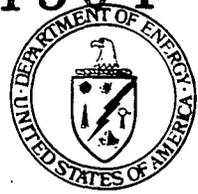




**Department of Energy**

**Ohio Field Office  
Fernald Area Office  
P. O. Box 538705  
Cincinnati, Ohio 45253-8705  
(513) 648-3155**

1304



**FEB 27 1998**

**DOE-0511-98**

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

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

**Dear Mr. Saric and Mr. Schneider:**

**TRANSMITTAL OF: (1) RESPONSES TO THE 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, (2) MODEL QUALITY ASSURANCE PROJECT PLAN CROSS REFERENCE TABLE**

- References:**
- 1) Letter and enclosure, Saric to Reising, "U.S. EPA Revised SCQ Comments," dated January 29, 1998.**
  - 2) Letter and enclosure, Schneider to Reising, "DOE-FEMP Comments Draft Sitewide CQA Plan," dated November 13, 1997.**

**This letter serves to submit the subject responses for your review and approval. The comments were provided in References 1 and 2. Only the responses to comments are being submitted at this time per the agreement reached during the February 17, 1998, weekly conference call between the Department of Energy, Fernald Environmental Management Project (DOE-FEMP), U.S. Environmental Protection Agency (U.S. EPA), and Ohio Environmental Protection Agency (OEPA). Once your concurrence on the comment responses and associated actions is received, the Sitewide CERCLA Quality Assurance Project Plan (SCQ) will be revised and submitted in final form for your approval. Also, per the agreement during the February 17, 1998, conference call, this transmittal includes a table to help facilitate cross referencing the revised SCQ to the U.S. EPA Region V Superfund Model Quality Assurance Project Plan, Revision 1, dated May 1996.**

Should you have any questions regarding this transmittal, please contact Joe Neyer at (513) 648-3178, or Robert Janke at (513) 648-3124.

Sincerely,



Johnny W. Reising  
Fernald Remedial Action  
Project Manager

FEMP:Neyer

Enclosure: As Stated

cc w/enc:

N. Hallein, EM-42/CLOV  
R. J. Janke, DOE-FEMP  
G. Jablonowski, USEPA-V, SRF-5J  
R. Beaumier, TPSS/DERR, OEPA-Columbus  
M. Rochotte, TPSS/DERR, OEPA-Columbus  
T. Schneider, OEPA-Dayton (total 3 copies of enc.)  
F. Bell, ATSDR  
M. Schupe, HSI GeoTrans  
R. Vandegrift, ODOH  
F. Baker, Tetra Tech  
D. Carr, FDF/9  
T. Hagen, FDF/65-2  
J. Harmon, FDF/90

**AR Coordinator, FDF/78**

cc w/o enc:

J. Bradburne, FDF/1  
R. Heck, FDF/2  
S. Hinnefeld, FDF/2  
EDC, FDF 52-7

# **ENCLOSURE 1**

**RESPONSES TO U.S. EPA AND OHIO  
EPA COMMENTS ON THE SITEWIDE  
CERCLA QUALITY ASSURANCE  
PROJECT PLAN (SCQ) REVISION 01**

**RESPONSES TO U.S. EPA AND OEPA COMMENTS ON THE  
SITEWIDE CERCLA QUALITY ASSURANCE PROJECT PLAN  
(REVISION 1)  
FOR JULY 1997**

**FERNALD ENVIRONMENTAL MANAGEMENT PROJECT  
FERNALD, OHIO**

**FEBRUARY 1998**

**U.S. DEPARTMENT OF ENERGY  
FERNALD AREA OFFICE**

**RESPONSES TO U.S. EPA COMMENTS ON THE  
SITEWIDE CERCLA QUALITY ASSURANCE PROJECT PLAN  
(REVISION 1)  
FOR JULY 1997**

**GENERAL COMMENTS**

1. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: Not Applicable (NA) Page #: NA  
 Original General Comment #: 1 Line #: NA
- Comment:** The text contains many typographical and grammatical errors, some of which could limit the usability of the document. The first example occurs on Page 1 of the Glossary, where "CCB" is defined as "Calibration Continuing Blank" rather than the correct "Continuing Calibration Blank." Only the errors that tend to mislead the reader are noted in the specific comments. Nevertheless, the document should be thoroughly edited before its release to eliminate such errors. In addition, some significant errors and omissions may not be noted in the following comments because of the document's complexity. While checking for and correcting minor errors, the U.S. Department of Energy (DOE) should also look for any major errors not yet detected and correct them as well.
- Response:** The comment is noted. The SCQ has been reviewed multiple times by many reviewers. We have gone to great efforts to correct the serious grammatical and logical errors that were found in the previous EPA-approved document. Unfortunately, in a document of this size and complexity some minor grammatical errors are bound to escape detection. We continue to correct these as they are discovered. In addition, several other technical errors were discovered during comment resolution and subsequent reviews. Several of these were the result of improper word processing which resulted in the inadvertent omission of proposed revisions and additions.
- Action:** The following corrections were made:  
 Glossary page 1: CCB definition was changed to ~~Continuing~~ Calibration Blank
- Section 1( page 1-8), line 6 was changed to: "... assigning DQO numbers, ~~resolving~~ ensuring that all..."
- Section J.4.3.2 (page J-13), line 8 was changed to: "... absent then ~~install~~ a..."
- Section 4.4.3.1.C (page 4-13), line 42 was changed to: "Review process including documented resolution of reviewer comments to ~~include concurring signature for comments submitted as significant,~~"
- Section 5.2.4 (page 5-4), lines 39-42 were changed as follows to reflect that a geologist, hydrogeologist, or geologic engineer are not required during well ~~development~~: "Wells must be properly developed to yield accurate aquifer test results and groundwater samples representative of aquifer conditions. ~~Personnel developing a well~~ shall have documented training..."
- Section 7.1 (page 7-2), line 7 was changed to: "...or handwritten using ~~black~~ indelible ink..."

Section 7.1 (page 7-2), line 29 was changed to: "...the ~~COC~~ shall contain the name of the storage area..." to reflect that this custody information is not recorded in the daily log.

Section 12.4 (page 12-4), line 42 was change to: "...by ~~qualified~~ auditors..."

Section D.12.2.14.C (page D-83, line 40), lifetime was changed from 100-300 micro seconds to ~~150-350 microseconds~~.

Section I.4.7.2 (page I-4 line 41 through page I-5, line 18) was changed as follows to reflect that requirements for Section I.4.7.1 were erroneously copied to this section:

- "A. Connect sampling hose to cylinder regulator outlet and other end to PID sampling probe.
- B. Open regulator valve.
- C. Take reading after 5 to 10 seconds.
- D. Perform steps D through H in paragraph I.4.7.1."

Appendix B, Form 7-1, page 2 of 5 (COC continuation page) was removed to reflect that the use of this continuation page is no longer permitted at the FEMP.

Section D.2.4 (page D-4, line 34) two new references were added to reflect additional guidance:

~~"American National Standard Measurement and Associated Instrument Quality Assurance for Radioassay Laboratories," ANSI N42.23-1996, American National Standards Institute, 1997.~~

~~"DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, U.S. Department of Energy, 1993.~~

Section K.4.2.2.A.16 (page K-12), lines 28-28 were changed as follows to reflect that dedicated equipment must always be placed on plastic if it is removed from well: ~~"If the potential for surface contamination exists and~~ equipment is removed from the well, then place the equipment on a plastic sheet to avoid equipment contamination."

2. Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Page #: NA

Line #: NA

Original General Comment #: 2

Comment: Revision 1 of the "Sitewide CERCLA Quality Assurance Project Plan" (SCQ) contains a number of new sections and has been partially reorganized, resulting in assignment of new section numbers. For example, former Section K.4.2.4 is now Section K.4.2.5, and former Section K.6.2.1 is now Section K.6.2.2. However, the text still contains cross-references to the original section numbers (for example, on Line 4 of Page 6-4 and Line 27 of Page 6-11 in the cases cited above). Cross-references should be checked and corrected as necessary. In addition, as part of the editing process, cross-references should be revised to identify to the precise sections of interest (for example, Section "K.4.2.4" rather than "K.4.2 et seq." in order to assist the reader in locating the necessary information.

**Response:** Comment noted. We have again reviewed the entire document and checked all reference citations. However, more section numbers and cross-references may be changed as the agencies evaluate DOE's comment responses in this document. We will review the entire document again to check all cross-references when these comments have been resolved.

**Action:** No action required.

3. **Commenting Organization:** U.S. EPA **Commentor:** Saric  
**Section #:** NA **Page #:** NA **Line #:** NA  
**Original General Comment #:** 3

**Comment:** The text provides quality assurance (QA) requirements for field analytical measurements but does not address real-time instruments such as the radiation tracking system and high-purity germanium detector. The text should be revised to include references to standard operating procedures (SOP) and other supporting information for these instruments.

**Response:** As agreed upon during a November 13, 1997, conference call that was held between representatives of the Fernald Environmental Management Project (FEMP), U.S. Environmental Protection Agency (U.S. EPA), Ohio Environmental Protection Agency (OEPA), and the Ohio Department of Health (ODH), the FEMP will develop a QA/QC program for the real-time radiological instrumentation. This QA/QC program will be documented as an addendum to the SCQ and will be submitted to U.S. EPA and OEPA by March 31, 1998. This commitment was confirmed in a December 22, 1997 letter from Johnny Reising to James Saric and Tom Schneider.

**Action:** The addendum will be incorporated into the SCQ when it has been approved.

4. **Commenting Organization:** U.S. EPA **Commentor:** Saric  
**Section #:** NA **Page #:** NA **Line #:** NA  
**Original General Comment #:** 4

**Comment:** Sections 6.4 and K.6 omit two of the three types of air samples to be collected under the final "Integrated Environmental Monitoring Plan" (IEMP) for the Fernald Environmental Management Project (FEMP): radiological air particulate monitoring samples and direct radiation monitoring samples. The IEMP states that sampling procedures for both types of samples are included in the SCQ (see Sections 6.5.2.1 and 6.5.4.1 of the IEMP). Sections 6.4.5 and K.6.5 of the SCQ include general discussions of the air sampling required to confirm compliance with applicable dose limits. However, these discussions do not specifically address the high-volume air samples that will be collected to demonstrate compliance with National Emission Standards for Hazardous Air Pollutant Subpart H requirements, a key component of the IEMP air monitoring program. Similarly, direct radiation monitoring using thermoluminescent detectors (TLD) is not addressed in the SCQ. Sections 6.4 and K.6 of the SCQ should be revised to discuss sampling procedures for both radiological air particulate monitoring and direct radiation monitoring using TLDs. The SCQ should also include references to any SOPs that may be used to collect the samples.

**Response:** We agree with the comment. The SCQ has been revised to include a description of the radiological air particulate monitoring samples and the direct radiation (TLD) samples. The SCQ has also been revised to include a general reference to the procedures used to collect the samples.

Action: Section 6.4 and Appendix K of the SCQ were revised as follows:

The following new section was added to Section K.6.5 (page K-49, line 13):

**K.6.5.1 Radiological Air Particulate Monitoring**

The 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.

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 immediately located adjacent to the property boundary. DOE guidance (DOE 1991) and EPA siting criteria (40 CFR 55, Appendix E) were considered when selecting these locations.

**A. Sampling Procedures**

The air filters from the high-volume environmental monitors are collected and analyzed in accordance with the following:

1. DOE Order 5400.5, "Radiation Protection of the Public and Environment";
2. "Environmental Regulatory Guide for Radiological Effluent Monitoring" (DOE 1991);
3. FEMP SCQ Section 6.0 and Appendix K;
4. Standard Operating Procedure SMPL-08, High Volume Air Monitoring;
5. Data Quality Objective AR-006, "Routine Air Monitoring";
6. Routine analyses are analyzed to ASL B quality level;
7. Quarterly air filter composites are analyzed to ASL D quality level;
8. Standard Operating Procedure EW-0002, Chain of Custody/Request for Analysis Record for Sample Control;
9. Standard Operating Procedure EQT-18, Calibration of Graesby GMW High Volume Air Sampler;

**B. Analytical Requirements for Radiological Air Particulate Monitoring**

1. The analytical regime frequency for this program is designed to meet the following two fundamental criteria:
  - a. Provide routine analysis that supports a timely evaluation of the effectiveness of sitewide emission controls.

- b. Account for the major contributors to dose, as defined in 40 CFR 61.93(b)(5)(ii) for the purposes of demonstrating NESHAP Subpart H compliance.
2. The isotopes selected for analysis represent the major contributors to dose based on the following considerations:
- a. Radionuclides which are stored in large quantities at the FEMP and which will be handled or processed during the remediation effort.
  - b. Radionuclides which have been the major contributors to dose based on environmental and stack filter measurements.
  - c. Radionuclides which, due to their concentration in waste and contaminated soil, will be the major contributors to dose if the waste or soil is released in the form of fugitive dust.

The following new section was added at page 6-12, line 23:

#### **6.4.2.4 Direct Radiation Monitoring**

The direct radiation monitoring program is designed to collect measurements of environmental radiation levels resulting from radioactive materials on-site. This is accomplished using a network of environmental thermoluminescent dosimeters (TLD).

The K-65 silos are the single largest source of direct (gamma) radiation at the FEMP. Therefore, TLD locations radiate outward from the silo area with emphasis on the nearby and publicly accessible western boundary of the site. Additional TLDs are located at air monitoring stations at the facility fence line and in the local community. Six TLD locations serve as background measurement points.

The network of TLDs provides a mechanism to measure and track ambient radiation levels at the facility fence line, as gamma emitting radioactive materials (primarily Radium-226, Thorium-232, and their decay products) that are handled and processed during remediation.

The following new section was also added:

#### **K.6.5.3 Direct Radiation Monitoring**

Direct radiation (TLD) monitoring measures the direct radiation at select locations on-site, at the facility fence line and in the local community. The data collected under this program are used to assess the collective effect of current remediation activities on the air pathway.

The monitoring design incorporates a network of TLD locations. Three TLDs are deployed quarterly at each location and submitted to the on-site dosimetry laboratory for analysis. External gamma radiation measurements are recorded from each TLD read. All TLDs are analyzed to ASL B.

#### **A. TLD Sampling Procedures.**

The TLDs are collected and analyzed in accordance with the following:

1. DOE Order 5400.5 Radiation Protection of the Public and Environment
2. Environmental Regulatory Guide for Radiological Effluent Monitoring (DOE 1991)
3. Standard Operating Procedure SMPL-10, Environmental Direct Radiation
4. Data Quality Objective MS-004 REM Direct Radiation Measurements

~~5. Standard Operating Procedure EW-0002, Chain of Custody/Request for Analysis Record for Sample Control~~

~~B. Performance standards for environmental TLDs are as follows:~~

- ~~1. Environmental TLDs shall be mounted at one meter above ground.~~
- ~~2. The frequency of exchange should be based on predicted exposure rates from site operations.~~
- ~~3. The exposure rate should be long enough (typically one calendar quarter) to produce a readily detectable dose (DOE 1991).~~
- ~~4. Annealing, calibration, readout, storage and exposure periods used should be consistent with the ANSI standard recommendations (ANSI 1975).~~

~~All TLDs placed in the field are tracked via a field tracking log which provides information pertaining to when and where dosimeters were deployed as well as scheduled collection date.~~

5. Commenting Organization: U.S. EPA

Section #: NA

Page #: NA

Commentor: Saric

Line #: NA

Original General Comment #: 5

Comment:

Section 6.4 and Appendixes G and K should be revised to present clearer and more consistent information on quality assurance and quality control (QA/QC) procedures and analytical methods for gaseous matrix samples. As stated in Section 1.1, the purposes of the SCQ are to (1) establish minimum performance standards and (2) ensure that the standards are followed. However, the SCQ does not adequately define minimum standards. For example, the IEMP includes radon monitoring using alpha track-etch radon cups as one type of air sampling that will be conducted under the sitewide air monitoring program, but neither the SCQ nor the IEMP completely defines the required QA/QC procedures and analytical methods for the samples. Section 6.5.3.2 of the IEMP states that QC samples for the alpha track-etch radon cups will include "internal control blanks, spikes, and laboratory control samples as required by the SCQ." Section 6.4.2.1 of the SCQ states that "the types of Quality Control samples analyzed with each batch of samples and the acceptance limits for the results" are included in Section K.6.2.1. While Section K.6.2.4 of the SCQ states that spiked detectors and blanks will be analyzed, frequencies and acceptance criteria for these QC samples are not presented. In addition, the analytical method for the alpha track-etch radon cups is not presented in Appendix G of the SCQ. Because the IEMP has been approved as final, the SCQ should be revised to include all remaining information needed to collect and analyze IEMP air samples and to evaluate the quality of the resulting data.

Response:

We agree with the comment.

Action:

Section 6.4.2.1 (\*page 6-11, line 17) was changed as follows:

"Specific requirements and guidelines are stated in Appendix K.6.2.4."

Section K.6.2.4 was revised as follows:

~~K.6.2.4 QA/QC Requirements for Long-term Environmental Radon Monitoring~~  
~~Radon alpha track-etch detectors allow radon to penetrate a filter canister within a plastic cup. Once the radon decays, an alpha particle is emitted that interacts with the plastic chip within the canister (hence the measurement is based on the "etch" left in the plastic). The radon canisters are received new from the vendor and therefore do not require periodic calibration.~~

~~A. The following quality assurance measures are utilized under the long-term environmental radon monitoring sampling program are performed with each change-out:~~

- ~~1. All detectors are purchased/analyzed/spiked by vendor(s) that participate in the USEPA Radon Measurement Proficiency Program.~~

- 2) All detectors purchased for a sampling interval must contain plastic taken from the same fabrication batch (sheet of plastic).
  - 3) All detectors received by and sent from the FEMP must be sealed in radon retardant bags.
  - 4) At a minimum five to ten percent of the purchased detectors (usually 20 total) are retained by the vendor in a background controlled area (where their quality control detectors are stored) and sent to the FEMP toward the end of the sampling period.
  - 5) At a minimum 75 percent (usually 15) of the retained detectors are sent to a different vendor for spiking, and returned to the FEMP.
  - 6) At a minimum 25 percent (usually five) of the retained detectors remain sealed at a FEMP designated background location as a verification of blank exposure.
  - 7) At the end of the sampling interval, all detectors are packaged in radon retardant bags, segregated by analytical sensitivity level (high or low) and sent for analysis. A chain of custody form accompanies the detectors denoting serial numbers but not exposure location (the analytical vendor is thus blind to the expected exposure).
  - 8) Hard copy and electronic data received upon analysis must contain the following information:
    - a) Detector serial numbers
    - b) Detector lot number
    - c) Analyzing process number
    - d) Total exposure (pCi/L-days)
    - e) Gross counts
    - f) Net counts
    - g) Average net tracks per square millimeter
  - 9) The vendor is also required to perform analyses on their internal control blanks, spikes and laboratory control samples and provide this and Radon Measurement Proficiency Program mandated data annually or as applicable.
- 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)**

- (a) IF  $\frac{|\text{Maximum Value} - \text{Average Value}|}{\text{Average Value}} \leq \frac{\text{Standard Deviation of Spikes}}{\text{Mean Value of Spikes}}$   
AND  
IF  $\frac{|\text{Minimum Value} - \text{Average Value}|}{\text{Average Value}} \leq \frac{\text{Standard Deviation of Spikes}}{\text{Mean Value of Spikes}}$   
THEN average all data from location.
- (b) IF  $\frac{|\text{Maximum Value} - \text{Average Value}|}{\text{Average Value}} \leq \frac{\text{Standard Deviation of Spikes}}{\text{Mean Value of Spikes}}$   
AND  
IF  $\frac{|\text{Minimum Value} - \text{Average Value}|}{\text{Average Value}} \geq \frac{\text{Standard Deviation of Spikes}}{\text{Mean Value of Spikes}}$   
THEN average data from two higher data points.
- (c) IF  $\frac{|\text{Maximum Value} - \text{Average Value}|}{\text{Average Value}} \geq \frac{\text{Standard Deviation of Spikes}}{\text{Mean Value of Spikes}}$   
AND  
IF  $\frac{|\text{Minimum Value} - \text{Average Value}|}{\text{Average Value}} \leq \frac{\text{Standard Deviation of Spikes}}{\text{Mean Value of Spikes}}$   
THEN average data from two lower data points.
- (d) IF  $\frac{|\text{Maximum Value} - \text{Average Value}|}{\text{Average Value}} \geq \frac{\text{Standard Deviation of Spikes}}{\text{Mean Value of Spikes}}$   
AND  
IF  $\frac{|\text{Minimum Value} - \text{Average Value}|}{\text{Average Value}} \geq \frac{\text{Standard Deviation of Spikes}}{\text{Mean Value of Spikes}}$   
THEN record highest value if within historical range and/or reasonable based on process knowledge.
3. Historically, radon data from property fence line and background locations have been recorded at concentrations of less than one pCi/L. For six months of exposure to this radon concentration, a total radon exposure of approximately 180 pCi/L-days would be observed. To ensure that the measurement technique has the ability to measure these low levels of radon, quality assurance measurements (spikes) at a total radon exposure of approximately 100 pCi/L-days are performed. If the measured exposure varies from the reference value (approximately 100 pCi/L-day), a laboratory exposure bias correction factor is calculated. This bias correction factor is equal to the expected reference value minus the observed mean value.
4. The bias correction factor is then applied to all location data points that passed the screening criteria for precision, giving a corrected exposure.
5. The corrected concentration is then determined by dividing the corrected exposure by the number of days in the exposure period (sampling time). The resulting concentration data is used to determine a location average corrected radon concentration.

New Section K.6.2.5 was added:

**K.6.2.5. Q/A/QC Requirements for Continuous Environmental Radon Monitoring**

The continuous environmental radon monitors operate in a passive mode, allowing radon to diffuse through the foam barrier of the alpha-scintillation detector. The units are set to collect measurements of a one-hour duration. Data is reduced to daily (~24 hours) average radon concentration. Summary statistics are performed by month, yielding minimum, maximum, and average daily radon concentrations.

The following quality assurance measures are utilized under the continuous environmental radon monitoring sampling program:

- A) All repairs are performed by the instrument manufacturer.
- B) All calibrations are performed in facilities consistent with USEPA's Radon Measurement Proficiency Program for approved radon labs.
- C) All calibrations are performed to procedures consistent with USEPA's Radon Measurement Proficiency Program for approved radon labs.
- D) All monitoring instruments are calibrated as a contiguous unit (a continuous passive radon detector mated to a specific counting instrument).
- E) All monitoring instruments are calibrated with NIST traceable sources annually or as needed.
- F) All monitoring instruments are calibrated in known radon concentration (usually 10 pCi/L) for a period of 48 hours yielding a sensitivity calibration factor.
- G) All calibrated monitoring instruments must be exposed in a radon free atmosphere for a period of 24 hours in order to determine total instrument background value.
- H) All calibrated counting instruments must be counted for a period of 24 hours in order to determine electronic background value of total instrument background value.
- I) Routine source checks (i.e., monthly) are performed on the counting instrument. Data will be recorded on process control charts and only instruments demonstrating the following acceptable performance will remain in the field to collect data:
  - 1) Source check data that falls within  $\pm 1$  two standard deviations of the mean expected count rate identifies an instrument as acceptable for use.
  - 2) Source check data that falls outside of the  $\pm 1$  two standard deviations of the mean expected count rate identifies an instrument as unacceptable for use. The affected instrument(s) will not be used until examined and repaired, and recalibrated if necessary.

The following new information was added to Appendix G:

<b>TABLE G-2 Organic, Inorganic, and Isotopic Performance Criteria (Cont.)</b>			
<b>Criterion: 52</b>		<b>PROTOCOL: USEPA</b>	
<b>ASLs: B only</b>		<b>METHOD: Alpha track-etch detectors (EPA 402-R-92-004, 2-6)</b>	
<b>REQUIREMENT</b>	<b>FREQUENCY</b>	<b>ACCEPTANCE LEVELS</b>	<b>CORRECTIVE ACTION</b>
1. CC	Annually	Vendor determined	Recalibrate
2. LCS (Method/Blank)	Batch	80-120% of background	Recalibrate
3. Internal Standard (spike)	3% or specified limit	80-120% of known exposure	Recalibrate
4. Duplicate measurements	10% minimum	<20% variability	Recalibrate
5. Blind/blank	2-5%	None <sup>1</sup>	Adjust data for deviations
6. Blind/spike	5-10%	None <sup>2</sup>	Adjust data for deviations
7. Location replicates	100%	IEMP agreement limits	Adjust data
8. Analyte list: <del>222Rn</del> ; <del>Rn-222</del>			
9. Detection limit: <del>ELD: 0.2-1.0 pCi/L-month</del>			
10. Calibration points and ranges: Several different radon concentrations (minimum of 3) including expected radon concentration range. A minimum of ten detectors are checked at each level.			

<sup>1</sup> Used as a qualitative determination of vendor's precision near the ELD. This data is used to verify integrity of packaging.

<sup>2</sup> Used as a quantitative determination of vendor's accuracy to a known exposure.

**Note:** The following analytical protocol is excerpted from USEPA 402-R-92-004 *Indoor Radon and Radon Decay Product Measurement Device Protocols*:

- (1) The track-etch detector plastic is exposed to an unknown radon concentration environment.
- (2) The alpha particles from decaying radon and its progeny damage the microscopic three dimensional structure of the plastic material.
- (3) The exposed detectors are packaged and sent to a vendor for analysis.
- (4) The vendor unpacks the detectors and places the plastic in a caustic solution that accentuates the damage tracks.
- (5) The vendor then places the chemically treated plastic in an automated optical counting system or on a microscope for counting of the tracks.
- (6) The background corrected (net) number of tracks per unit area (density) is proportional to the true integrated average radon concentration for the exposure period. The density is correlated to a radon concentration in air by using a conversion factor obtained from previously determined calibration data.

6. Commenting Organization: U.S. EPA  
 Section #: 6.4.3 and 6.4.4  
 Original General Comment #: 6

Page #: 6-12

Commentor: Saric  
 Line #: NA

**Comment:** These sections briefly discuss air monitoring for radioactivity and for organic and inorganic contaminants and imply that such health and safety monitoring is outside the scope of the operational analytical activities that are the subject of the SCQ. In addition, Section 5.4 on Page 5-10 discusses monitoring for radioactivity for health and safety purposes and explicitly excludes this activity from the requirements of the SCQ. However, the major unknowns at FEMP are the extent of the known contaminated sites and the locations of any unidentified contaminated sites within or near FEMP. The "extent" question is being addressed by various project-specific plans for both initial surveys and certification surveys to be carried out in accordance with the SCQ, the "Sitewide Excavation Plan," and similar documents. The only reasonable method for locating unknown contamination is visual observation (of green salt, derbies, or other foreign matter in soil, for instance) supplemented by use of the standard health and safety monitoring equipment for radioactivity and organic vapors. Because the health and safety activities serve remedial purposes, they should be treated as on-site analytical activities covered by the SCQ at analytical support level (ASL) A. The sections cited above and related ones in Appendix K and elsewhere should be revised to emphasize the need to use all available information to locate all significant contamination, especially contamination that exceeds the waste acceptance criteria for the On-Site Disposal Facility. Section 2.3.4.A, which defines ASL A, need not be changed because it already includes some examples of use of health and safety monitoring equipment for identifying contamination.

**Response:** DOE agrees that all information gathered as part of the remediation process, including health and safety monitoring data, should be utilized to support identification of areas of significant contamination. However, the radiological surveys and industrial hygiene (IH) monitoring which focuses on occupational safety are addressed in the Radiological Control Manual (DOE 1997), and health and safety and IH procedures. The project-specific application of health and safety monitoring and its relationship to remedial activities are detailed in project-specific documents. DOE agrees that the SCQ should acknowledge the use of health and safety monitoring information to support remedial decision making and has revised section 5.4 to reflect this position.

**Action:** The following was added to Section 5.4 (page 5-10, line 43):

~~"... are not subject to the requirements of the SCQ. However, this information should be integrated with environmental characterization information to support a comprehensive assessment of field conditions and ensure areas of significant contamination are identified. Requirements for screening of samples..."~~

Section 6.4.3 (page 6-12, lines 26-35) was changed as follows:

#### **6.4.3 General Air Samples**

Routine air sampling is performed to measure ~~occupational~~ levels of airborne radioactive material in order to properly characterize areas in accordance with 10 CFR, Part 835. These data are also used to ~~measure ambient levels of airborne radioactive in the workplace, assess worker intakes, dictate posting requirements, and evaluate the adequacy of engineered and administrative process controls such as containment and ventilation.~~ Sampling is accomplished as specified in Appendix K.6.5.

Continuous air monitors are used to provide real-time air monitoring as required by 10 CFR, Part 835. These monitors are operated in accordance with applicable documented procedures.

Section 6.4.5 (page 6-12, line 42-50) was retitled and the text was changed as follows to reflect current program under IEMP:

**6.4.5: Radiological Air Particulate Monitoring**

~~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 provides a reliable, accurate assessment of dose received by off-site receptors via the air pathway. Also, to demonstrate compliance with DOE Order 5400.5 and the provisions of the Clean Air Act, 40 CFR 61, Subpart H (NESHAP).~~

The following changes were made to Section K.6.3 (page K-44, lines 41-46):

“Continuous Air Monitors (CAM) are used to provide real-time air monitoring as required by 10 CFR, Part 835. There are several different types of CAMs in use at the ~~FEMP~~ and each must be operated in accordance with applicable documented procedures. These instruments are generally used as warning devices ~~and do not normally produce data useable by the FEMP CERCLA group~~. However, instruments equipped with strip charts may be used for tracking ambient airborne levels of radioactive contaminants.”

7. Commenting Organization: U.S. EPA Commentor: Saric  
 Appendix #: D Page #: NA  
 Original General Comment #: 7 Line #: NA

Comment: Appendix D discusses the data validation requirements for organic, inorganic, and radiochemistry analytical methods; however, the ASLs discussed for each type of analysis appear to differ. For example, most discussions of organic analyses include only ASLs C and D, while most discussions of inorganic analyses include ASLs B, C, and D. In addition, Section D.9 discusses validation of volatile organic compound (VOC) data for drinking water at ASL B only. A rationale for the ASL differences should be clearly presented in the introduction to Appendix D.

Response: We agree with the comment.

Section D.9 (VOCs in drinking water) and Section D.11 (conventional/non-metals) provide only guidance for ASL B validation due to the fact that these analyses are performed only according to SW-846 methodologies. ASL C and D criteria are taken from the EPA CLP SOW, and are therefore not appropriate.

Radiological data is validated to the same criteria, so there is no need to identify different guidance or requirements according to ASLs.

For the remaining types of analyses (volatile and semivolatile organics in Section D.6, pesticides in Section D.7, and organics by GC in D.8) we validate standard, predefined ASL B data according to the applicable requirements for ASLs C&D. ASL B data with user-defined QC is validated in accordance with the applicable PSP.

This is clearly stated in Section D.8.1.1. For clarification, we have included this information in Sections D.6 and D.7.

Action: The following was added to Sections D.6.1 and D.7.1. Subsequent sections were renumbered:

**Guidelines for ASL B Data**

~~There are two sublevels of ASL B data, and they require different validation guidance. If standard, predefined ASL B analysis is specified, QC information shall be reviewed and compared to the QC acceptance criteria of the individual methods. The portions of~~

~~ASLs C and D guidance that are applicable (e.g., matrix spike/matrix spike duplicate, blanks, laboratory control samples) shall be used as the outline for review. The specific acceptance criteria from the Appendix G method shall be used.~~

~~If the samples taken are user-defined as ASL B, they shall be validated in accordance with requirements in the PSP for that sampling event. When the data user specifies the quality control (QC) requirements, the validation requirements shall also be specified in the PSP. The data validator must review the PSP to ensure compliance with PSP requirements.~~

The title of Section D.6.1 was changed to "Volatile and Semivolatile Organic Data Validation Guidance for ASLs B, C, and D."

The title of Section D.7.1 was changed to "Pesticides Data Validation Guidance for ASLs B, C, and D."

8. Commenting Organization: U.S. EPA Commentor: Saric  
 Appendix #: D Page # NA Line #: NA  
 Original General Comment #: 8  
 Comment: Sections of Appendix D are inconsistent with each other when discussing the procedures for qualifying analytical data when the laboratory does not submit all the laboratory QC data to the validator. For example, Section D.6.3.3 states that "if continuing calibration data are required and not available, qualify all associated data as unusable (R)." However, Section D.6.2.3 indicates that if the laboratory fails to submit instrument tuning criteria data, the validator should complete a request for additional information and resubmittal (RIR). Other sections, for example Section D.6.3.2, do not even discuss the issue of insufficient laboratory QC data. The issue of insufficient laboratory QC data should be addressed globally in Appendix D, and all portions of the appendix that contradict the global procedures should be removed.
- Response: In Section D.2.6 (page D-8) the SCQ addresses the steps that should be taken when a laboratory fails to provide all information required by the analytical contract. Whenever required information is missing, the FEMP issues a Request for Additional Information/Resubmittal (RIR). If the missing information is not provided, the validator qualifies the data as unusable or, in some cases, requires the laboratory to reanalyze the sample (if sufficient sample volume exists or holding times permit). Although the instructions in D.2.6 *et seq.* provide universal guidance for Appendix D (and other sections of the SCQ), several sections specify that validators submit an RIR. This redundancy is a vestige of the former EPA-approved versions of the SCQ.
- Action: The following changes were made to D.6.3.3.A (page D-20, line 38) to clarify the requirements and to make it consistent with other requirements: "If continuing calibration data are required and are not available, ~~submit an RIR to the laboratory for the missing data. If the required continuing calibrations were not performed,~~ qualify all associated data as unusable (R)."

9. Commenting Organization: U.S. EPA Commentor: Saric  
 Appendix #: F Page #: NA Line #: NA  
 Original General Comment #: 9  
 Comment: Section F.3.7 refers to the FEMP Sitewide Environmental Database (SED) as a data repository that is the heart of the FEMP environmental data management system. The text in other sections of Appendix F is confusing because inconsistent references are made to the SED as the "database," "repository," or "centralized data repository." DOE should refer to the SED in a consistent manner throughout the appendix.

In addition, Section F.1 indicates that the subsystems of the data management system and linkages between the subsystems will be described in Appendix F. However, the

text does not identify the components of the data management system as subsystems and provides only limited discussion of linkages within the data management system. It is not clear which components are subsystems, and it appears that some of the components are stand-alone with no linkage to the data management system. DOE should revise the text to clarify the overall system and subsystem structure as well as the interrelationships between the different systems and subsystems.

Response: We agree that the text of the SCQ contained imprecise descriptions of the SED database. We have revised the text to remove confusing statements. The relationship of the databases is addressed in our response to DOE Comment #93.

Action: The following changes were made to clarify the information in Appendix F:

F.4 (page F-4, line 13): "... data in the FEMP ~~environmental~~ SED is linked..."

F.4.1.B (page F-5, line 1-2): "... for direct import into the ~~data-repository~~ SED;"

F.4.1.C (page F-5, line 4-5): "... and the input to the ~~data-repository~~ SED."

F.4.3.H (page F-6, line 1): "... systems use the ~~ORACLE~~ SED directly..."

F.4.6 (page F-6, line 25): "The ~~ORACLE~~ SED (F.2.4) act as..."

F.4.6.B (page F-6, lines 41-43): "B. Relational Database Linkages to ~~ORACLE~~ SED - Via the Intergraph Relational Interface System (RIS that provides linkage between ERMA and the ~~ORACLE-repository~~ SED. ERMA also maintains its own data structures in ~~ORACLE~~."

F.4.6.C (page F-6, lines 45-46): "... and directly interfaced with the ~~ORACLE~~ SED."

F.5.1 (page F-7, line 33): "The ~~ORACLE-based Sitewide Environmental Database~~ SED..."

F.5.1 (page F-7, lines 36-37): "The ~~central ORACLE database~~ SED provides..."

F.5.1 (page F-7, line 41): "The ~~ORACLE database~~ SED is normalized..."

F.5.3.D (page F-8, line 24): "... accepted into the ~~database~~ ~~FACTS~~ or SED."

F.5.4 (page F-8, line 43): "... reports from the ~~ORACLE data-repository~~ ~~FACTS~~ or SED."

F.5.4 (page F-8, lines 45-46): "... data from the ~~ORACLE data-repository~~ ~~FACTS~~ or SED and format ad hoc reports."

F.5.5 (page F-9, lines 1-3): "Data interface between separate environmental software systems is facilitated by sharing the common ~~ORACLE data-repository relational database-management system~~. The ~~ORACLE database~~ This system provides..."

10. Commenting Organization: U.S. EPA

Commentor: Saric

Appendix #: G

Page #: NA

Line #: NA

Original General Comment #: 10

Comment: Appendix G does not reference the most recently promulgated analytical methods in Update III of "Test Methods for Evaluating Solid Waste" (SW-846). Although some of the methods listed in the SCQ are still approved for use, others have been deleted from SW-846 altogether. For example, Method 3520 cited in Table G-1 has been replaced with Method 3520C, and Methods 8080A and 8150B cited in Table G-1 have been

deleted from SW-846 and should not be used. These examples do not represent all the changes required in Appendix G. This appendix should be thoroughly checked and revised to reflect use of the most recently promulgated analytical methods in SW-846 Update III. In addition, Footnote 4 of Table G-1 cites the Seventeenth Edition of "Standard Methods for the Analysis of Water and Wastewater," but the Nineteenth Edition (dated 1995) is current. This footnote should be revised to cite the current guidance.

Response: We agree with the comment.

Action: The following changes have been made to Table G-1:

TABLE G-1					
SCQ ANALYTICAL METHODS SELECTION TABLE FOR STANDARD AND HISTORICAL METHODS (ORGANIC, INORGANIC, AND ISOTOPIC)					
Analyte or Class of Analytes	ASL	Matrices and Methods Water and Wastewater		Matrices and Methods Soil and Solids	
with performance criteria numbers		Prep Method(s) <sup>1,2</sup>	Analytical Method(s)	Prep Method(s) <sup>1,2</sup>	Analytical Method(s)
1a. VOCs	B	W	SW 846-8260B	W	SW 846-8260B
	C, D	W	CLP <sup>(8)</sup>	W	CLP <sup>(8)</sup>
1b. VOCs (Drinking Water)	C, D	W	CLP <sup>(11)</sup>	NA	NA
2. Semi-Volatile Organic Compounds	B	SW 846-3520C or 3510 <sup>(9)</sup>	SW 846-8270C	SW 846-3550B <sup>(10)</sup>	SW 846-8270C
	C, D	W	CLP <sup>(8)</sup>	W	CLP <sup>(8)</sup>
3. Pesticides and PCBs	B	SW 846-3520C or 3510 <sup>(9)</sup>	SW 846-8081A or 8082	SW 846-3550B <sup>(10)</sup>	SW 846-8081A or 8082
	C, D	W	CLP <sup>(8)</sup>	W	CLP <sup>(8)</sup>
4. Organophosphorus Pesticides	B	SW 846-3520 or 3510 <sup>(9)</sup>	SW 846-8141A	SW 846-3550B <sup>(10)</sup>	SW 846-8141A
5. Herbicides	B	W	SW 846-8151A	W	SW 846-8151A
6. Aromatic Volatile Organics	B	SW 846-5030B	SW 846-8021B	SW 846-5030B	SW 846-8021B
7. Halogenated Volatile Organics	B	SW 846-5030B	SW 846-8021B	SW 846-5030B	SW 846-8021B
8. Purgeable Organic Halogens	B	W	SW 846-9021	W	SW 846-9021
9. Metals by GFAA	B	SW 846-3020A, 7060A <sup>(6)</sup> , 7740 <sup>(6)</sup> or 7761 <sup>(6)</sup>	SW 846-7000A series or 3113B	SW 846-3050B, 3031 or 7761 <sup>(6)</sup>	SW 846-7000A series or 3500 <sup>(4)</sup> series
	C, D	W	CLP <sup>(8)</sup>	W	CLP <sup>(8)</sup>

TABLE G-1					
SCQ ANALYTICAL METHODS SELECTION TABLE FOR STANDARD AND HISTORICAL METHODS (ORGANIC, INORGANIC, AND ISOTOPIC)					
Analyte or Class of Analytes	ASL	Matrices and Methods Water and Wastewater		Matrices and Methods Soil and Solids	
with performance criteria numbers		Prep Method(s) <sup>1,2</sup>	Analytical Method(s)	Prep Method(s) <sup>1,2</sup>	Analytical Method(s)
10. Metals by AAS (Flame)	B	SW 846-3010A or 7760A <sup>(7)</sup>	SW 846-7000A series or <del>3011B</del> or <del>C</del>	SW 846-3050B, <del>3031B</del> or 7761 <sup>(6)</sup>	SW 846-7000A series or 3500 <sup>(4)</sup> series
	C, D	W	CLP <sup>(8)</sup>	W	CLP <sup>(8)</sup>
11. Metals by ICP	B	SW 846-3010A or 7760 <sup>(7)</sup>	SW 846-6010B or <del>3120B</del> , or <del>2007<sup>(3)</sup></del>	SW 846-3050B or 7760 <sup>(7)</sup>	SW 846-6010B or 3500 <sup>(4)</sup> series
	C, D	W	CLP <sup>(8)</sup>	W	CLP <sup>(8)</sup>
12. Mercury by Cold Vapor AAS	B	W	SW 846-7470A, <del>3112B</del> , or <del>245-29<sup>(3)</sup></del>	W	SW 846-7471A
	C, D	W	CLP <sup>(8)</sup>	W	CLP <sup>(8)</sup>
13. Cyanide (Total)	B	W	<del>SW 846-9010B</del> or <del>9012A</del> , 335.2 <sup>(3)</sup> , 335.3 <sup>(3)</sup>	W	335.2 <sup>(3)</sup>
	C, D	W	CLP <sup>(8)</sup>	W	CLP <sup>(8)</sup>
14. Soil pH	B	NA	NA	W	SW 846-9045C
15. pH (electrometric)	B	W	SW 846-9040B or 4500-H <sup>+</sup> B <sup>(4)</sup>	NA	NA
16. Nitrogen, Nitrate/Nitrite	B	W	353.1 <sup>(3)</sup> , 353.2 <sup>(3)</sup> , 4500D <sup>(4)</sup> , E <sup>(4)</sup>	NA	NA
17. Conductivity	B	W	120.1 <sup>(3)</sup> or 2510B <sup>(4)</sup>	NA	NA
18. TKN	B	W	351.2 <sup>(3)</sup>	NA	NA
19. TOC	B	W	SW 846-9060	NA	NA
20. Alkalinity	B	W	310.1 <sup>(3)</sup> or 2320B <sup>(4)</sup>	NA	NA
21. Chloride	B	W	325.2 <sup>(3)</sup> , 300.(all) <sup>(3)</sup> or 4500B <sup>(4)</sup>	NA	NA
22. Sulfide	B	W	376.1 <sup>(3)</sup> or SW 846-9030B	NA	SW 846-9030B
23. Ammonia	B	W	350.1 <sup>(3)</sup> , 350.3 <sup>(3)</sup> , 4500C & F <sup>(4)</sup>	NA	NA

TABLE G-1

**SCQ ANALYTICAL METHODS SELECTION TABLE FOR STANDARD AND HISTORICAL METHODS (ORGANIC, INORGANIC, AND ISOTOPIC)**

Analyte or Class of Analytes	ASL	Matrices and Methods Water and Wastewater		Matrices and Methods Soil and Solids	
		Prep Method(s) <sup>1,2</sup>	Analytical Method(s)	Prep Method(s) <sup>1,2</sup>	Analytical Method(s)
with performance criteria numbers					
24. Hexavalent Chromium	B	SW 846-3060A, W	SW 846-7195 or 7196A, 3500-CrD <sup>(4)</sup>	SW 846-3060A, W	SW 846-7195 or 7196A
25. Oil & Grease	B	W	SW 846-9070, <del>5520B</del> <del>4131D</del>	W	SW 846-9070 or 9071A
26. Temperature	B	W	170.1 <sup>(3)</sup>	W	170.1 <sup>(3)</sup>
27. Percent Solids (Moisture)	B	W	160.3 <sup>(3)</sup>	W	160.3 <sup>(3)</sup>
28. TPH	B	W	418.1 <sup>(3)</sup>	W	SW 846- <del>8440</del>
29. Total Dissolved Solids	B	W	160.1 <sup>(3)</sup> or 2540C <sup>(4)</sup>	NA	NA
30. Phosphorus	B	W	365.(all) <sup>(3)</sup> or 4500E <sup>(4)</sup>	NA	NA
31. Surfactants (MBAS)	B	W	5540C <sup>(4)</sup>	NA	NA
32. Phenolics, Total Recoverable	B	W	SW 846-9065 or 9066	W	SW 846-9065 or 9066
33. Sulfate	B	W	375.2 <sup>(3)</sup> , 300.0 <sup>(3)</sup> or 4500E <sup>(4)</sup>	NA	NA
34. Fluoride	B	W	340.2 <sup>(3)</sup> , 300.0 <sup>(3)</sup> or 4500C <sup>(4)</sup>	NA	NA
35. Total Organic Halides	B	W	SW 846-9020B	NA	NA
36. Color	B	W	110.2 <sup>(3)</sup>	NA	NA
37. Red/Ox Potential	B	W	ASTM-1498	NA	NA
38. Total Suspended Solids	B	W	160.2 <sup>(3)</sup> or 2540D <sup>(4)</sup>	NA	NA
39. Paint Filter Test	B	W	SW 846-9095A	W	SW 846-9095A
40. COD	B	W	5220D <sup>(4)</sup>	NA	NA
41. BOD <sub>5</sub> & CBOD <sub>5</sub>	B	W	5210B <sup>(4)</sup>	NA	NA
42. Total Fecal Coliforms	B	W	9222D <sup>(4)</sup>	NA	NA
43. Reactivity	B	W	SW 846-parts 7.3.3 & 7.3.4	W	SW 846- parts 7.3.3 & 7.3.4

TABLE G-1					
SCQ ANALYTICAL METHODS SELECTION TABLE FOR STANDARD AND HISTORICAL METHODS (ORGANIC, INORGANIC, AND ISOTOPIC)					
Analyte or Class of Analytes	ASL	Matrices and Methods Water and Wastewater		Matrices and Methods Soil and Solids	
		Prep Method(s) <sup>1,2</sup>	Analytical Method(s)	Prep Method(s) <sup>1,2</sup>	Analytical Method(s)
with performance criteria numbers		Prep Method(s) <sup>1,2</sup>	Analytical Method(s)	Prep Method(s) <sup>1,2</sup>	Analytical Method(s)
44. Corrosivity	B	W	SW 846-9040 <del>B</del>	W	SW 846-9040 <del>B</del>
45. Ignitability	B	W	SW 846-1010	W	SW 846-1010
46. Sulfide, Extractable	B	W	SW 846-9031	W	SW 846-9031
47. U & Th in Soil by EDXRF	B	W	<del>6541</del> <sup>(5)</sup>	W	<del>6541</del> <sup>(5)</sup>
48. Thorium, Low Level	B	W	<del>5514</del> <sup>(5)</sup>	W	<del>5514</del> <sup>(5)</sup>
49. Uranium, Low (ppm) Level	B	W	<del>5512</del> <sup>(5)</sup>	W	<del>5512</del> <sup>(5)</sup>
50. Uranium, High Level	B	W	<del>5504</del> <sup>(5)</sup>	W	<del>5504</del> <sup>(5)</sup>
51. Semi-Quant. Analysis by EDXRF	B	W	<del>6514</del> <sup>(5)</sup>	W	<del>6514</del> <sup>(5)</sup>
52. Total Hardness	B	W	2340C <sup>(4)</sup>	NA	NA
53. Dioxins by GC/MS	B	W	SW 846- 8290	W	SW 846-8290
54. Uranium Isotopic Analysis (wt %)	B, C, D	<del>4501</del> <sup>(5)</sup>	<del>5511</del> <sup>(5)</sup>	<del>4501</del> <sup>(5)</sup>	<del>5511</del> <sup>(5)</sup>
55. Uranium Isotopic Analysis (pCi/g or pCi/L)	B, C, D	<del>4501</del> <sup>(5)</sup>	<del>5511</del> <sup>(5)</sup>	<del>4501</del> <sup>(5)</sup>	<del>5511</del> <sup>(5)</sup>
56. Total Uranium and Isotopic Uranium Analysis by ICP/MS	B, C, D	W	<del>5501</del> <sup>(5)</sup>	W	<del>5501</del> <sup>(5)</sup>
57. Dissolved Oxygen	B	W	4500-O G <sup>(4)</sup>	NA	NA
58. Total Residual Chlorine	B	W	4500-Cl G <sup>(4)</sup>	NA	NA
<del>59. Air Particles</del>	<del>B</del>	<del>NA</del>	<del>NA</del>	<del>W</del>	<del>5515</del> <sup>(5)</sup>
60. Radon	B	NA	NA	NA	NA

<sup>1</sup>SW 846-1311 (TCLP) could be a prep; however, it is not necessary in all cases.

<sup>2</sup>"W" signifies that preparation is contained in the analytical method.

<sup>3</sup>Methods for Chemical Analysis of Water and Wastes, EPA 600/4-79-020. These methods are used for NPDES analyses.

<sup>4</sup>Standard Methods for the Analysis of Water and Wastewater, 17th ed. These methods are used for NPDES analyses.

<sup>5</sup> FEMP Laboratory Method Number.

<sup>6</sup>7060 contains the preparation for As, 7740 for Se, and 7761 for Ag.

<sup>7</sup>7760 contains the preparation for Ag.

<sup>8</sup>USEPA Contract Laboratory Program Statement of Work, Multi-Media, Multi-Concentration, most recent revision. The applicable CRDLs will be those listed in the method or the final remediation levels, whichever is lower.

<sup>9</sup>SW 846-3520 is the preferred method; however, some foamy or small samples may require the use of Method 3510.

<sup>10</sup>SW 846-3550 is used for uniform soil samples. SW 846-3540 is recommended for special matrices (e.g. oil soaked soil, etc.).

<sup>11</sup>USEPA Contract Laboratory Program Statement of Work for Organic Analyses, Low Concentration Water, most recent revision. The applicable CRDLs will be those listed in the method or the final remediation levels, whichever is lower.

<sup>12</sup>~~Radon-222 is measured in ambient air only.~~

~~Note: The analytical and prep methods in Table G-1 are current as of 1/23/98. The most current promulgated methods shall be used.~~

Former analyte class 53 (Methanol by GC) was deleted. This analysis is no longer performed at the FEMP and the analytical methodology referenced has been canceled. This criterion (Criterion 53) was also removed from Table G-2, and subsequent criteria have been renumbered.

The analytical method specifications in Table G-2 have been revised to reflect the changes in Table G-1.

#### SPECIFIC COMMENTS

11. Commenting Organization: U.S. EPA  
Section #: 1.2.3  
Original Specific Comment #: 1  
Commenter: Saric  
Page #: 1-4 and 1-5  
Line #: NA
- Comment: This section lists U.S. Environmental Protection Agency (U.S. EPA) guidances and requirements used to develop the QA/QC procedures in the SCQ. However, several documents listed have been replaced by more recent U.S. EPA documents. For example, Item A has been replaced by "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations, Draft Interim Final" (EPA QA/R-5, August 1994). A final version of EPA QA/R-5 is scheduled for publication in 1997. Similarly, Item F has been replaced by "Data Quality Objectives Process for Superfund, Interim Final Guidance" (EPA/540/G-93/071, September 1993). In addition, "Guidance for the Data Quality Objectives Process, Final" (EPA QA/G-4, September 1994) is not listed. Section 1.2.3 should be revised to include applicable, up-to-date U.S. EPA documents, and copies of these documents should be maintained at FEMP.
- Response: Comment noted. We have reviewed the referenced EPA requirement and guidance documents to ensure that the changes do not threaten the consistency and comparability of FEMP environmental data. The section of the SCQ addressed in this comment states that the following documents were considered during the development of QC/QC criteria (Section 1.2.3, page 1-4, lines 5-7). Since it may be valuable to retain the original guidance references for historical purposes, we have simply added the revised documents to this listing. It is unlikely that this strategy will create any confusion.
- Note that as of February 17, 1998, the final version of EPA QA/R-5 has not been published.
- Action: The following were added to Section 1.2.3 and to the References section:
- O. *EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations, Draft Interim Final*. EPA QA/R-5, August 1994. (U.S. Environmental Protection Agency, 1994e).



Response: We agree with the comment. The SCQ should specify the approval/signatory authority for DQOs.  
 Action: The following has been added to Section 1.5.1 (page 1-8, line 5):

~~The project manager is responsible for ensuring that a DQO is developed for each PSP. The project manager shall also ensure that the appropriate persons or organizations, including QA, have reviewed the DQO. The completed DQO must be signed by the responsible project manager and the DQO Coordinator to note approval.~~

15. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: 1.5 Page #: 1-7 Line #: 28  
 Original Specific Comment #: 5

Comment: The text outlines the means used to amend ongoing projects, giving the process for revision and approval of project-specific plans (PSP). Many of the actual modifications can be done through use of a variance/field change notice (V/FCN). Use of the V/FCN should be discussed in the text, and a cross-reference to Section 15.3 should be included for the details of the V/FCN's applicability and use.

Response: We agree with the comment. However, note that a variance/field change notice (V/FCN) can be used only for specified changes to an approved PSP, and those changes must be in accordance with the corresponding DQO. Typical changes would be items such as the relocation of a sampling point to avoid a physical obstruction. However, the addition or deletion of analytes would deviate from the DQO and require an amended PSP.

Action: Add new item 1.5.M: ~~"If it is necessary to deviate from procedures or drawings when implementing PSP requirements, a variance may be written to identify those changes necessary for work to proceed (see Section 15.3)."~~

Renumber previous item M as new item N.

16. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: 1.5.1 Page #: 1-7 Line #: 48  
 Original Specific Comment #: 6

Comment: The text states that completed DQO summary forms should be referenced in a PSP. However, Item C on Page 1-6 states that DQO summary forms will be included in the PSP. The SCQ should be revised to clearly state whether DQO summary forms are to be included or simply referenced in the PSP.

Response: The inclusion of the approved DQO in the PSP is an important requirement. The DQO Logic Flow should serve as a guide in the development and implementation of the PSP. The sampling and QC information in the DQO Summary Form should serve as an efficient reference for developing the sampling plan.

It appears that the current references to "DQO Logic Flow" and "DQO Summary Form" have created the unnecessary potential for confusion. Item C of Section 1.4.2 states that the PSP shall "include the...identification of data needs, intended data use and quality requirements through inclusion of the approved DQO Logic Flow and DQO Summary Form;..." This could be more succinctly stated as "... inclusion of the approved DQO;..." Section 1.5.1 again identifies the logic flow and summary form as if they were independent entities rather than parts of a single process. The entire completed and approved DQO must be directly linked to the PSP through attachment and incorporation as a reference. The following changes should remove this confusion and clarify the requirement that PSPs be directly linked to the appropriate DQO.

Action: Section 1.4.2.C (Page 1-6, Line 9), "Logic Flow and DQO Summary Form" was deleted. The new text reads: "Identification of data needs, intended data use, and quality requirements through inclusion of the approved DQO;"

Section 1.5.1 (page 1-7, line 48), the following was deleted: "... and a DQO summary form to be referenced in the PSP." New text reads: "The process results in preparation of a logic flow statement (including a decision rule or potential subsequent actions) that shall be kept as part of the permanent record." The following new sentence was added (page 1-8, line 13): "... before the PSP can be completed. ~~A copy of the approved DQO must be attached to the PSP and incorporated as a reference.~~ Based on the information..."

17. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: 3.1.1 Page #: 3-1 Line #: 27 to 31  
 Original Specific Comment #: 7

Comment: The text identifies the regulatory bodies through which U.S. EPA has authority at FEMP. The text should be revised to state that U.S. EPA has review and comment responsibility for Comprehensive Environmental Response, Compensation, and Liability Act documents.

Response: We agree with the comment.

Action: The following sentence was added to the beginning of Section 3.1.1: "~~The USEPA has review and comment responsibility for Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) documents.~~"

The necessary editorial changes have been made to Section 3.1.2 (only the CERCLA acronym is used).

18. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: 3.3.1 Page #: 3-5 Line #: 47  
 Original Specific Comment #: 8

Comment: The text states that "USEPA guidance has been used to develop a process for defining DQOs..." Although the DQO definition process described in Appendix C is consistent with current U.S. EPA guidance, the current guidance is not identified in the text, the reference section, or Appendix C of the SCQ. The SCQ should be revised to identify the current U.S. EPA guidance on DQOs.

Response: We agree with the comment.

Action: We have added the following references to Section 3.3.1 (page 3-5, line 47): "USEPA guidance has been used to develop a process for defining DQOs for projects at the FEMP ~~(U.S. Environmental Protection Agency, 1987a and 1994e)."~~"

The following reference was added to Section C.2 (page C-2, line 20): ~~(U.S. Environmental Protection Agency, 1994e)~~

See DOE Comment #12 for additions to the References section.

19. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: 3.3.2.2 Page #: 3-7 Line #: 32 and 33  
 Original Specific Comment #: 9

Comment: The text states that the "DQO date must be attached to the PSP and incorporated as a reference." The text should be revised to refer to the DQO summary form (Form C-1 in Appendix B). In addition, as discussed in Original Specific Comment 6, the SCQ presents conflicting information as to whether the DQO summary form should be included in the PSP, referenced in the PSP, or both. The SCQ should be revised to clarify this matter.

Response: We agree with the comment. However, the entire DQO must be attached and incorporated into the PSP. See also DOE Comment #16.

Action: The following changes were made to Section 3.3.2.2 (page 3-7, lines 32-33): "A copy ~~of the approved~~ DQO must be attached to the PSP and incorporated by reference."

20. Commenting Organization: U.S. EPA  
Section #: 3.3.2.5  
Original Specific Comment #: 10  
Page #: 3-8  
Commentor: Saric  
Line #: 49  
Comment: The text should be revised to refer to "approved" methods rather than "approval" methods.  
Response: We agree with the comment.  
Action: Section 3.3.2.5 (page 3-8, line 49): "approval" was replaced with "approved."
21. Commenting Organization: U.S. EPA  
Section #: 3.3.3  
Original Specific Comment #: 11  
Page #: 3-9  
Commentor: Saric  
Line #: 24 to 36  
Comment: The text in this section describes the PSP review and approval process. The text refers to PSP review and approval by the appropriate regulatory agency. For the soils remediation project, PSPs have undergone an informal review by the regulatory agencies. DOE should revise the text in this section to describe this informal review process.  
Response: Comment noted.  
Action: The following text has been added to Section 3.3.3 (page 3-9, lines 33-36):  
  
"PSPs required as part of the 1991 Amended Consent Agreement or the Consent Decree with the state of Ohio shall be reviewed by DOE-FEMP and approved by the appropriate agency prior to implementation (see Section 1.5.3) ~~unless other arrangements are made for certain time-critical PSPs. For normal PSPs, the regulatory comment resolutions will be incorporated in the final PSPs before implementation. For time-critical PSPs (see Section 15.3.1), uncontrolled copies will be forwarded to regulatory agencies at the direction of DOE-FEMP. Comments generated by regulatory agency review will be evaluated, and if a significant change to scope is required and is agreed to by both the regulatory agency and DOE-FEMP, a Variance/Field Change Notice to the PSP (see Section 15.3) will be issued to incorporate the change.~~"
22. Commenting Organization: U.S. EPA  
Section #: 4.1.1  
Original Specific Comment #: 12  
Page #: 4-3  
Commentor: Saric  
Line #: 1 to 18  
Comment: The general descriptions of trip blank and field blank samples presented in this section are not applicable to air sampling media such as high-volume air filters or alpha track-etch radon cups. The descriptions should be revised to apply more broadly to the types of samples that will be collected under the SCQ.  
Response: The blanks used in the high volume air monitoring and alpha track-etch radon monitoring programs are method blanks, described in section 4.1.2.B of the SCQ. The high-volume air and alpha track-etch radon monitoring programs do not use trip blank or field blank samples. The blanks measure the inherent levels of the target analytes in the materials (filter media for air samples and specialized plastic for radon cups) used to collect samples and have a purpose similar to the material blanks described in 4.1.1. The general descriptions of blank samples in the SCQ are therefore adequate in describing the use of blank samples in the high volume air sampling and alpha track-etch radon cup programs.  
Action: No action required.
23. Commenting Organization: U.S. EPA  
Section #: 4.3.1  
Original Specific Comment #: 13  
Page #: 4-7  
Commentor: Saric  
Line #: 3  
Comment: The text discusses data that are imperfect but still adequate to be counted for completeness. The text should be revised to note that data qualified as "estimated" by data validators are usually considered to be valid for calculating completeness but may

not be considered acceptable if very high precision is needed to meet the project objectives.

Response: Comment noted. We feel it would be more precise to make the following changes.  
Action: Section 4.3.1 (page 4-7, lines 4-7) was changed as follows: "Completeness can be defined by the percentage of total useable points from the set of total data points collected, analyzed, and available. A formula for estimating completeness is presented in Section 14.5. Data points may be judged to be unusable for their intended purpose if sample holding times were exceeded,..."

Section 14.5 (page 14-3, line 11) was changed as follows:

"V = number of required measurements judged ~~useable for their intended purpose~~"

24. Commenting Organization: U.S. EPA

Section #: 4.5.1.2

Page #: 4-17

Commentor: Saric

Line #: 34 and 35

Original Specific Comment #: 14

Comment: The text states that test programs will be run whenever significant hardware or operating system configuration changes are made. However, the circumstances that will trigger in-use tests are not clear. The text should be revised to either define or provide examples of a significant hardware or operating system configuration change.

Response: Comment noted.

Action: The following additional requirements have been added to Section 4.5.1.2 (page 4-17, line 38):

~~The system administrator charged with maintaining each application is responsible for determining whether a proposed change to underlying hardware or software has the potential to impact the operation of that application. The system administrator then determines what testing and modifications, if any, are needed to assure proper operation of the application.~~

~~A: Examples of operating system changes that would require testing and possible modifications include:~~

- ~~1: Changing client operating system from Windows 3.1 to Windows-95;~~
- ~~2: Upgrading database server software (e.g., moving to new version of Oracle);~~
- ~~3: Upgrading to new version of server operating system;~~

~~B: Examples of hardware system changes that would require testing and possible modifications include:~~

- ~~1: Moving from terminal-based to PC-based user workstation;~~
- ~~2: Changes in location/designations of server disk drives;~~
- ~~3: Changes in printer hardware or print queue definitions;~~

25. Commenting Organization: U.S. EPA

Section #: 4.5.5

Page #: 4-19

Commentor: Saric

Line #: 1 to 6

Original Specific Comment #: 15

Comment: The text states that software will be controlled to prevent use of modified packages that have not been verified. However, it is not clear how inadvertent use of unverified software will be prevented. The text should be revised to clarify this matter.

Response: Data systems are controlled according to the FEMP software management plan. Database managers control changes to the hardware and the availability of software. Untested software is not placed in production. Software management for small "stand alone" systems is more problematic. Each project manager must ensure that only tested and approved computer hardware and software are used to generate or manage data that is used for environmental decision making.

Action: The following has been added to Section 4.5.5 (page 4-19, line 6):

~~Each project manager shall ensure that only tested and approved computer hardware and software are used to generate or manage data that is used for environmental decision making.~~

26. Commenting Organization: U.S. EPA Page #: 5-3 Commentor: Saric  
Section #: 5.2.2 Line #: 48

Original Specific Comment #: 16

Comment: The text states that Figure 2-2 illustrates the well types defined in the text. However, the figure shows a "Type 6" well that is not discussed in the text. The text should be revised to define the "Type 6" well and discuss how it differs from the similar "Type 3" well.

Response: Type 6 wells are constructed in the same manner as Types 2 and 3 wells. However the well screen is installed at a depth between that of a Type 2 and a Type 3. Preliminary investigations (e.g., through the use of Geoprobe) determine the location of the contaminant plume. A Type 6 well is then installed to the appropriate depth to effectively monitor the plume.

Action: The following clarification has been added to Section 5.2.2, paragraph 3 (page 5-3, line 48): ~~Type 6 wells are installed at a depth between that of a Type 2 well and a Type 3 well to effectively monitor the movement of the contaminant plume.~~

References to Type 6 wells have also been included for the following:

J.4.3.2.F (page J-12, line 31),  
J.4.3.3.B.6 (page J-16, line 43)  
J.4.3.3.B.7.c (page J-17, line 26)

27. Commenting Organization: U.S. EPA Page #: 6-3 Commentor: Saric  
Section #: 6.2.1 Line #: 17 and 18

Original Specific Comment #: 17

Comment: The text indicates that field requirements for measurement of turbidity are provided in Section K.4.1 *et seq.* However, the field methodology for collecting turbidity measurements is not included in Section K.4.1, and no calibration procedures for turbidity are included in Section I.4. Appendixes K and I should be revised to include this information.

Response: We agree with the comment. Appendixes I.4 and K.4.1 have been edited to include the field methodology and calibration procedures.

Action: The following new sections have been inserted as Appendix I.4.5 and K.4.1.6 with subsequent subsections renumbered as necessary:

The following has been added to Appendix I (page I-3, line 29):

**I.4.5 Turbidity**

~~Calibration procedures for turbidity instruments vary significantly between manufacturers; therefore, manufacturer's instruction will be followed.~~

The following has been added to Appendix K (page K-7, line 1):

**K4.F6 Turbidity**

Because turbidity is sensitive to a number of variables, the measurement shall be made in the field, either *in situ* (e.g., directly in a well or stream) or as soon as possible after sample collection.

**A:** The following are required:

- 1: Turbidity cell or probe;
- 2: Turbidity meter or combination meter;
- 3: Two known standards bracketing the expected turbidity of the sample solution to be measured;

**B:** Determine the turbidity of sample as follows:

- 1: Calibrate the measuring system (see Appendix F.4.5);
- 2: Switch on instrument for a power check. Replace battery when the meter indicates a low battery;
- 3: Calibrate to a known standard in accordance with manufacturer instructions. Verify calibration prior to measuring the first sample of a sample event per manufacturer's instructions. Recalibrate instrument as necessary;
- 4: Rinse probe twice with deionized water;
- 5: Insert probe into sample in accordance with manufacturer instructions;
- 6: Record readings in Nephelometric Turbidity Units (NTUs);
- 7: Rinse probe twice with deionized water between each measurement;

28. Commenting Organization: U.S. EPA

Commentor: Saric

Section #: 6.2.4.1

Page #: 6-5

Line #: 38

Original Specific Comment #: 18

Comment: The text states that Appendix G gives analytical procedures required for compliance with the National Pollutant Discharge Elimination System permit, and Line 20 on Page 6-5 indicates that samples collected from Discharge Point 11000004901 will be analyzed for acute toxicity. However, Appendix G does not discuss acute toxicity tests. The text should be revised to include quality criteria for acute toxicity analysis.

Response: The FEMP conducted acute toxicity testing on the wastewater effluent and at a point in the Great Miami River approximately 20 feet downstream from the FEMP discharge. The NPDES permit required bimonthly testing for a period of one year. Provided that no acute effect was observed in any of the tests, the testing would cease after the first year.

The FEMP began testing 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 NPDES permit.

Laboratories or facilities 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.

As of now, we no longer test for acute toxicity at the FEMP. If this should become a condition of a future NPDES permit, we will again contract with an approved laboratory that has OEPA-approved methods and QC procedures. Therefore, it is not necessary to include additional QC requirements in the SCQ.

Action: No action required.

29. Commenting Organization: U.S. EPA Commentor: Saric  
Section #: 6.4.5 Page #: 6-12 Line #: 42

Original Specific Comment #: 19

Comment: The text discusses air monitoring for off-site exposure but does not cite the IEMP. The text should be revised to cite the IEMP and discuss the differences between the IEMP and PSP. In particular, the text should note that the IEMP includes provisions for monitoring emissions from the entire FEMP, including multiple sources, while the PSP or similar documents cover individual sources such as those created or modified during remedial activities.

Response: We disagree with the comment. The SCQ is a "higher tiered" document than the IEMP and establishes the quality control requirements for samples collected under the IEMP and all other PSPs. A detailed discussion of how the IEMP sampling will monitor and measure off-site exposure is outside the scope of the SCQ, but the general role of air monitoring for off-site exposure is presented in the proposed revision to Section 6.4.

Action: See response to DOE Comment #4.

30. Commenting Organization: U.S. EPA Commentor: Saric  
Section #: 6.4.5 Page #: 6-13 Line #: 13 to 24

Original Specific Comment #: 20

Comment: Meteorological data collection is potentially relevant to all the types of gaseous matrix samples described in Section 6.4. The SCQ should be revised to address meteorological data collection in a separate subsection rather than as part of Section 6.4.5.

Response: We agree with the comment.

Action: Section 6.4.5 (page 6-13): lines 13 through 24 were deleted and replaced with the following:

#### **6.4.6 Meteorological Monitoring Program**

~~The FEMP meteorological monitoring program is designed to provide data on the atmospheric conditions which influence the dispersion and transport of contaminants in the air pathway. This program provides critical data for the evaluation and interpretation of air monitoring data, and the support of the design and conduct of the air monitoring programs.~~

~~Monitoring instruments record wind speed, wind direction, temperature, barometric pressure, precipitation and relative humidity and store 1-minute and 15-minute average data on the meteorological database. The system has been developed based on the requirements of DOE Order 5400.5 and DOE guidance (DOE 1991c) and complies with industry standards for calibration and data recovery.~~

~~Meteorological data is used in the evaluation and interpretation of environmental data collected from the air, radon, and project-specific monitoring data. Short-term meteorological data will be used to relate air monitoring results to specific projects, when necessary. In addition to supplying data necessary to support monitoring and surveillance, the meteorological monitoring system serves to support the day-to-day operations for construction, emergency preparedness, and engineering design.~~

31. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: 6.5 Page #: 6-13 Line #: NA  
 Original Specific Comment #: 21  
 Comment: This section discusses biological sampling at FEMP. The text should be revised to state that biota samples to be used for ecological risk assessment will be collected during periods of high species abundance and activity.  
 Response: We agree with the comment.  
 Action: The following was added to the Section 6.5 (page 6-14, line 20)

“... depending on the purpose. ~~Biota samples to be used for ecological risk assessment will be collected during periods of high species abundance and activity.~~ Procedures for sample processing...”

32. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: 6.7.8.2 Page #: 6-24 Line #: 4  
 Original Specific Comment #: 22  
 Comment: The text cites Table K-1 in Appendix A, but no Table K-1 is included in the SCQ. This table should be provided.  
 Response: The referenced paragraph was inadvertently retained during word processing. Due to the impact of recent changes in DOT regulations, it was decided to rely solely upon the requirements of 49 CFR and reference those requirements in the SCQ, removing all outdated and/or redundant tables. This strategy emphasizes our commitment toward regulatory compliance and removes the need to revise the SCQ when the regulations are changed.  
 Action: Section 6.7.8.2 (page 6-24), lines 4-7 were deleted.

33. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: 7.2.1.1 Page #: 7-6 Line #: 8 to 10  
 Original Specific Comment #: 23  
 Comment: The text provides instructions for comparing custody seal numbers on the shipping container (cooler) with the numbers recorded on the chain-of-custody (COC) form. However, if samples are shipped to a laboratory by common carrier, the COC form is placed in a plastic bag and sealed inside the cooler as detailed in Section K.10.4.I. The text should be reviewed to account for this procedure by adding “and record seal numbers” to the end of Line 12 and adding “open the cooler and remove the COC form” followed by current Lines 8 through 10 after current Line 14. These changes and some minor editing will provide a logical order of actions for all relevant cases.  
 Response: We agree with the comment.  
 Action: 7.2.1.1 has been revised as follows:

**7.2.1.1 Sample Examination and Management.**

**NOTE**

Failure to follow the procedures outlined below can adversely affect the legal documentation of the FEMP remediation efforts.

- A. Examine the shipping container custody tape on seals for breakage and tampering. ~~Open the cooler and remove the COC.~~ Record the condition of custody seals on the COC. Sample containers received by onsite laboratory may lack container custody seals.
- B. Compare the custody seal number on the COC form to the number on the custody seal that is used to secure the container. Ensure that they are the same. Indicate the results of this comparison on the COC.

The remainder of 7.2.1.1 has been renumbered.

34. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: 7.2.1.1 Page #: 7-6  
 Original Specific Comment #: 24 Line #: 33  
 Comment: The text states that the way bill number should be entered on the COC form. The person shipping the samples should enter the way bill number on the COC form before relinquishing sample custody to the common carrier. The text should be revised to specify that the way bill number is to be entered on the COC form before sample custody is relinquished to the common carrier.  
 Response: We disagree with the comment. The COC is usually placed inside the shipping container before it is sealed (see Section 7.1.5.H, page 7-5, lines 28-32), and before the waybill is generated. It is often not possible for the sample shipper to enter the waybill number on the COC, so this is performed by the sample receiver, as specified in the SCQ.  
 Action: No action required.
35. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: 9.4.1 Page #: 9-2  
 Original Specific Comment #: 25 Line #: 27 and 28  
 Comment: The text indicates that all organic, inorganic, and wet chemical analytical methods to be used under the jurisdiction of the SCQ are listed in the "Method Selection Table" (Appendix G, Table G-1). However, Table G-1 does not identify radiochemical analytical methods for all isotopes of concern at FEMP; the table specifies chemical analytical techniques for uranium and thorium only. The highest allowable minimum detectable concentrations (HAMDC) for additional isotopes of concern, such as plutonium, neptunium, polonium, americium, radium, lead, strontium, and technetium, are identified in Table G-3. If HAMDCs can be specified for these additional isotopes, then Table G-1 should be revised to include specific chemical analytical methods for them.  
 Response: We disagree with this comment. There are insufficient standard methods for the scope of radiochemical analysis required at the FEMP. Instead, we rely upon established performance criteria. SCQ Section 9.2 (page 9-1, lines 33-47) states: "Unlike organic and inorganic chemical analytical methods, few standard methods are available for the radiochemical analysis of environmental samples. Standard established quality assurance/quality control requirements and acceptance criteria are not available for environmental radiochemical methods, so different USEPA, DOE, and commercial environmental laboratories may have different sample preparation and analytical techniques for specific radiochemical analytes. For this reason, laboratory-reported detection limits may vary. Nonetheless, multilab validation studies and interlaboratory comparison studies have demonstrated that accurate, comparable radiochemical data are obtainable even though different procedures are used."  
  
 "The FEMP has adopted the approach of using performance-based methods for radiochemical analyses. These methods specify quality control frequencies and acceptance criteria for quality control performance parameters. Table G-4 in Appendix G presents performance specifications for radiochemical analyses as a function of radionuclides and a matrix for the analytes of interest at the FEMP."  
  
 Section 9.4.2 (page 9-3, lines 8-9) states: "All radiochemical analyses to be performed under the auspices of the SCQ shall be represented by Radiochemical Performance Criteria Tables in Table G-4 of Appendix G."  
  
 The current requirements for radiochemical analyses as specified in Appendix G are sufficient. No changes to Table G-1 are required.

Action: No action required.

36. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: 14.2 Page #: 14-1 and 14-2 Line #: NA  
 Original Specific Comment #: 26  
 Comment: Section 14.2 discusses initial, secondary, and tertiary data review requirements for the laboratory; however, documentation of the reviews is not discussed. The text should be revised to state that the three-tiered review will be documented to provide evidence that the reviews were performed.  
 Response: This information is currently documented in the analytical data packages as they are produced by the laboratories.  
 Action: Section 14.2 (page 14-2, lines 8-9) has been changed as follows:

~~"All data shall be reviewed...prior to transmittal to the data requestor. These reviews shall be documented in the analytical data package."~~

37. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: 15.1.2.1 Page #: 15-2 Line #: NA  
 Original Specific Comment #: 27  
 Comment: This section includes several references to a "nonconformance report form," but no such form is included among the forms in Appendix B of the SCQ. A form is necessary to complete the nonconformance reporting procedure presented in Section 15.1.2.1. The SCQ should be revised to either modify the reporting procedure or include a nonconformance report form.  
 Response: Comment noted. Since the SCQ was submitted for agency review, DOE has redefined the types of nonconformances listed in Section 15.1. The SCQ must be changed to be consistent with the current DOE requirements.  
 Action: An example of the nonconformance report form has been added as new Form 15-2 (Appendix B). A copy of this new form is attached at the end of these comments.

Section 15.1 (page 15-1, lines 26-37) have been replaced with the following:

- A: ~~Observation: an assessment conclusion that identifies a condition that is not a deviation to a written requirement. An observation, if resolved, could lead to excellence in operations.~~
- B: ~~Finding: an individual item that does not meet written requirements.~~
- C: ~~Concern: a determination of a programmatic breakdown or widespread problem supported by one or more findings.~~

38. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: 15.4 Page #: 15-6 Line #: 13 to 41  
 Original Specific Comment #: 28  
 Comment: Section 15.4 discusses procedures for obtaining expedited sampling and analysis authorization. Section 15.4 should be revised to describe how the authorization or approval of expedited sampling and analysis is to be documented. Section 15.4 should also be revised to more clearly describe the documentation that must be prepared by the project organization conducting the expedited sampling and analysis with special attention to any deviations from normal procedures.  
 Response: We agree with the comment.  
 Action: Section 15.4 (page 15-6, lines 34-41) was changed to read:

~~"The written authorization must be documented in the project files and include the information identified in the DQO summary form (Appendix B, Form C-1). This~~

information in conjunction with the established standard operating procedures for the sampling and analysis activities will serve as the sampling and analysis plan. The ~~written~~ authorization for expedited sampling and analysis must be approved by the ~~initiating~~ level 2 project manager, the project QA representative, and the manager of ~~Environmental Monitoring~~ before the requested samples are collected."

39. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: References Page #: R-1 Line #: NA  
 Original Specific Comment #: 29  
 Comment: A final version of the American Society for Quality Control document listed on this page is available and should be referenced. The final version is "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs" (ANSI/ASIC A.-1994).  
 Response: We agree with the comment.  
 Action: References (Page RE-1): "American Society for Quality Control. 1991." was replaced with: "American Society for Quality Control. 1994. Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs" (ANSI/ASQC E4-1994)."
40. Commenting Organization: U.S. EPA Commentor: Saric  
 Appendix #: A Page #: A-11 Line #: NA  
 Original Specific Comment #: 30  
 Comment: The heading on this page of Table 2-2 implies that laboratory QC requirements for organic analyses are presented on this page. However, the reference to "DFTPP and BFB performance results" applies only to gas chromatography/mass spectrometry (GC/MS) analysis and not to all organic analyses as the heading implies. The table should be revised to note that this QC requirement is for GC/MS analysis only.  
 Response: We agree with the comment.  
 Action: Table 2-2 (Page A-11): (GC/MS) has been added after "DFTPP and BFB performance results" to match the format used for "Internal standard" in that same table.
41. Commenting Organization: U.S. EPA Commentor: Saric  
 Appendix #: A Page #: A-17 to A-23 Line #: NA  
 Original Specific Comment #: 31  
 Comment: Analytical methods for approximately 30 analytes listed in Table 6-1 titled "Sample Container and Preservation Requirements" are not provided in Table G-1 titled "SCQ Analytical Methods Selection Table for Standard and Historical Methods (Organic, Inorganic, and Isotopic)." For example, nitrite, sulfite, benzidines, haloethers, nitrosamines, and phthalate esters are identified as analytes for the project in Table 6-1 but are not identified in Table G-1. Therefore, it is not clear whether these analytes are applicable to the project. Table 6-1 should be thoroughly checked and revised as necessary to provide container, preservation, and holding time requirements for project-specific analytes only. Also, Table 6-1 should be revised to identify the analytical method for each analyte in the table.  
 Response: Table 6-1 was intended to provide requirements for analytes regularly collected, as well as provide guidance for the management of potential analytes of concern. Although we have removed much redundant or extraneous information from the SCQ, we have purposefully retained some requirements in case they are needed in the future (e.g., milk sampling in K.7.1.2). The retained requirements will provide greater consistency and comparability.

Many of the analytes referred to in this comment were used during the RI/FS activities. We have decided to retain those requirements in Table 6-1 in the event that they are needed. Analytical methods must be specified during the DQO/PSP process. If a

method that is not listed in Appendix G is selected (such as an EPA-approved method that provides a lower detection limit) that selection will be justified in the PSP.

Action: No action required.

42. Commenting Organization: U.S. EPA Commentor: Saric  
 Appendix #: A Page #: A-17 to A-23  
 Original Specific Comment #: 32 Line #: NA  
 Comment: A number of deficiencies were noted in Table 6-1 titled "Sample Container and Preservation Requirements." The table should be revised as indicated below.

- For all toxicity characteristic leaching procedure (TCLP) analyses, the holding times from sample collection to TCLP extraction and from TCLP extraction to analysis of the sample extract should be provided.
- The table should be revised to specify a 24-hour liquid sample holding time for ammonia analysis.
- The table should be revised to include cooling the samples to 2 to 6 °C for the metals analyses on Page A-19.
- The table should be revised to specify use of 0.008 percent sodium thiosulfate for phenols analysis of liquid samples.
- The table should be revised to specify use of a container with a Teflon-lined cap for elemental phosphorus analysis of liquid samples.
- The table should be revised to reflect a sample holding time requirement of "8 hours from sample collection to extraction and analysis of the extract as soon as possible" for elemental phosphorus analysis of liquid samples.
- Liquid samples for total phosphorus analysis should be analyzed on the day of sample collection, or the samples should be collected in glass containers, preserved with 40 milligrams of mercuric chloride for every liter of sample, and cooled to 2 to 6 °C. The table should be revised to reflect this requirement.
- Table G-1 provides various SW-846 and Contract Laboratory Program (CLP) methods for VOC analyses of soil, sediment, or sludge samples; however, Table 6-1 lists a sample holding time of 14 days for VOC analyses of soil, sediment, or sludge samples, which applies to SW-846 analyses only. A sample holding time of 10 days for CLP VOC analyses should also be included in Table 6-1.

Response: We agree with some of the proposed changes and disagree with others. Each item is addressed below.

- Bullet 1: We agree with the comment. Holding times for TCLP analyses have been revised to comply with the comment in the format noted in footnote 1 of Table 6-1 (holding time prior to extraction/holding time after extraction).
- Bullet 2: 40 CFR, Part 136.3, Table II ("Required Containers, Preservation Techniques, and Holding Times") specifies a 28-day holding time for appropriately preserved liquid samples collected for ammonia analysis.
- Bullet 3: Neither SW-846 nor 40 CFR, Part 136.3, Table II require that liquid samples be cooled when collected for metals analyses.

Bullet 4: The methods used by the FEMP for total phenolics (SW-846 9065 and 9066) do not require the use of thiosulfate.

Bullets 5-7: Neither Method 365 ( from "Methods for Chemical Analysis of Water and Wastes"), EPA 600/4-79-020, nor 40 CFR, Part 136.3, Table II require the sample container, preservation method, or holding time specified in the comment for total phosphorus. The SCQ Table 6-1 specifies the requirements from these references.

Bullet 8: While the CLP SOW OLM03.1 does give a 10-day hold time for VOAs, the U.S. EPA Functional Guidelines for Data Validation only require qualification of appropriately preserved VOAs after 14 days. The 14-day holding time criterion has been applied to all FEMP VOA analyses, including those used for RI/FS studies as well as those generated during remediation activities. We feel that the benefits of data consistency and comparability are greater than any benefits gained from this newly modified holding time.

Action: The following changes were made to Table 6-1(page A-17 and A-22):

Bullet 1:

	Holding time
TCLP metals, except Hg:	<del>180/180</del>
TCLP Hg	<del>28/28</del>
TCLP volatile organics	<del>14/14</del>
TCLP volatile organics	<del>14/40</del>

43. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: C.2 Page #: C-2 Line #: 40  
 Original Specific Comment #: 33  
 Comment: The reference cited in this section (Neptune 1991) should be added to the SCQ reference section.  
 Response: We agree with the comment. This citation was inadvertently omitted from the consolidated list of references.  
 Action: "Neptune 1991" has been added to the list of references.

44. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: D.2.2.1 Page #: D-2 Line #: 23 to 44  
 Original Specific Comment #: 34  
 Comment: The section titled "Field Checklist Development" does not discuss development of a field checklist; instead, it lists data package requirements. The section should be revised to include a description of field checklist development similar to the discussion in Section D.2.2.2.  
 Action: Section D.2.2.1 (page D-2, lines 23-44) was changed as follows:

~~Checklists for validating field data packages are determined by the requirements (including QC samples) specified in the DQO and PSP as well as the SCQ requirements for daily logs (see Sections 5.1 and 6.1) and for the field activities that generated the data (see Section J.4.1.1-10 and Appendix K). The field validator shall review the SCQ, PSP, and DQO to identify all field records required for the field data package. The standard FEMP data validation checklist (available as an electronic file) shall then be modified to include all required field records and QC samples.~~

The incomplete list of items (A-H) to be included in the checklist has been deleted.

45. Commenting Organization: U.S. EPA Commentor: Saric

Section #: D.2.2.2

Page #: D-3

Line #: 4 to 42

Original Specific Comment #: 35

Comment: The organic analysis checklist requirements listed in Item A of this section do not include field duplicates, target compound identification, compound quantitation and reported detection limits, tentatively identified compounds, and system performance. For a validation checklist to be an effective tool for the task, it should include all elements being reviewed. Although the items specified above are discussed in Sections D.6.7, D.6.9, D.6.10, D.6.11, and D.6.12, they should also be identified as organic analysis checklist elements in Section D.2.2.2. Likewise, the laboratory control samples (LCS) discussed in Section D.10.5, graphite furnace atomic absorption precision and accuracy checks discussed in Section D.10.9, sample result verification discussed in Section D.10.11, and field duplicates discussed in Section D.10.12 should be included as inorganic analysis checklist elements in Item B of Section D.2.2.2.

Response: It is not necessary to duplicate this level of detail in Section D.2.2.2. This information is merely descriptive and can be removed from the SCQ without weakening the QA requirements in the document.

Action: Section D.2.2.2 (page D-3, line 3 through page D-4, line 13): The sentence "Checklists shall include, but not be limited to. The following criteria:" as well as items A-C have been deleted.

46. Commenting Organization: U.S. EPA

Commentor: Saric

Section #: D.2.2.2

Page #: D-3

Line #: 9

Original Specific Comment #: 36

Comment: The references to a "gas chromatograph/spectrometer" in this section are incomplete. The complete instrument name is "gas chromatograph/mass spectrometer," and the text should be revised to use this name.

Response: We agree with the comment.

Action: This error has been corrected (see DOE Comment Response #45).

47. Commenting Organization: U.S. EPA

Commentor: Saric

Section #: D.2.4.3

Page #: D-7

Line #: 1

Original Specific Comment #: 37

Comment: The description of the "S" qualifier in this section is incomplete. The text should be revised to state that while the "S" qualifier indicates that the sample result was obtained by performing the method of standard addition, it also indicates that the calculated correlation coefficient was greater than or equal to 0.995.

Response: We agree with the comment.

Action: The following has been added to the description of the "S" qualifier (page D-7, line 1): "Reported value was determined by the method of standard additions (MSA), and the ~~correlation was greater than or equal to 0.995.~~"

48. Commenting Organization: U.S. EPA

Commentor: Saric

Section #: D.2.4.3

Page #: D-7

Line #: 38

Original Specific Comment #: 38

Comment: The description of the "+" qualifier in this section is incomplete. The description should be revised to state that the qualifier indicates that the sample result was obtained by performing the method of standard addition and that the calculated correlation coefficient was less than 0.995.

Response: We agree with the comment.

Action: The following has been added to the description of the "+" qualifier (page D-7, line 8): "Correlation coefficient for ~~this result reported from~~ the MSA was less than 0.995."

49. Commenting Organization: U.S. EPA

Commentor: Saric

Section #: D.2.6

Page #: D-8

Line #: 20

Original Specific Comment #: 39

- Comment: The text describes the RIR procedure and form. A blank copy of the RIR form should be included in Appendix B to clarify the description.
- Response: Comment noted.
- Action: We have added a blank Request for Additional Information/Resubmittal (RIR) to Appendix B (new page form D-1). A copy of this new form is attached at the end of these comments.
50. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: D.4.1 Page #: D-12 Line #: 6 to 24  
 Original Specific Comment #: 40  
 Comment: Item C of this section lists the items to be reviewed by the validator. Although this list includes items required for validation, it is inconsistent with the items in the validation checklist (Section D.2.2) and the discussion in Sections D.5 through D.12. Item C should be revised to make it consistent with the validation requirements set forth in other sections of Appendix D.
- Response: As stated in the title of this section, this information provides an overview of data validation. Some of these may not be applicable in all cases (e.g., strip charts, equations, and calculations are not checked during validation of ASL B deliverables), but this list represents the general scope of review that is part of the FEMP data validation process.
- As stated earlier in this response document, there is a tension between the use of the SCQ as a strict QA requirements document and the more descriptive information that was incorporated into the earlier EPA-approved version. During the course of this revision, we attempted to make only those changes that were necessary to provide technical correctness and future applicability (i.e., make sure the methodologies were relevant and correct). We consciously decided not to make the type of sweeping editorial changes required to remove these "extensive but incomplete descriptive lists" common in the earlier EPA-approved versions.
- Action: No action required.
51. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: D.6.1.2.6 Page #: D-14 Line #: 46  
 Original Specific Comment #: 41  
 Comment: The text discusses qualification of volatile organic analysis (VOA) results as unusable because of extreme holding time exceedances. The text should be revised to include numerical guidance as is done for semivolatile organic analysis (SVOA) in Section D.6.1.3. This comment also applies to the discussion of VOA results for drinking water in Section D.9.1.2.C. DOE should consider using the most common criterion - that an analysis conducted more than twice the standard holding time after sample collection requires data rejection.
- Response: We agree with the comment.
- Action: The following has been added to D.6.1.2.C. (page 14, line 46): "The reviewer may determine that undetected data should be qualified unusable (R) ~~if the holding times exceeded two times the standard holding time.~~"
52. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: D.6.1.3 Page #: D-15 Line #: 5 to 36  
 Original Specific Comment #: 42  
 Comment: The discussion of holding time qualification for semivolatile organic compound (SVOC) analyses of solid and liquid samples presented in this section is very confusing because Items E and F contradict Item D. If the undetected results for early-eluting SVOCs in soil samples are to be qualified as rejected (R) when they are obtained 21 days after sample collection as stated in Item D, then the text should explain the rationale for qualifying all undetected early-eluting SVOC results as estimated (UJ) when they are

obtained between 41 and 54 days after sample collection as stated in Item E. Likewise, Item F states that when they are obtained after 54 days, the undetected early-eluting SVOC results should be qualified as rejected (R). The text should be revised to resolve these contradictions for both solid and liquid sample analyses.

Response: We disagree with the comment. D.6.1.3.C & D give holding time guidance PRIOR to extraction. D.6.1.3.E & F give holding time guidance AFTER extraction. There is no contradictory guidance.

Action: No action required.

53. Commenting Organization: U.S. EPA  
Section #: D.6.2.1  
Original Specific Comment #: 43
- Commentor: Saric  
Line #: NA
- Page #: D-16

Comment: The text gives criteria for tuning the mass spectrometer for VOA and SVOA. However, in a number of cases (such as the mass/charge [m/z] ratio of 50 for VOA), the criteria for ASLs C and D are less stringent than the criterion for ASL B (8.0 to 40.0 percent of m/z 95 versus 18.0 to 40.0 percent of m/z 95, in this case). In addition, the criterion "present" for m/z 70 for SVOA for ASLs C and D seems inappropriate compared to the "less than 2 percent of m/z 69" criterion for ASL B, which encompasses zero. ASL C and D data are defined as being higher in quality than ASL B data, so one would expect ASL C and D criteria to be at least as stringent as ASL B criteria. The text should include a justification for these discrepancies, or the criteria should be changed.

Response: We disagree with the comment. The requirements in D.6.2.1 are those given by the applicable methods. For ASLs C and D, the ion abundance criteria were taken directly from the most current CLP SOW. The criteria for ASL B were taken verbatim from SW-846.

Action: No action required.

54. Commenting Organization: U.S. EPA  
Section #: D.6.3.1  
Original Specific Comment #: 44
- Commentor: Saric  
Line #: 17 to 28
- Page #: D-19

Comment: Item A(1) and Item B(1), which discuss initial and continuing calibration criteria, respectively, are not consistent with each other. Text was added to Item B(1) that includes hazardous substance list (HSL) compounds, but the HSL compounds are not discussed in Item A(1). The text should be revised to resolve this inconsistency.

Response: We agree with the comment.

Action: The following has been added to D.6.3.1.A.1 (page D-19, line 18): "Average Relative Response Factors (AVGRRF) shall be greater than or equal to 0.05 for Target Compound List (TCL) or ~~Hazardous Substances List (HSL)~~ compounds,..."

Only the HSL acronym was used for D.6.3.1.B.1 (page D-19, line 27).

55. Commenting Organization: U.S. EPA  
Section #: D.7.7.1  
Original Specific Comment #: 45
- Commentor: Saric  
Line #: 39 and 40
- Page #: D-39

Comment: This section states that the review criteria for field duplicates are the same as those for laboratory duplicates; however, organic analyses generally do not require laboratory duplicates. Organic analyses generally require matrix spike duplicates instead. The text should be revised to address this issue.

Response: We agree with the comment.

Action: The original text of D.7.7.1 (page D-39, lines 39-40) has been replaced with the following: "~~Field duplicates shall agree within ± 5x the CRDL when at least one result is below the CRDL, or within 20 percent RPD when both results are above the CRDL.~~"

56. Commenting Organization: U.S. EPA  
Section #: D.8.8.2
- Commentor: Saric  
Line #: 16 to 32
- Page #: D-49

Original Specific Comment #: 46

Comment: The text gives guidance on use of LCSs in data validation. The SCQ should state either here or in Section D.8.6.2 on matrix spike/matrix spike duplicate (MS/MSD) analyses that when the LCS results are within QC limits but the MS/MSD results are outside those limits, significant matrix interference probably exists in the sample used for the MS/MSD analyses and in all similar samples.

Response: We agree with the comment.

Action: The following new item was added to D.8.6.2 (page D-48, line 34):

~~E. When the LCS is within QC limits, but the MS/MSD results are outside those limits, significant matrix interference probably exists in the sample used for MS/MSD and all similar samples.~~

Subsequent items were renumbered.

The following new item was added to D.8.8.2 (page D-49, line 17):

~~A. When the LCS is within QC limits, but the MS/MSD RESULTS are outside those limits, significant matrix interference probably exists in the sample used for MS/MSD and all similar samples.~~

Subsequent items were renumbered.

57. Commenting Organization: U.S. EPA

Commentor: Saric

Section #: D.10.2.4

Page #: D-58 and D-59

Line #: NA

Original Specific Comment #: 47

Comment: The text presents QC limits for qualifying analytical results because of irregular recoveries in calibration verification analyses. However, many of these QC limits are much less stringent than the limits provided in the U.S. EPA guidance cited. For instance, U.S. EPA would reject results associated with a calibration verification recovery of less than 75 percent for metals, 70 percent for cyanide, or 65 percent for mercury with no exceptions, while DOE would consider rejecting the results only if the recovery was less than 30 percent. Therefore, DOE would retain analytical results that U.S. EPA would consider unusable because of excessively low bias. Either the text should be revised to reflect use of U.S. EPA guidance or DOE should thoroughly justify its modified criteria in the SCQ.

Response: We agree with the comment. Note that this change will have no impact on any validated data, since our contracts require the use of the CLP-mandated 90-110 percent limits, and we have received no data associated with less than 75 percent recoveries in recent memory.

Action: Section D. 10.2.3 (page D-58, lines 34-41) was changed as follows:

A. "Continuing calibration results shall fall within control limits of 90 to 110%R of true value for all analytes ~~except~~ ~~including~~ mercury and cyanide."

Subsequent items B and C were deleted.

Section D.2.4 (page D-59, lines 1-36) was changed as follows:

(A) 1. "If an ICV or CCV %R is 75 to 89 percent, qualify..."

(A) 3. "If an ICV or CCV %R is less than 75 percent, qualify results as unusable (R)."

(B) 1. "If an ICV or CCV %R is 70 to 89 percent, qualify..."

- (B) 2. "If an ICV or CCV %R is greater than ~~10~~ percent, qualify..."
- (B) 3. "If an ICV or CCV %R is less than 70 percent, qualify results as unusable (R)."
- (C) 1. "If an ICV or CCV %R is 65 to 89 percent, qualify..."
- (C) 2. "If an ICV or CCV %R is greater than 110 percent, qualify..."
- (C) 3. "If an ICV or CCV %R is less than ~~65~~ percent, qualify results as unusable (R)."

For consistency, in Table G-2 (page G-18), Criterion 12 (mercury) and Criterion 13 (cyanide), the acceptance criteria for ICV and CCV were changed to ~~90-110%~~.

58. Commenting Organization: U.S. EPA Section #: D.12.2.2 Original Specific Comment #: 48 Commentor: Saric Line #: 5 to 7 Page #: D-79
- Comment: The text states that for daily background checks, results should be qualified as estimated if the results are "no greater than +/- 2 standard deviations of the mean." The text should be revised to clarify that for daily background checks, if results are not within +/- 2 standard deviations of the mean, all associated data should be qualified as estimated.
- Response: We agree with the comment.
- Action: The following changes were made to D.12.2.2.O (page D-79, lines 5-7):
- "If daily background checks (no stipulation on count times) were not performed, ~~or if the daily background check results were not within~~  $\pm 2$  standard deviations of the mean, qualify all associated data as estimated (J)."
59. Commenting Organization: U.S. EPA Section #: D.12.2.4 Original Specific Comment #: 49 Commentor: Saric Line #: 5 to 24 Page #: D-80
- Comment: This section provides supplemental calibration requirements for analyses using gas proportional counters. Item C should be expanded to identify a qualifier for a minimum alpha efficiency value. Also, Item F should identify a qualifier for beta-into-alpha crosstalk. Based on the discussion in Item G, if the beta-into-alpha crosstalk exceeds 3 percent, all associated data should be qualified as unusable.
- Response: We agree with the comment.
- Action: The following changes were made to D.12.4 (page D-80):
- C. If the beta ~~or alpha~~ efficiency calculation shows less than 20 percent efficiency, qualify all data as estimated (J).
- F. If the laboratory cannot furnish data which documents both alpha-into-beta and beta-into-alpha crosstalk, or if the alpha-into-beta cross talk is greater than 6 percent, ~~or if the beta-into-alpha cross talk is greater than 3~~ percent, qualify all associated data as unusable (R).
60. Commenting Organization: U.S. EPA Section #: D.12.2.7 Original Specific Comment #: 50 Commentor: Saric Line #: 27 to 31 Page #: D-81
- Comment: The text states that when efficiency calibrations of gamma spectrometry systems are performed, mixed nuclide sources containing at least six useable gamma emissions should be used. The text should be revised to state that when useable gamma energies for calibration are selected, the range should encompass the entire span of photon

energies that may be resolved for quantification purposes. This procedure would alleviate use of unnecessary data qualifiers such as those delineated in Section D.12.2.8.E.

Response: We agree with the comment.

Action: The following has been added to the note in D.12.2.7 (page D-81, line 31): "~~The range of gamma sources selected for calibration reference must encompass the entire span of photon energies to be resolved.~~"

61. Commenting Organization: U.S. EPA  
Section #: D.12.3.1  
Original Specific Comment #: 51

Commentor: Saric  
Line #: 23

Page #: D-84

Comment: This section provides an equation for calculating instrument detection limit concentrations. The term "K" used in this equation is defined as the product of several factors, including an exponential factor. However, the exponential factor is not defined in the text. The text should be revised to include definitions of all factors associated with the calculations.

Response: We agree with the comment. The undefined term ( $e^{-\lambda t}$ ) is the decay factor for the isotope of interest. We have defined the term in this section.

Action: Section D.12.3.1, Page D-84, Line 26, the following text was added: "efficiency,  $e^{-\lambda t}$  is ~~the decay correction~~ and ABN, is the sample abundance fraction.

~~$e^{-\lambda t}$  = decay correction factor where  $\lambda$  is the natural log of 2 divided by the half-life of the isotope of concern, and  $t$  is the time from sample collection to sample analysis.~~

For additional clarity, the formula for  $S_{BKG}$  has been moved to the line preceding the definition of  $B_{SD}$  (former Line 27).

For consistency, the parenthetical note "(See definition of K in D.12.3.1)" has been added at the end of D.12.3.4, Page D-86, Line 28.

62. Commenting Organization: U.S. EPA  
Section #: D.12.11  
Original Specific Comment #: 52

Commentor: Saric  
Line #: NA

Page #: D-94 and D-95

Comment: In addition to the other QC checks listed, some overall review of analytical results should be performed. For example, in many cases multiple radionuclides are to be analyzed for that may exist in secular equilibrium with their parent. If this is the case, a review of the data associated with these isotopes should be performed to ascertain data comparability. In other cases, a qualitative review should be performed for gross alpha and gross beta activities with respect to individual alpha and beta measurements. Although the sum of alpha and beta isotopic activities should not be directly comparable to gross results, a qualitative review could help to identify anomalous data that should be further reviewed. The text should be revised to include an overall review of the data.

Response: The FEMP data validators do perform an overall review of analytical results (see Sections D.6.13, D.7.10, D.8.10, D.9.11, D.10.14). If results appear to be anomalous, they compare them with historical results for that sampling location, the documented naturally-occurring values for this geographical area, and the results of associated laboratory and field QC samples. The data validators report to the project manager any anomalous results that cannot be explained.

However, the various levels of data review suggested in this comment are beyond the scope of standard data validation. The project managers and technical experts for each remediation project are responsible for this level of review. If necessary, they may request additional technical assistance from the FEMP data validators.

Action: For consistency, the following new section was added (page D-96, line 18):

**D:12:13 Overall Assessment of Data for a Case**

The data reviewer shall make professional judgements, express concerns, and comment on validity of the overall data package. This is particularly appropriate when there are several QC criteria out of specification. If necessary, data may be compared to historical values for a particular sampling point or known naturally-occurring values for this geographical area.

The additive nature of QC factors out of specification is difficult to assess in an objective manner, but the reviewer has a responsibility to inform users concerning data quality and limitations. Availability of DOOs and PSP may be needed for this review. The information will help the user avoid inappropriate use of data and yet not preclude all consideration of the data.

63. Commenting Organization: U.S. EPA Commentor: Saric  
 Section#: F.3.10 Page #: F-4  
 Original Specific Comment #: 53 Line #: 10 to 14

Comment: The text states that the electronic database is permanently archived in a neutral ASCII file. DOE should specify the type of electronic data that will be permanently archived in this manner. For example, the inventory and waste characterization components of the Sitewide Waste Information, Forecasting, and Tracking System should be permanently archived, but it is not clear whether this type of information is included in the permanent archives. In addition, DOE should specify what is meant by a "permanent" archive. It is not clear whether "permanent" refers to the manner in which data will be stored long after the site cleanup activities are completed. The text should be revised to address these issues.

Response: The electronic databases are currently backed up to tape on a routine daily basis. The backups are in the format of the database server's file system. For example, FACTS backups are in VAX/VMS format. Daily backups are held for one week, end of the month backups are held for one year, and end of fiscal year and end of calendar year backups are held for seven years. All backup tapes are considered working files and are currently intended for the facilitation of file and system restorations.

The electronic databases that track the data covered by the SCQ will be archived under the guidance of the National Archives and Records Administration in effect at the time the databases are no longer in active use. The file format, storage media, and documentation used will be determined at the that time to facilitate the long term usefulness of the data in supporting the project activities.

Action: Section F.3.10 (page F-4, lines 11-14) has been changed to the following:

~~"Each piece of data in the SED is linked to the original hard-copy documents produced by analytical laboratories. Hard copies are kept in permanent storage. The electronic databases that track the data covered by the SCQ will be archived under the guidance of the National Archives and Records Administration in effect at the time the databases are no longer in active use. The file format, storage media, and documentation used will be determined at the that time to facilitate the long term usefulness of the data in supporting the project activities."~~

64. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: F.4 Page #: F-4  
 Original Specific Comment #: 54 Line #: 30 and 31

Comment: The text states that redundant storage of a piece of data in more than one location in the database is avoided when possible. The text should be revised to describe the mechanisms that have been developed to minimize, resolve, and delete anomalies between different systems.

**Response:** The SED is a collection of data tables that contain specific attributes for a given piece of data. With the exception of "Key Fields" that are used to link the various tables, data is entered into only one table in the SED. This is standard operating procedure for any relational database.

In general, the instances in which anomalies do occur, they occur between specific data sets. Specific data sets are those data sets or tables that were compiled in support of specific projects (i.e., the Operable Unit Remedial Investigation and Feasibility Study reports). These data sets/tables have been "frozen" in order to preserve the data as it was used in each of these reports. Because of changes in data validation procedures and data corrections, differences do exist between these "frozen" data sets and, in some cases, the SED.

The SED tables are "live" and represent the current state of the data. Because of the structure of the relational database and the fact that specific pieces of data are only entered into one table, anomalies are minimized.

**Action:** No action required.

65. **Commenting Organization:** U.S. EPA **Page #:** F-7 **Commentor:** Saric  
**Section #:** F.5.1 **Line #:** 21 and 22

**Original Specific Comment #:** 55

**Comment:** The text states that entity relationship diagrams describe relationships among the ORACLE® tables. These diagrams should be included in Appendix F.

**Response:** We disagree with this comment. The entity relationship diagrams are intended for the use of the database administrators and are not meaningful without the data dictionary which describes each data table, the data elements in each table, keyed data elements, and other technical information. The level of infrastructure detail referred to in this comment is well beyond the scope and purpose of SCQ. The SCQ is primarily a Quality Assurance document, not a software management plan. If it is needed, this information is available in other appropriate documents.

**Action:** No action required.

66. **Commenting Organization:** U.S. EPA **Page #:** G-8 to G-44 **Commentor:** Saric  
**Section #:** Table G-2 **Line #:** NA

**Original Specific Comment #:** 56

**Comment:** Except for Criteria 55 and 56 (for uranium isotopic analyses) and Criterion 57 (for total uranium analysis), all criteria in this table are for ASL B only. Criteria for ASLs C and D, which are needed for certification of the site as meeting final remediation levels, should be included.

**Response:** Except for the three criteria noted by the commentor, all other methods specify that ASL C and D analyses be conducted according to the requirements of the appropriate U.S. EPA Contract Laboratory Program Statement of Work (see Table G-1). Table G-2 was developed to provide specific QC requirements for methods that provide optional QC and/or variable acceptance levels.

**Action:** No action required.

67. **Commenting Organization:** U.S. EPA **Page #:** G-17 **Commentor:** Saric  
**Section #:** Table G-2 **Line #:** NA

**Original Specific Comment #:** 57

**Comment:** In Item 7 of this table, a set of criteria for analyzing postdigestion spikes is presented in the footnotes. However, according to this table, the analyst is required to continue redigesting the sample until the matrix spike recovery is greater than 30 percent and the postdigestion spike recovery is less than the matrix spike recovery. At some point the redigestion should end, and if the results are the same as those for the original digestion,

the data should be qualified. The rationale and criteria presented in Item 7 are confusing and should be revised for clarity.

Response: We agree with the comment.  
Action: Table G-2, Criterion 11 (page G-17), footnote 2 was changed to the following:

“When sample concentration  $\leq 4 \times$  MS concentration, then:  
If MS < 30% and MS << Post Digestion Spike recovery, redigest ~~and reanalyze~~  
~~once, then report results;~~  
If MS 30-74%, Post Digestion Spike.”

68. Commenting Organization: U.S. EPA Commentor: Saric  
Section #: Table G-2 Page #: G-19 Line #: NA

Original Specific Comment #: 58

Comment: The text states that the calibration verification criteria for pH are “90 to 110 percent.” Such criteria are inappropriate for logarithmic units such as pH. These criteria should be changed to plus or minus some fraction of a standard unit as was done for the duplicate criteria.

Response: We agree with the comment.

Action: The following changes were made to Table G-2, criteria 14 and 15 (page G-19):

Requirements: ICV, CCV Acceptance Levels: ~~±0.5 pH units~~

Duplicate

~~±0.1 pH units~~

69. Commenting Organization: U.S. EPA Commentor: Saric  
Section #: Table G-2 Page #: G-32 Line #: NA

Original Specific Comment #: 59

Comment: The text states that the duplicate criterion for ignitability analyses is a “relative percent difference (RPD)[of] less than 20 percent.” The result of the ignitability analysis is either a temperature (on the Celsius, Fahrenheit, Kelvin, Rankin, or another scale) or a pass/fail result at a specified temperature. Therefore, the RPD criterion is inappropriate and should be changed to plus or minus a specified temperature.

Response: We agree with the comment. The RPD criteria are not appropriate for this analysis. SW846-1010 refers the reader to ASTM D93 for procedural details and acceptance criteria. The current version (ASTM D93-96) gives the following definitions and criteria:

Repeatability: +/- 9 degrees F

Reproducibility: +/- 18 degrees F

Repeatability is defined as the difference between successive results by the same operator with the same apparatus under constant operating conditions on identical material. Reproducibility is defined as the difference between two single and independent results by different operators in different laboratories on identical material. Using the ASTM definitions, the appropriate criteria is repeatability (+/- 9 degrees F). This will also satisfy the case of a pass/fail result.

Action: Table G-2, Criterion 45 (page G-32), the Acceptance Levels for Duplicate have been changed to “~~±9°F~~”.

70. Commenting Organization: U.S. EPA Commentor: Saric  
Section #: Table G-3 Page #: G-45 and G-46 Line #: NA

Original Specific Comment #: 60

Comment: All the information presented in Table G-3 is also included in Table G-4. Table G-3 could be removed from the SCQ without any loss of information.

Response: Although the information may be redundant, Table G-3 acts as a quick reference index and should be retained.

Action: No action required.

71. Commenting Organization: U.S. EPA

Commentor: Saric

Section #: Table G-3

Page #: G-45 and G-46

Line #: NA

Original Specific Comment #: 61

Comment: The table specifies HAMDCs for radionuclides that may be present at FEMP. However, some of the concentrations specified appear to be low and should be further evaluated. The HAMDCs specified represent the minimum detectable concentrations that would be detected in a sample with a 95 percent probability. Although large sample volumes and long counting times would reduce minimum detectable activity values, the presence of interferences from the physical matrix as well as other radionuclides may prevent HAMDC attainment for some isotopes. In particular, the HAMDCs specified for isotopic uranium, thorium, plutonium-241, strontium-90, and technetium-99 in water and soil appear to be very low. The issue is not that the HAMDCs are unrealistic; rather, the analytical laboratory may be required to use unnecessarily long counting times and perform other labor-intensive activities to achieve the HAMDCs when doing so may not be practical. Therefore, the HAMDCs should be further evaluated and revised if necessary.

In addition, the isotope uranium-233 is not listed in the table. In fact, uranium-233 is not included anywhere in the SCQ. Considering that thorium was used at FEMP for the production of uranium-233 and that this thorium was recycled at various DOE installations, some uranium-233 might be present at FEMP. Furthermore, this isotope is not associated with the uranium used for target assemblies. Therefore, no relationship between uranium-234, -235, and -238 could be used to ascertain the uranium-233 proportion of total uranium. Therefore, the SCQ should be revised to include uranium-233 as an isotope of concern at FEMP, and detection methods and HAMDCs for uranium-233 should be specified in Table G-3.

Response: We disagree with the comment(s).

Regarding the HAMDCs: Note 4 at the end of Table G-3 (page G-46) states "The HAMDCs are representative values derived from input from seven radiochemical laboratories for routine operating conditions. These values may be refined, pending EPA review, on the basis of measurements of these or other laboratories on FEMP matrices under actual operating conditions." The HAMDCs were developed in accordance with input from EPA laboratories in Las Vegas, Nevada, and Montgomery, Alabama. The FEMP laboratory and subcontract laboratories meet these performance requirements. If the DQO process determines that it is necessary to stipulate higher or lower HAMDCs in order to meet the requirements of a project, those analyses are treated as ASL E data as specified in the SCQ. Therefore, it is not necessary to change the HAMDCs currently specified in the SCQ.

Regarding uranium-233: Based upon the findings of the various FEMP RI/FS documents, that isotope was not identified as a contaminant of concern in the signed Records of Decision for the FEMP.

Action: No action required.

72. Commenting Organization: U.S. EPA

Commentor: Saric

Section #: Table G-4 Page #: G-77 and G-78

Line #: NA

Original Specific Comment #: 62

Comment: The text states that the units for HAMDCs in soils and sediments are picocuries per liter. This unit of measure should be changed to picocuries per mass unit.

Response: We agree with the comment.

Action: Table G-4, Criteria 31 and 32 (pages G-77 and G-78): the HAMDC units for soil/sediment matrix have been changed to pCi/g, and the HAMDC units for air filters have been changed to pCi/Filter.

73. Commenting Organization: U.S. EPA  
Section #: J.3  
Original Specific Comment #: 63

Commentor: Saric  
Line #: NA

Page #: J-1

Comment: The text identifies the general responsibilities of field personnel; however, it discusses only geologists and project managers. A new section (J.3.3) should be added to present the responsibilities of the sampling team members identified in Section K.3.3.

Response: We agree with the comment.

~~J.3.3. Sampling Team Leader~~

~~The sampling team leader is responsible for implementing requirements of the PSP including the following:~~

~~A. Ensure that team members follow specified procedures.~~

~~B. Ensure that work is completed in a safe and efficient manner.~~

~~C. Ensure that documentation is maintained and completed as specified in this document and procedures specified in PSP.~~

~~D. Ensure communication with the FEMP project manager or designee concerning progress.~~

~~E. Assume initial custody of project samples and transfer custody to the FEMP project contact as specified in Section 7.~~

~~J.3.4. Sampling Team Members~~

~~Members of the sampling team are responsible for performing sampling activities under the supervision of the team leader and as specified in PSPs and procedures. They shall ensure that documentation is maintained and completed as specified in this document and procedures specified in PSP. They shall observe health and safety requirements, ensuring work is completed in a safe and efficient manner, and communicate information on progress and concerns to the team leader.~~

For consistency, this revised text was also inserted to replace Sections K.3.2 and K.3.3 (page K-1, line 44 through page K-2, line 16).

Section K.3.2.E (page K-2), lines 9-10 were deleted to reflect that the sampling team leader does not assume initial custody of project samples. Any member of the sample collection team may assume custody of the samples as described in site procedure EW-0002, Chain of Custody/Request for Analysis Record for Sample Control.

74. Commenting Organization: U.S. EPA  
Section #: J.4.2.1.2  
Original Specific Comment #: 64

Commentor: Saric  
Line #: 10

Page #: J-9

Comment: The text states that dry boreholes drilled in stable material can be grouted from the bottom of the borehole using a tremie line. However, Line 37 on Page J-9 describes the use of a side-discharge tremie hose. It is unclear whether two different types of tremie are to be used during grout installation. The text should be revised to clarify this matter.

Response: We agree with the comment.

Action: Section J.4.2.1.2 B. (Page J-9, line 10) was changed to read:

“... from the bottom of the hole using a ~~side-discharge~~ tremie line.”

75. Commenting Organization: U.S. EPA Commentor: Saric  
Section #: J.4.3.1 Page #: J-10 Line #: 22  
Original Specific Comment #: 65

Comment: The text states that schedule-40 polyvinyl chloride (PVC) or 316 stainless-steel casing with flush-thread joints should be used. However, no decision-making criteria are presented to aid the project manager in determining the proper material to be used for a specific condition. For example, the Ohio Environmental Protection Agency does not recommend use of PVC when free product is present. The text should be revised to provide basic guidelines for choosing the appropriate casing material for particular conditions.

Response: We agree that decision-making criteria for the type of casing material should be added to the text.

Action: The following changes were made to Section J.4.3.1. A (page J-10, line 23-24:

“The casing type selected depends on the presence of known or suspected contaminants, the proposed depth, and purpose of the well. ~~If high concentrations of organic compounds are suspected (i.e., parts per thousand), a stainless steel well should be installed. If conditions are highly corrosive, then PVC should be used in place of stainless steel.~~”

76. Commenting Organization: U.S. EPA Commentor: Saric  
Section #: J.4.3.2.F Page #: J-12 Line #: 38 to 41  
Original Specific Comment #: 66

Comment: The text states that the native material should be allowed to collapse on top of the filter pack (Step 3) and that the bentonite seal should then be added on top of the filter pack (Step 4). The text should be revised to reverse these steps so that the bentonite seal is placed on top of the filter pack and the native material is allowed to collapse on top of the bentonite seal.

Response: Step 4 should state “native material”, not “filter pack”. However, the order for material placement is appropriate and agrees with the letter report “Summary of Monitoring Well Integrity Investigation (Grout Contamination).” This letter report contained recommendations for modified well installations (these are the modifications that are in the SCQ Draft). The modifications were approved by USEPA and by OEPA (conditional approval).

Action: Section J.4.3.2.F.4 (page J-12, line 41) was changed as follows:

“Install a 5-foot bentonite seal on top of the ~~native material.~~”

77. Commenting Organization: U.S. EPA Commentor: Saric  
Section #: J.4.7 Page #: J-28 Line #: 44  
Original Specific Comment #: 67

Comment: The text addresses inspecting locks for rust; however, no specific corrective action is provided for locks found to be rusty. The text should be revised to specify the corrective action.

Response: Section J.4.7 was inaccurate as previously revised.

Action: Section J.4.7 (page J-29, line 26 through page J-29, line 29) has been replaced with the following:

~~Well maintenance is required to ensure the monitoring well is protective of the environment, to ensure the collection of representative samples, and to extend the life of the monitoring well. The project manager shall be notified of the results of the routine inspections if problems are noted.~~

**A. Routine inspections of monitoring wells include the following at a minimum:**

1. Inspection of the ground around the monitoring well for depressions or channels that allow surface water to collect or flow towards the well. The surface must be regraded so that water flows away from the well on all sides.
2. Inspection of the integrity of the locking mechanism and well cap. The locking mechanism and/or well cap must be replaced if they have been tampered with or may compromise the security of the well.
3. Inspection of concrete surface seals for settling and cracking. Concrete surface seals must be completely removed and replaced if settling or cracking has occurred.
4. Ensuring the well is visible in high-traffic areas or areas of active remediation. To protect the well from vehicular damage, it may be necessary to install protective posts. Additional protective measures include installing construction fence around well and ensuring vegetative growth is cut, as appropriate.

**B. For wells which are sampled routinely, inspections also include the following:**

1. Inspection of the well cap to ensure it is free of debris, fits securely, and the vent hole is clear, and, if the well is flush-mounted, ensure that the cap is water-tight to prevent surface water from entering the well. Well caps must be replaced as necessary.
2. Measurement of the bottom of the well to determine if sediment is accumulating in the well. The sediment must be removed by either pumping the accumulated sediment from the well or completely redeveloping the well, as appropriate. If defects or damage to well screens or casing are suspected, downhole camera surveys may be conducted to determine the condition of the monitoring well.
3. Evaluation of the turbidity of the sample. Historical field documentation will be reviewed to determine whether the turbidity is increasing with each sampling event. Increasing turbidity measurements may indicate the need for redevelopment of the monitoring well or, if redevelopment is unsuccessful, the well may require plugging and abandoning. As with accumulation of sediment, downhole camera surveys may be necessary to determine the condition of the monitoring well.

If well maintenance or inspection activities indicate a problem with the well, then the project manager must determine whether the well should be repaired or abandoned in accordance with J-4.3.3. If a monitoring well has been damaged beyond repair so that it is no longer protective of the environment, then the well must be plugged and abandoned. If it is determined that the well does not yield representative samples and rehabilitation efforts are not effective in improving the condition of the monitoring well, the monitoring well must be abandoned. Well abandonment and repair shall be performed and documented in compliance with applicable USEPA and OEPA regulations and the SCQ.

The related well maintenance requirements in Section 5.2.5 (page 5-4, lines 39-42) were changed as follows to reflect that water quality is not evaluated in regards to well maintenance, and that a PSP is not required for well maintenance activities:

"It is necessary to maintain groundwater wells in order to extend the life of the wells and to provide representative water levels and samples of the groundwater surrounding the wells. ~~Therefore, a regular inspection program for FEMP wells shall be developed.~~ Maintenance shall be performed on a case-by case basis pursuant to the results of the inspection as specified in Appendix J.

FDF is responsible for performing and documenting well maintenance activities. FDF shall conduct a maintenance survey of groundwater wells and evaluate appropriate concerns such as ~~water quality~~, structural integrity and wellhead protection. ~~Well maintenance activities shall comply with applicable regulatory and site requirements.~~ If problems are noted, existing groundwater wells shall be evaluated prior to use to assess whether the status will allow for collection of representative groundwater samples. The assessment process is detailed in Appendix J."

The third paragraph was deleted.

78. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: K.5.E Page #: K-28 Line #: 41  
 Original Specific Comment #: 68  
 Comment: The text states that "unfiltered metals" are a type of analyte for solid matrix environmental samples. The word "unfiltered" should be deleted.  
 Response: We agree with the comment.  
 Action: The word "unfiltered" has been deleted.
79. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: K.5.5.4.B.2 Page #: K-35 and K-36 Line #: NA  
 Original Specific Comment #: 69  
 Comment: The text states that samples will be collected from the eight grid points in the drum. The text should describe the procedure for locating the prescribed eight grid points.  
 Response: The requirement for eight sampling points per drum appears to be erroneous. This requirement is not clearly stated in this section. There is a single reference in K.5.5.4.B.2.f to "the other seven grid points in the drum" for the "use of a pipe sampler for moist or otherwise cohesive particulate solids that can be pulled out as a core...". We have been unable to find a requirement that eight samples be collected from this or any other type of drummed waste. Additionally, the introductory note for this section states "Because drum samples are taken from top to bottom, only the sampling location [singular] needs to be random." If grid sampling of drummed wastes (or any other type of waste at the FEMP) is deemed necessary, the requirements for that sampling must be identified in the DQO and project-specific plan. Therefore, we assert that item K.5.5.4.B.2.f should be deleted.  
 Action: Item K.5.5.4.B.2.f (page K-36, lines 11-12) has been deleted.
80. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: K.6.1 Page #: K-39 Line #: 34 to 38  
 Original Specific Comment #: 70  
 Comment: The text cites three specific analytical laboratory method numbers for total uranium, thorium-230, and particulate matter analyses of stack gas samples. However, these method numbers are not included in Appendix G, which is supposed to include "methods and/or performance criteria for all analyses performed for the FEMP." Appendix G should be revised to include all analytical methods listed in Appendix K as well as associated method numbers.

**Response:** The analytical methods referenced in K.6.1 have been changed since the revised text was submitted. The performance specifications for Thorium-230 are presented in Table G-4, pages G-49 and G-50; the performance specifications for total uranium are presented in Table G-4, pages G-73 and G-74. The analytical methods for air particulates have been added to Appendix G.

**Action:** Section K.6.1 (page K-39, lines 30-37) was changed as follows to allow for subsequent revision of analytical methods, and because radiochemical analyses are "performance-driven" rather than "method-specific":

"Stack monitoring is done at the FEMP to measure radionuclide emissions. Stacks with a potential for delivering a dose of 0.1 millirem (mrem) in one year to any individual shall be monitored and inspected at least weekly as specified in the Clean Air Act, 40 CFR, Part 61, and DOE 5400.5. Total uranium analysis, Th-230 analysis, and ~~air particulate analysis are performed according to current approved methods listed in Appendix G.~~"

The following was added to Appendix G, Table G-1 (page G-7):

<del>59 Air Particulates</del>	<del>B</del>	<del>NA</del>	<del>NA</del>	<del>W</del>	<del>5515<sup>59</sup></del>
--------------------------------	--------------	---------------	---------------	--------------	------------------------------

The following was added to Appendix G, Table G-2 (page G-44):

TABLE G-2 Organic, Inorganic, and Isotopic Performance Criteria (Cont.)			
Criterion: <del>59</del>		PROTOCOLS: <del>FEMP Laboratory Method</del>	
ASLs: <del>B only</del>		METHOD: <del>Gravimetric Determination of Airborne Particles (5515)</del>	
REQUIREMENT	FREQUENCY	ACCEPTANCE LEVELS	CORRECTIVE ACTION
<del>1. Method Blank</del>	<del>1/20<sup>1</sup></del>	<del>&lt; 3% difference when tared</del>	<del>Check balance calibration, humidity, qualify data</del>
<del>2. Balance calibration check<sup>2</sup></del>	<del>1/20<sup>1</sup></del>	<del>±0.0005 g</del>	<del>Recalibrate balance</del>
<del>3. Detection Limit: 10 µg/L</del>			

<sup>1</sup>Or 1 per batch, whichever is more frequent.

<sup>2</sup>Using three weight standards that bracket the range of samples

81. Commenting Organization: U.S. EPA Commentor: Saric  
 Section #: K.6.4.6 Page #: K-47  
 Original Specific Comment #: 71 Line #: 38  
 Comment: The text states that calibration methods for portable gas chromatographs are provided in Section I.4.12. However, this section does not exist, and Appendix I does not include portable gas chromatograph calibration methods. These calibration methods should be added to Appendix I, and Section K.6.4.6 should be revised to include a correct reference to Appendix I.
- Response:** Portable GCs are no longer used at the FEMP. All instruments have been taken out of service. There are no plans to use them in the future.
- Action:** Section K.6.4.6 (page K-47, line 30 through page K-48, line 8) has been deleted and subsequent sections have been renumbered.

82. Commenting Organization: U.S. EPA Commentor: Saric

Original Specific Comment #: 72

Comment: The text states that calibration methods for an X-ray fluorescence analyzer (XRF) are provided in Appendix I.4.13. However, this section does not exist, and Appendix I does not include XRF calibration methods. These calibration methods should be added to Appendix I, and Section K.6.4.7 should be revised to include a correct reference to Appendix I.

Response: We agree with the comment. The revised calibration requirements for XRF were inadvertently omitted from the revised Appendix I. These requirements were moved from K.6.4.7.1-2 and expanded to include the verification of resolution and intensity that are performed as part of the regular instrumentation checks.

Action: The following changes were made to Section K.6.4.7:

**K.6.4.7 X-Ray Fluorescence Spectrometer (XRF) with HgI<sub>2</sub> Detector - Spectrace 9000**

This instrument ~~includes~~ a portable multichannel analyzer (MCA) with a mercuric iodide (HgI<sub>2</sub>) detector ~~and three sealed radioactive sources (<sup>55</sup>Fe, <sup>109</sup>Cd, and <sup>241</sup>Am)~~. The system ~~performs a qualitative and semi-quantitative analysis of~~ chemical elements by means of energy dispersive x-ray ~~fluorescence~~ spectroscopy. A sample is placed in the sample chamber, where it is ~~irradiated~~ with incidental radiation from a radioactive source contained within the instrument. The sample can be a solid, liquid, slurry or powder and normally requires no special preparation. The analysis is nondestructive and can be repeated with highly reproducible results. After the sample has been ~~irradiated~~ with x-rays and the data collected, the XRF produces a spectral distribution of the characteristic energy lines of all sample elements from sulfur through uranium.

The unit is preset at the factory to allow adjustment for the matrices to be surveyed by the user. Instrument calibration shall be verified each day prior to use to confirm that the instrument is functioning within ~~calibration~~, resolution, and ~~intensity specifications~~ (see Appendix I.4.11).

The following requirements shall be followed when the instrument is operated:

- A. Remove the electronic unit, probe assembly, interface cable, and optional equipment [mylar film, sample cups and RS-232 (25 to 9 pin) interface cable for a laptop PC] from the storage case.
- B. Prepare the sample for screening and the XRF probe used in the bench-top configuration, or screen the sample *in situ*.
- C. Using three sealed radioactive sources (Fe<sup>55</sup>, Cd<sup>109</sup> and Am<sup>241</sup>), conduct sample screening.
- D. Expose the samples to the x-ray energy emitted by the radioactive sources. The XRF performs a qualitative and ~~semi~~ quantitative screening by measuring x-ray energy and intensity fluoresced by the elements present in the sample.
- E. Store data in the electronic memory or (optional) download into a laptop PC.
- F. Turn the equipment off and pack it into the protective case. Return the case to the designated storage location.

The following calibration requirements were added to Appendix I:  
(Note - changes to the original text in K.6.4.7.1-2 have been marked in redline)

#### **I.4.11 X-Ray Fluorescence Spectrometer (XRF) with HgI<sub>2</sub> Detector - Spectrace 9000**

This instrument includes a portable multichannel analyzer (MCA) with a mercuric iodide (HgI<sub>2</sub>) detector and three sealed radioactive sources: (<sup>55</sup>Fe, <sup>109</sup>Cd, and <sup>241</sup>Am) (see Section K.6.4.7). The unit is preset at the factory to allow adjustment for the matrices to be surveyed by the user. Instrument calibration shall be verified each day prior to use to confirm that the instrument is functioning within calibration, resolution, and intensity specifications.

##### **I.4.11.1 Calibration, Resolution, and Intensity Verification.**

The following verification procedure shall be performed before each day's use to confirm that the unit is functioning within calibration, resolution, and intensity specifications.

##### **A) Spectral intensity verification:**

1. Place the pure iron element provided with the instrument over the window and run a 50 second analysis for each source. This operation should be performed with the instrument in the lab stand base only and using the probe safety cup to cover the iron standard.
2. Review the raw relative intensities for iron, manganese and cobalt.
3. A relative intensity greater than 0.950 for iron and less than 0.006 for manganese and cobalt indicates that the system is working properly.

##### **B) Spectral resolution verification:**

1. Check the <sup>109</sup>Cd spectrum of the iron standard and ensure that the counts per second at 6.25 keV and 6.55 are less than one-half of the count rate at 6.40 keV.

##### **C) Energy calibration verification:**

1. Check the <sup>109</sup>Cd spectrum of the iron standard and ensure that the centroid of the iron K $\alpha$  peak is 6.40 keV  $\pm$  0.02 keV.

- D. Maintain each day's verification measurements in a log book or on the daily log form for instrument troubleshooting.

##### **I.4.11.2 Energy Calibration**

The following energy calibration shall be performed when the calibration verification was out of specification or the unit has not been used for several days. Note that the unit performs one form of energy calibration each time an analysis is performed. The second calibration method is user selected to verify the validity of the first.

1. Place the lead-lined safety cover over the probe unit.
2. Initiate the menu selection of the ENERGY CALIBRATION option. The unit will self-calibrate.

83. Commenting Organization: U.S. EPA  
Section #: K.6.5  
Original Specific Comment #: 73

Page #: K-49

Commentor: Saric  
Line #: 27

Comment: The text incorrectly states that flow calibration procedures for air sampling systems are included in Appendix I. Appendix I should be revised to include these calibration procedures.

Response: We agree with the comment.

Action: Section K.6.5 (page K-48, line 47) has been retitled "**Radiological Air Particulate Monitoring**".

Section K.6.5 (page K-49, line 27) was changed as follows:

"Air sampling systems shall be leak-tested, flow-calibrated (Appendix I.2.4), tested,..."

The following has been added to Appendix I.1 (page I-1, line 33):

~~"M: Environmental (high volume) air monitoring stations."~~

Appendix I.2.4 (page I-2, lines 13-17) was replaced with the following:

~~"I.2.4 Environmental (High Volume) Air Monitoring Stations  
Environmental air sampling systems shall be calibrated prior to initial FEMP use, yearly thereafter, and/or after equipment maintenance (maintenance that would affect calibrations). Calibrations shall be performed in accordance with manufacturer's instructions as documented in approved standard operating procedures. The power source shall be within manufacturer specifications and checked at least annually. Calibration worksheets and records for any one particular unit shall be maintained in the project files."~~

84. Commenting Organization: U.S. EPA  
Section #: K.6. Page #: K-49 and K-50  
Original Specific Comment #: 74

Commentor: Saric  
Line #: NA

Comment: Section K.6.5 presents a general discussion of ambient air sampling requirements for characterizing air-related contaminant exposures. However, the discussion of performance standards for ambient air sampling systems (beginning on Page K-49, Line 38) includes several items related to "effluent sampling," such as Items A, B, and I. These items should instead be included in Section K.6.1, which discusses stack sampling requirements. Appendix K should be revised to address stack or effluent sampling requirements and ambient air sampling requirements separately.

Response: We agree with the comment. See response to Comment 5. Information has been removed from various parts of Appendix K and brought together into a new/revised section to address these performance standards for stack effluent sampling.

Action: In addition to the changes specified in DOE Comment #5, Section K.6 (page K-39) was renamed and changed as follows:

**~~K.6.1 Effluent (Stack) Sampling~~**

~~Stack monitoring is done at the FEMP to measure radionuclide emissions. Stacks with a potential for delivering a dose of 0.1 millirem (mrem) in one year to any individual shall be monitored and inspected at least weekly as specified in the Clean Air Act, 40 CFR, Part 61, and DOE 5400.5. Total uranium analysis, Th-230 analysis, and air particulate analysis are performed according to current approved methods listed in Appendix G.~~

The following information was moved from other sections and consolidated as new Section K.6.1.1 (page K-39, line 37):



Action: The text has been changed to "... (pH of 12.30 or less)."

87. Commenting Organization: U.S. EPA Section #: K.10.6 Page #: K-63 Commentor: Saric Line #: 23 and 24 Original Specific Comment #: 77

Comment: The text states that potentially radioactive samples will be screened before they are accepted for analytical measurement. The text further states that the screening method specified in Appendix G will be followed. However, after a thorough review of Appendix G, it is not clear what this screening method is. Appendix G should be revised to clearly identify the screening method for potentially radioactive samples.

Response: The original text was in error. There are no screening specifications in Appendix G. Any laboratory that would be qualified to receive such samples would have be licensed. Each laboratory would be required to comply with the specifications of their license. The requirements in Appendix G (if they did exist) would be irrelevant, due to the statement that "(l)aboratory-specific license requirements shall take precedence..." This paragraph should be rewritten to address this conflict.

Action: Section K.10.6 (page 63, lines 23-26) has been changed as follows:

The following sentence has been moved to line 21 as the last sentence of the preceding paragraph: "Potentially radioactive samples shall be screened as specified by individual laboratory licensing requirements before they can be accepted for analysis."

The following sentences have been deleted: "The method for screening in Appendix G shall be followed when applicable. Laboratory-specific license requirements shall take precedence over this requirement."

88. Commenting Organization: U.S. EPA Section #: K.10.9 Page #: K-65 Commentor: Saric Line #: NA Original Specific Comment #: 78

Comment: The text states that the external surface of each package will be decontaminated to the extent practical and that no significant removable contamination will be present. However, these statements are ambiguous and do not provide quantitative contamination control requirements that must be met for package shipment. The text should be revised to provide contamination control requirements stipulated in 49 Code of Federal Regulations (CFR) 173.443. Allowable radiation levels should be identified as well, and the text should provide a reference to 49 CFR 173.441 for these levels.

Response: We agree that the term "significant" is ambiguous and that it should be removed. The SCQ specifies that for Low-Specific-Activity materials and Limited Quantity shipments of radioactive materials, all packaging shall comply with the requirements of 49 CFR, Part 173 (page K-64, lines 27 and lines 42-43) and that "(t)he package shall not exceed limits for removable radioactive contamination and radiation level" (page K-64, lines 36-37 and page K-65, lines 1-2). These requirements also apply to the general requirements for packaging radioactive materials. Section K.10.9 (page K-65, lines 17-18) already specifies that the shipment of radioactive materials shall comply with the requirements of 49 CFR, Part 173. Item K.10.9.A.10 should be changed to remove the current ambiguity and make the requirement consistent with the previous sections.

Action: Section K.10.9.A.10 (page K-65, lines 49-50) has been replaced with the following:

[A. "... shall comply with the requirements of 49 CFR, Part 173 as follows:"]

~~"10. The package shall not exceed limits for removable radioactive contamination and radiation level."~~

89. Commenting Organization: U.S. EPA Commentor: Finkelberg

Section #: Signature Page

Page #: N/A

Line #: N/A

Original Specific Comment #: I

**Comment:** The signature page with the title and date of approval should be included for individuals who have reviewed and approved the document (including the US EPA Region 5 RPM, US EPA Region 5, QA Reviewer, Contractor Project Manager, Contractor Sampling Organization, Responsible Laboratory(ies), Contractor QA Manager). The titles and names of all individuals appearing on the title page should be consistent with the references to those people elsewhere [sic] in the QAPP.

**Response:** We agree with the comment, but not the titles listed. "Contractor Sampling Organization" and "Responsible Laboratory(ies)" are not appropriate for the FEMP. Since our subcontract laboratories receive a copy of the SCQ and agree to comply with the requirements of the SCQ as part of their contractual requirements, there is no need to include them on the signature page. The sampling organization is part of Fluor Daniel Fernald; the president of Fluor Daniel Fernald is included in the list of signatories.

**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

90. Commenting Organization: U.S. EPA

Commentor: Finkelberg

Section #: Table of Contents

Page #: N/A

Line #: N/A

Original Specific Comment #: II

**Comment:** Table of Contents needs to be revised for the following:

1. Sections 5 and 6 should be combined under the name "Sampling procedures".

2. Section 10 needs to be renamed for "Internal QC Checks" [sic].

3. Section 12 needs to be renamed for "Performance and System Audits"

**Response:** Comment noted. Sections 10 and 12 can be renamed with no disruption to the document. However, Sections 5 and 6 should not be combined under the name "Sampling procedures". The consolidation of these chapters would cause a great deal of confusion. Personnel are familiar with the current format of the SCQ. All existing PSPs and DQOs reference the current chapter citations.

The complex scope of activities demanded that this information be presented in a way that would facilitate the use of this document by project managers and field personnel. The following format was developed with U.S. EPA's approval to effectively meet the

specific needs of this project. The basic requirements for well installation are presented in Section 5, with additional detail provided in Appendix J. The basic requirements for all field sampling are presented in Section 6, with additional detail provided in Appendix K. This separation of requirements enables the users to locate information more easily.

Action: Section 10 has been renamed "**Internal Quality Control Checks and Frequency**"

Section 12 has been renamed for "**Performance and System Audits**"

91. Commenting Organization: U.S. EPA Commentor: Finkelberg  
Section #: 2.3 & 2.4 Page #: 2-19 & 2-24 Line #: 45-46 & 45

Original Specific Comment #: III.1

Comment: Sections 2.3 and 2.4 reference the Project -Specific Plan (PSP) for specific objectives and Sample Network Design. Where are the PSPs?

Response: Section 1.4.2 states that a PSP is developed for every project that requires sampling and analysis. There are many active PSPs at the FEMP, many that have been completed, and many more that will be developed before remediation efforts are completed. The SCQ identifies the requirements for PSPs, but it would not be practical or relevant to list them in the document.

Action: No action required.

92. Commenting Organization: U.S. EPA Commentor: Finkelberg  
Section #: 2.2.4 Page #: various Line #: N/A

Original Specific Comment #: III.2

Comment: The list of target parameters for this project, sample matrices and frequencies of sample collection should be outlined in this section or appropriate document should be referenced to provide this information.

Response: A RI/FS study and report as well as a ROD was developed for each operable unit (OU) at the FEMP. Each OU has FRLs for various target parameters that vary according to the applicable matrices. In Section 2.2.4, the source of the FRLs is referenced for each OU (see Section 2.2.4.1, page 2-13, lines 43-44). The frequency of samples is dependent upon the applicable PSP and/or remedial action work plan, not a set of requirements in the SCQ.

Action: No action required.

93. Commenting Organization: U.S. EPA Commentor: Finkelberg  
Section #: Not stated. Page #: N/A Line #: N/A

Original Specific Comment #: III.3

Comment: 3. The US EPA no longer uses the five QC Levels listed in this section to describe data quality. Please remove (throughout the SCQ) the reference to the five FEMP analytical levels based on EPA -defined DQO levels 1 through 5. Please follow the requirements outlined in Region 5 Superfund Model QAPP (Revision 1, May 1996).

Response: Comment noted. Although the U.S. EPA no longer uses the five QC levels, it is unnecessary to remove the five FEMP analytical support levels (ASLs) from the SCQ. The FEMP projects are currently following the data quality objective requirements outlined in the Region 5 Superfund Model QAPP, as specified by the current approved SCQ. Each project manager must ensure that the seven-step DQO process is completed before the PSP is developed and sampling begins. During the DQO process, the appropriate field and laboratory QC samples are identified, and the analytical laboratory deliverables are identified. These requirements generally fall within one of the five FEMP analytical support levels specified in the SCQ. However, the project manager may specify unique requirements, if necessary. An examination of Table 2-2 shows that many of the listed requirements are identical or must be specified by the DQO writer.



Original Specific Comment #: IV.2.a

Comment: Section 3.2.2 needs to be revised for the following:

The US EPA QA Reviewer has the responsibility to review and approve QAPP.

Response: Comment noted.

Action: The following change was made to Section 3.2.2.A (Page 3-5, Line 6): "The USEPA Region V QA Reviewer is responsible for review and approval of the SCQ."

96. Commenting Organization: U.S. EPA Section #: 3.2.2.B Page #: 3-5 Commentor: Finkelberg Line #: 9-11

Original Specific Comment #: IV.2.b

Comment: There is no Region 5 QA Section. Please delete this reference (3.2.2 B).

Response: Comment noted.

Action: 3.2.2.B has been deleted. Items C-E have been renumbered.

For consistency, the following change was made to Table 3-2 (Page A-16):

Review of SCQ and supporting documents: "EPA Region V QA Section" has been deleted.

97. Commenting Organization: U.S. EPA Section #: 3.2.2 Page #: 3-5 Commentor: Finkelberg Line #: Not stated

Original Specific Comment #: IV.2.c

Comment: EPA Region 5 FSS is responsible for review and approval of field and laboratory procedures.

Response: Comment noted.

Action: The following new Section 3.2.2.E (Page 3-5, Line 22) was added: "The USEPA Region V Field Support Section is responsible for review and approval of field and laboratory procedures."

98. Commenting Organization: U.S. EPA Section #: 3.2.2 Page #: 3-5 Commentor: Finkelberg Line #: 13-18

Original Specific Comment #: IV.2.d

Comment: Please revise statements 3.2.2. C and D to outline that external field and laboratory Audit may be conducted by EPA Region 5. Region 5 CRL and CDO are not responsible for those activities.

Response: Comment noted.

Action: The following changes were made to Section 3.2.2 (Page 3-5):

Item C was changed to the following: "USEPA Region V is responsible for external laboratory audits (see Section 12 for audit requirements and responsibilities);"

Item D was changed to the following: "USEPA Region V is responsible for external field audits;".

99. Commenting Organization: U.S. EPA Section #: Not stated. Page #: N/A Commentor: Finkelberg Line #: N/A

Original Specific Comment #: IV.2.e

Comment: Please address the QA personnel responsible for data validation and data assessment.

Response: Requirements for the validation process and the validators are identified in Appendix D. To clearly identify those requirements and better answer the concerns of this comment (in response to a comment by Ohio EPA), we have moved the last paragraph of D.2.2 (formerly page D-2, lines 14-21) to Section D.3 "Organizational Responsibilities and Functions" as the new paragraph #2 (page D-10, new lines 14-21). The revised text states:

"The data validation team members have the authority to access and review all required sampling and analytical information, qualify the data results if necessary, summarize the findings for each set of data examined, assign data qualifiers, and transmit the data validation package to the user. The following sections outline specific functions associated with each organizational responsibility."

"It is not a requirement that all data validation functions be performed by the data validation group of the FEMP data quality organization. Validation functions can be done by other qualified groups at the direction of the FEMP data generating group. However, the data validators shall be independent of the data user and the laboratory producing the data, and they must meet the requirements of this SCQ and the sitewide data validation procedure. FEMP data validators must meet the training requirements listed in the FEMP Data Validation Procedure. Training requirements for subcontractor validators are listed within the individual contracts."

Specific responsibilities for data validation personnel (group manager, field validators, laboratory data validators) are specified in subsequent sections.

Action: No action required.

100. Commenting Organization: U.S. EPA  
 Section #: Appendix A, Table 2-3  
 Original Specific Comment #: V.1  
 Comment: Table 2-3 from Appendix A needs to be revised to address the EPA requirements for field QC samples frequency:

Commentor: Finkelberg  
 Line #: N/A

Page #: A-14

Response: The general level of the QC effort should be one field duplicate and one field blank for every 10 or fewer investigative samples.  
 This comment does not cite the specific regulatory requirement for this increased sampling effort. The standard frequency for these QC samples at the FEMP has historically been 1/20 or one per each sampling event, whichever is more frequent. When the DQO process determines that stricter QC requirements are necessary, we increase the QC frequency to 1/10 or greater. The imposition of these stricter limits would overrule these decisions that have previously been determined by the DQO process.

Action: We have made key RI/FS decisions according to our existing requirements. We feel that they should be sufficient for current remediation activities as well.  
 No action taken.

101. Commenting Organization: U.S. EPA  
 Section #: 4.1.1  
 Original Specific Comment #: V.2  
 Comment: The distinguish of the Field Blank and Equipment Rinsate is not clear. Please note, that the field blank collected to check for procedural contamination at the sampling location required to be collected for water sampling only.

Commentor: Finkelberg  
 Line #: N/A

Page #: 4-3

Response: Comment noted. For clarity, grammatical corrections were also made to the description of equipment rinsate samples.

Action: Section 4.1.1 - Field Blank (page 4-3, line 14) has been changed as follows:

"Field blank analyses...have affected sample quality. ~~Field blanks are collected for aqueous samples only.~~ Field blanks are prepared by..."

Section 4.1.1 - Equipment Rinsate (page 4-3, lines 20-24) has been changed as follows:

"Equipment rinsate analyses...contamination of samples does not occur. Rinsate samples are prepared by the sampling team at the decontamination site (see Section K.11). A final rinse from the decontamination process is collected in appropriate containers and analyzed for the constituent of concern. In addition to sampling frequencies..."

102. Commenting Organization: U.S. EPA  
 Section #: Not stated. Page #: N/A Commentor: Finkelberg  
 Original Specific Comment #: V.3 Line #: N/A  
 Comment: The definition of Precision and Accuracy for field and laboratory objectives should be addressed in this section. Please note that Field precision is assessed through the collection and measurement of field duplicates and Accuracy in the field is assessed through the use of field and trip blanks and through the adherence to all sample handling, preservation and holding time. Please address.  
 Response: Comment noted. Laboratory precision and accuracy are addressed in Sections 4.2.1 and 4.2.2, respectively.  
 Action: The following has been added to Section 4.1.1 (page 4-2, line 23):

~~Field precision is assessed through the collection and measurement of field duplicates and Accuracy in the field is assessed through the use of field and trip blanks and through the adherence to all sample handling, preservation and holding time.~~

103. Commenting Organization: U.S. EPA  
 Section #: 4.1.2 Page #: 4-5 Commentor: Finkelberg  
 Original Specific Comment #: V.4 Line #: N/A  
 Comment: Section 4.1.2 needs to outline that matrix spike/matrix spike duplicate samples are investigative samples; aqueous MS/MSD samples must be collected at triple the volume for VOCs and double the volume for extractable organics. The soil MS/MSD samples require no extra volume for VOCs or extractable organics.  
 Response: Comment noted. However, the term "investigative sample" is poorly defined and confusing. We are aware that it appears in the Region V Model QAPP, but do not believe that its use is meaningful in this context. All analytical samples are "investigative", and matrix spike/matrix spike duplicates are primarily QC samples. We respectfully choose not to use the term "investigative sample" at this time.  
 Action: Section 4.1.2.C (page 4-5, lines 10-11) has been changed as follows:

~~"... are readily available. The requirements for collecting matrix spike samples are specified in K.4.6.I (aqueous matrices) and K.5.4.B (solid matrices). Matrix spike acceptance criteria are listed in Appendix G."~~

Section 4.1.2.D (page 4-5, lines 10-11) has been changed as follows:

~~"...used in organic analyses. The requirements for collecting matrix duplicates or matrix spike duplicates are specified in K.4.6.I (aqueous matrices) and K.5.4.E (solid matrices)."~~

Section K.4.6.I (page K-28, lines 16-19) has been changed as follows:

~~"Additional sample volume may be required for laboratory QC samples. The DQO and/or PSP shall specify the type of laboratory QC samples required and the frequency with which they shall be collected. Matrix spike/matrix spike duplicate samples shall be collected at triple the regular volume for VOCs and at least double the volume for extractable organics. These samples shall be collected and handled in the same manner as the other samples."~~



- Action: No action required.
109. Commenting Organization: U.S. EPA Section #: Section 10 Original Specific Comment #: IX Comment: Section 10 needs to be renamed for **Internal** Quality Control Checks. Response: Comment noted. Action: See action for DOE Comment #40. Commentor: Finkelberg Line #: 4
110. Commenting Organization: U.S. EPA Section #: Appendix A, Table 2-2 Original Specific Comment #: X.1 Comment: Table 2-2 needs to be revised to address the analytical QC levels based on **DQO process** that allow decision makers to define the QC requirements instead of using ASL based on EPA-defined five levels (1987). Please follow Region 5 Superfund Model QAPP (Revision 1, May 1996). Response: Table 2-2 specifies the QC requirements for the standard FEMP ASLs. Each DQO determines the specific QC requirements for sample collection and analysis necessary to produce the data needed for a particular purpose. The information in Table 2-2 may be selected, or the DQO may specify more stringent QC requirements. The information in Table 2-2 should, therefore, remain for reference. (See also the response to DOE Comment #93). Action: No action required. Commentor: Finkelberg Line #: N/A
111. Commenting Organization: U.S. EPA Section #: Appendix A, Table 2-3 Original Specific Comment #: X.2 Comment: Table 2-3 Please note, that the correct frequency to collect Field Blanks and Field Duplicate is one per ten or fewer investigative samples. (See comment .... Of current memo). Response: See response to DOE Comment #100. Action: No action required. Commentor: Finkelberg Line #: N/A
112. Commenting Organization: U.S. EPA Section #: Appendix A, Table 3-2 Original Specific Comment #: X.3 Comment: Table 3-2 needs to be revised to outline that **Review and Approval** of the SCQ and supporting documents (including project-specific plans) is the responsibility of EPA Region 5 QA Reviewer. EPA Region 5 CDO does not exist any more after the EPA reorganization, therefore please delete the reference to CDO. Response: Comment noted. Action: Table 3-2 (Page A-16), the following changes were made:  
  
Review of SCQ and supporting documents: "EPA Region V Central District Office" has been deleted. Commentor: Finkelberg Line #: N/A
113. Commenting Organization: U.S. EPA Section #: Appendix A, Table 3-2 Original Specific Comment #: X.4 Comment: The EPA Region 5 (but not CRL and CDO) has the responsibility for Performance and System Audits of Laboratory(ies) and Field Activities. Response: Comment noted. Action: Table 3-2 (Page A-16), the following changes were made: Commentor: Finkelberg Line #: N/A

External field surveillances and audits: "EPA Region V Central Regional Laboratory" and "EPA Region V Central District Office" have been replaced with "EPA Region V."

External laboratory audits and surveillances: "EPA Region V Central Regional Laboratory" has been replaced with "EPA Region V."

114. Commenting Organization: U.S. EPA Commentor: Finkelberg  
 Section #: Appendix G Page #: G-16 Line #: N/A  
 Original Specific Comment #: Appendix G, 1  
 Comment: Table G-2 (page 16) needs to be revised to include requirement to use MSA when the post digested spike recovery is less than 85% or greater than 115%.  
 Response: We partially agree with the comment. MSA is only required where the post digestion spike falls outside 85%-115% and the sample absorbance or concentration is greater than 50% of the post digestion spike.  
 Action: The following has been added under second footnote of Table G-2, Criterion 10 (page G-16): If Post Digestion Spike recovery is < 85% or > 115% and the sample absorbance or concentration is greater than 50% of the spike absorbance or concentration, the Method of Standard Additions is required.
115. Commenting Organization: U.S. EPA Commentor: Finkelberg  
 Section #: Appendix G Page #: G-17 Line #: N/A  
 Original Specific Comment #: Appendix G, 2  
 Comment: Table G-2 (page 17) needs to include the requirement to perform Serial Dilution analysis on a sample from each group samples with a similar matrix type.  
 Response: We agree with the comment.  
 Action: The following new requirement #9 has been added to Table G-2, Criterion 11 (page G-17):

<u>REQUIREMENT</u>	<u>FREQUENCY</u>	<u>ACCEPTANCE LEVELS</u>	<u>CORRECTIVE ACTION</u>
<u>Serial Dilution</u>	<u>1/20<sup>1</sup></u>	<u>% Difference &lt; 10% for initial results &gt; 50x IDE</u>	<u>Qualify Data</u>

Former item #9 has been renumbered.

**RESPONSES TO OEPA COMMENTS ON THE  
SITEWIDE CERCLA QUALITY ASSURANCE PROJECT PLAN  
(REVISION 1)  
FOR JULY 1997**

**GENERAL COMMENTS**

116. Commenting Organization: Ohio EPA Commentor: HSI GeoTrans  
Section #: Not Applicable (NA) Page #: NA Line #: NA  
Original General Comment #: 1
- Comment: Revision 1 of the SCQ has not yet been updated with sections that will support the real-time gamma spectroscopy methods for soils characterization. Updates should be added to address the proper operation of RTRAK, RSS and HPGe methods and also the Geographic Positioning System (GPS). Topics addressed should include:
1. Operational envelopes such as acceptable weather and atmospheric conditions and procedures to avoid operating in areas where there is potential for unacceptable levels of "shine."
  2. Operational parameters such as HPGe detector heights and the criteria for operating at one meter or one foot heights.
  3. Count times and RTRAK speed.
  4. Validation and verification of associated software.
  5. Data validation including rejection of data that does not lie within technically defensible calibration ranges.
  6. Calibration and associated daily source checks, including acceptable limits.
  7. Appropriate Analytical Support Levels (ASLs) for each method, i.e., HPGe and RTRAK.
- Response: See response to DOE Comment #3.  
Action: No action required.

**Specific Comments**

117. Commenting Organization: OEPA Commentor: HSI-GeoTrans, Inc.  
Section #: 5.1 Page #: 5-1 Line #: 44  
Original Specific Comment #: 2
- Comment: The text should be revised to indicate that the daily log will be a narrative of field events with the status of field activities reported every 30 minutes. The daily log should include cross-references to uniquely numbered field forms such that the time sequence of information acquisition can be readily recreated.
- Response: We agree that log should be narrative and, additionally, significant activities should be recorded as they occur, at a minimum of every 30 minutes. Uniquely numbered field forms are currently tied together with a control number. See changes indicated below.
- Action: The following changes were made to Section 5.1 (page 5-1, lines 23-31):

**NOTE**

~~"Field activity logs shall be written in a narrative manner that sufficiently describes the event so that the sampling team may reconstruct that event without reliance upon memory. Field activity logs shall be updated as significant activities occur, at a minimum of every 30 minutes."~~

~~"Field personnel are required to keep a daily log of project activities. Daily logs are written records of activities and measurements conducted in the field on a given date (see J.4.1). The log shall be in a bound book with printed, sequentially numbered pages or on uniquely numbered field forms. Uniquely numbered field forms must be cross-referenced with a control number which links together all field forms associated with a~~

~~field activity~~: Daily logs shall include all documentation of field activities, including but not limited to the following, as applicable:"

118. Commenting Organization: OEPA Page #: 5-9 Commentor: HSI-GeoTrans, Inc. Line #: 17  
 Section #: 5.3.1  
 Original Specific Comment #: 3  
 Comment: The PSP should also specify the method for data management, storage, and evaluation. The referenced list should, therefore, be amended to include an additional bullet:  
 "I. Methods for data management (both electronic and hard copy), storage, and evaluation."  
 Response: We agree that data management should be included as a required component of PSPs, however, because the referenced section is specific to geophysical logging, the data management requirement will be added to Section 3.3.2 so that the data management requirement is a consistent requirement for all PSPs.  
 Action: The following was added to Section 3.3.2.A (page 3-6, line 30):  
~~"7. Methods for data management, storage, and evaluation."~~  
 The following new section was also added (page 3-9, line 23):  
~~"3.3.2.7. Data Management, Evaluation, and Storage  
 Requirements for data management, data evaluation, and storage shall be included in the PSP. The PSP must specify requirement for field-generated data documentation and analytical data, including both electronic and hard copy data. Responsibilities for each requirement must be stated. Additional requirements for data management are provided in Section 4.4.2."~~
119. Commenting Organization: OEPA Page #: 6-2 Commentor: HSI GeoTrans Line #: 5-32  
 Section #: 6.1  
 Original Specific Comment #: 4  
 Comment: The sampling information list on Lines 5-32 should include the analytical parameters.  
 Response: This information is already required/provided as part of the chain of custody form (see Section 7.1.4 and Form 7-1). Repeating this information on the Sample Collection Log would be duplicative, as the chain of custody is a part of the daily log as stated in Section 5.1, *Daily Logs*.  
 Action: No action required.
120. Commenting Organization: OEPA Page #: 6-3 Commentor: HSI-GeoTrans, Inc. Line #: 42  
 Section #: 6.2.2.1  
 Original Specific Comment #: 5  
 Comment: The use of dedicated sampling equipment should also be encouraged when multiple sampling events will occur at the same well or set of wells at regular intervals over a significant period of time.  
 Response: We agree with the comment.  
 Action: Section 6.2.2.2 (page 6-3, lines 41-45) has been changed to read: "The installation and use of dedicated groundwater sampling equipment is encouraged when well accessibility is a problem, when the handling and decontamination of sampling equipment is difficult due to the presence of high concentrations of contaminants at the well site, and when ~~multiple sampling events will occur at the same well or set of wells at regular intervals over a significant period of time.~~"

121. Commenting Organization: OEPA Commentor: OFFO  
 Section #: 6.2.2.4 Page #: 6-4 Line #: 2  
 Original Specific Comment #: 6  
 Comment: This is incorrect. According to DOE's Integrated Environmental Monitoring Plan (IEMP), private well monitoring has been limited to three private wells. The wells are located down gradient from Fernald and are samples on a quarterly basis. Refer to the IEMP, Section #3.5.2.1, page 3-35, first full paragraph.  
 Response: We agree with the comment. Select private wells are routinely monitored in accordance with the IEMP. However, DOE has also committed to the initial sampling of private wells at the request of the homeowner.  
 Action: Section 6.2.2.4 (page 6-4, lines 1-4) has been changed as follows:  
~~“Selected private water wells near the FEMP may be sampled as part of FEMP programs. In addition, DOE has authorized the sampling of private wells at the request of the homeowner. Requirements for collecting water samples from private wells are stated in Appendix K.4.2.5.”~~  
 The first paragraph of K.4.2.5 (page K-19, lines 5-8) has been deleted. The following sentence has been added to the beginning of the former second paragraph: ~~“Private water wells and other production wells near the FEMP may be sampled as part of FEMP programs. Property owner approval...”~~
122. Commenting Organization: OEPA Commentor: OFFO  
 Section #: 6.2.4.1 Page #: 6-5 Line #: 2  
 Original Specific Comment #: 7  
 Comment: Line four should read: “Storm water runoff discharge to Paddys Run via the Storm Sewer Outfall Ditch.”  
 Response: We agree with the comment.  
 Action: Section 6.2.4.1 (page 6-5, line 4) was changed to: “...to Paddys Run via the Storm Sewer Outfall Ditch.”
123. Commenting Organization: OEPA Commentor: OFFO  
 Section #: 6.2.4.2 Page #: 6-6 Line #: 2-3  
 Original Specific Comment #: 8  
 Comment: This statement is incorrect. Sampling locations 4003, 4004, 4005, and 4006 are required to be monitored for flow twice a year.  
 Response: We agree with the comment.  
 Action: Section 6.2.4.2 (page 6-6, lines 3-4) was changed to read: “... when a discharge occurs at sampling locations 4001, 4002, and 4601. Flow is monitored twice a year at sampling locations 4003, 4004, 4005, and 4006. Meters are in place...”
124. Commenting Organization: OEPA Commentor: OFFO  
 Section #: 6.4.1 Page #: 6-9 Line #: General comment  
 Original Specific Comment #: 9  
 Comment: This section describes the stack monitoring for the Boiler Plant. The Boiler Plant is currently out of service. What (if any) stack monitoring protocols will be used for the new gas-fired plants?  
 Response: We agree with the comment. Stack monitoring is not performed for the gas fired boiler plant.  
 Action: We have deleted the last three paragraphs in section 6.4.1 (page 6-9, line 44 through page 6-10, line 6) and inserted the following text:  
~~OEPA requires an estimate of emissions from the Boiler Plant as part of the FEMP's efforts to demonstrate compliance with the Clean Air Act. The FEMP estimates the~~

amount of nonradioactive pollutants including particulate matter (PM), sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), and carbon monoxide (CO).

In order to estimate SO<sub>2</sub> emissions for fuel oil burned in the boilers, the oil supplier's fuel analysis reports are used in which the heat content and sulfur content of the fuel are identified. For all pollutants of concern for natural gas and the other pollutants in fuel oil combustion, the estimates of emissions from combustion are based on USEPA developed emission factors.

125. Commenting Organization: OEPA Commentor: OFFO  
 Section #: 6.4.2 Page #: 6-10 Line #: General comment  
 Original Specific Comment #: 10  
 Comment: The specific isotope of radon should be defined, i.e., Rn-222 or Rn-220. The information provided in this section seems to be consistent with Rn-222 methods.  
 Response: We agree with the comment.  
 Action: Section 6.4.2 (page 6-10, line 8 through page 6-12, line 23) has been replaced with the following:

#### **6.4.2 Radon Monitoring**

In addition to the radon-222 (referred to in this document as radon) found naturally in the environment, radon is also produced at the FEMP from radioactive materials stored onsite. The primary source of radon at the FEMP is from the radium-bearing material stored in the K-65 silos. The Waste Pits and the Thorium Warehouse (Building 65) are relatively small radon sources. The FEMP has established a radon monitoring program to monitor radon levels at the FEMP and to assess the impact on the public and the environment.

This program operates in compliance with the requirements of DOE Order 5400.5, Radiation Protection of the Public and the Environment. This order provides guidelines for radon concentrations and emissions in the atmosphere above facility surfaces or openings. It defines environmental radiological protection requirements and guidelines for cleanup of residual radioactive material, the management of resulting wastes and residues, and the radiological release of property. These requirements and guidelines are applicable at the time the property is released and state that environmental radon levels must not exceed the following limits when added to background levels:

- A. 100 pCi/L at any given point,
- B. Annual average concentration of 30 pCi/L over any facility site,
- C. Annual average concentration of 3 pCi/L at or above any location outside the facility site, or
- D. Flux rates greater than 20 pCi/m<sup>2</sup>-sec from the storage of radon-producing wastes.

Federal regulations (40 CFR 61 and 192) also impose flux limits on the emission of radon gas from a variety of sources either owned or operated by DOE. Flux monitoring has only been conducted in association with specific EPA-related projects as the waste may only be potential radon sources when excavation begins.

The FEMP routinely uses two types of radon detectors to measure radon concentrations in the environment: long-term time-integrating alpha track-etch detectors and continuous-reading alpha scintillation monitors.

#### **6.4.2.1 Long-Term Environmental Radon Monitoring**

Alpha track etch detectors are used when monitoring requirements pertain to annual limits. Since these detectors collect data over longer periods of time (6 months), they are used to generate an average annual concentration. The detectors are placed onsite and offsite to gather information regarding the dispersion of radon from FEMP sources. Currently, there are approximately 55 locations, with each location containing two or three detectors. Multiple detectors are used for Quality Control purposes. At the site boundary, approximately 20 locations are evaluated using alpha track etch detectors. Additionally, data is collected from area residences, background locations, locations adjacent to the K-65 silos, and at locations in the path of the prevalent wind direction from the silos.

An alpha track etch detector consists of a filtered canister containing a special plastic chip. The canister is placed inside a plastic cup that is mounted in an environmental housing. Radon in the atmosphere penetrates the filter and concentrates within the canister. As radon and radon progeny decay, alpha particles are released that can react with the plastic chip, leaving a damaged track in the material. The tracks are made visible by chemical etching. The number of tracks is proportional to the average concentration of radon in the canister.

Each radon measurement contains three components:

- A) The local natural background radon component;
- B) The etches present in the plastic before field placement (known as detector background); and
- C) The potential FEMP radon component.

The second component can be determined by submitting unexposed detectors for counting. Unfortunately, at a specific location, it is impossible to distinguish between the first and third components. To determine a net radon contribution from FEMP sources, the average background value for all background locations can be subtracted from each radon measurement.

Specific requirements and guidelines are stated in Appendix K 6.2.1. This includes the types of Quality Control samples analyzed with each batch of samples and the acceptance limits for the results.

#### **6.4.2.2 Continuous Environmental Radon Monitoring**

Continuous environmental radon monitors reveal important information regarding the dynamics of radon concentrations onsite and offsite. These monitors allow for timely review of radon concentrations and provide the ability to detect short-term changes. However, there are certain restrictions to using these monitors. Electrical power is available from a limited number of locations and extreme cold weather may effect the reliability of the instruments, rendering some data unusable. Data is collected and analyzed from approximately 20 onsite and offsite monitoring locations. Sampling is performed using passive methods, without the aid of a pump.

The monitors utilize alpha-scintillation detectors, hollow cylinders with a foam barrier which prevents airborne material from entering the detector. Radon can pass through the foam barrier to concentrate within the detector. The inside surface of the detector is coated with crystalline zinc sulfide. Alpha particles generated from radon and its progeny produced within the cell react with the zinc sulfide crystals producing light pulses. These light pulses enter a photomultiplier tube that converts the light signal into

an electronic signal, the strength of which corresponds to a specific concentration of radon within the detector.

In a radon-free environment, the continuous monitor will record a signal, falsely indicating a radon concentration. This electronic noise phenomena is common to all types of electronic instrumentation. Radon data collected at Fernald is corrected for electronic noise.

The equipment used for continuous environmental radon monitoring is calibrated at least annually. Additional requirements and guidelines related to the use of these monitors are found in Appendix K.

#### 6.4.2.3 Radon Flux Sampling

Measurement of radon flux density using a passive charcoal collector is the method of choice for determining radon emissions from sources such as the Waste Pits (40 CFR 61, Method 115). Method 115 also references an USEPA document written by Hartley and Freeman that describes the large-area, activated charcoal collector in detail and gives general field methods for its use. Additional requirements and guidelines for conducting this type of sampling are found in Appendix K.6.2.

#### 6.4.2.4 FFA-Mandated Radon Monitoring

Federal Facility Agreement (FFA), Control and Abatement of Radon-222 Emissions, signed November 19, 1991, ensures that DOE takes all necessary actions to control and abate radon emissions at the FBMP, under the authority of 40 CFR 61, Subpart Q. This agreement acknowledges that the K-65 silos (Operable Unit 4) exceed the radon emission of 20 pCi/m<sup>2</sup>-sec, but allows the FBMP to address this exceedance by implementing a removal action to bring radon emissions from the silos to a level AEARA, and to attain the NESHAP, Subpart Q standard upon completion of final remediation. The remediation work plan included a radon monitoring system, which was previously monitored under the predecessor EMP, and has been incorporated into the IEMP.

This agreement mandated continuous monitoring of the radon concentration within the two K-65 silos, confirmatory headspace grab samples, and continuous environmental radon monitoring at designated locations. The equipment used for the headspace monitoring is essentially the same as the alpha-scintillation detectors used in continuous environmental radon monitoring. However, the method of sample collection differs in that in headspace monitoring, air is pumped from the silos through a filter and desiccant column before entering the alpha-scintillation cell.

126. Commenting Organization: OEPA Commentor: OFFO  
 Section #: 6.4.2 Page #: 6-10 Line #: General comment  
 Original Specific Comment #: 11  
 Comment: Radon-222 grab sampling of the K65 silo headspace is not mentioned in the SCQ. It should be included.  
 Response: We agree with the comment.  
 Action: See action for DOE Comment #125.
127. Commenting Organization: OEPA Commentor: OFFO  
 Section #: 6.4.2 Page #: 6-10 Line #: 21-23  
 Original Specific Comment #: 12  
 Comment: The text states that these requirements are applicable at the time of release. The FFA between the USEPA and DOE also has guidelines and requirements relative to radon monitoring. Also, DOE 5400.5 states that 3 pCi/L... shall be used for Rn-222 releases from DOE facilities.

- Response: We agree with the comment.  
Action: See action for DOE Comment #125.
128. Commenting Organization: OEPA Commentor: OFFO  
Section #: 6.4.2.1 Page #: 6-11 Line #: 3 & 8  
Original Specific Comment #: 13  
Comment: Change the word "contribution" to "component."  
Response: We agree with the comment.  
Action: Section 6.4.2.1 (page 6-11, lines 3 and 8) the word "contribution" was changed to "component."
129. Commenting Organization: OEPA Commentor: OFFO  
Section #: 6.4.2.1 Page #: 6-11 Line #: 23-24  
Original Specific Comment #: 14  
Comment: The text implies that alpha track-etch cups are used to monitor the radon concentrations of the K65 silo headspace. OEPA was under the impression that continuous radon monitors were used for this sampling.  
Response: We agree with the comment.  
Action: See action for DOE Comment #125.
130. Commenting Organization: OEPA Commentor: OFFO  
Section #: 6.4.2.2 Page #: 6-11 Line #: 35  
Original Specific Comment #: 15  
Comment: When using the continuous radon monitor in the "pump" mode, the sample does NOT pass through a foam barrier as described in the text.  
Response: We agree with the comment.  
Action: See action for DOE Comment #125.
131. Commenting Organization: OEPA Commentor: OFFO  
Section #: 6.4.2.2 Page #: 6-11&12 Line #: 50-3  
Original Specific Comment #: 16  
Comment: The text incorrectly states that "gross radon concentrations" are reported. If electronic noise, i.e., instrument background, is not subtracted from the accumulated counts, then gross counts are used to report a radon concentration. "Gross radon concentration" is the concentration of radon present naturally plus any contributions from the FEMP, not electronic noise. It should also be noted that the practice of not subtracting instrument background from the radon concentration calculation limits the FEMP to only monitoring relative changes in radon concentration and not the actual radon concentration.  
Response: We agree with the comment.  
Action: See action for DOE Comment #125.
132. Commenting Organization: OEPA Commentor: OFFO  
Section #: 6.4.5 Page #: 6-12 Line #: General comment  
Original Specific Comment #: 17  
Comment: A revised or new section needs to be added here to reflect that high volume air sampling for radionuclides will be used to demonstrate compliance with 40 CFR 61 Subpart H in 1998 as stated in the IEMP.  
Response: We agree with the comment. The use of high volume air sampling to demonstrate compliance with 40 CFR 61 Subpart H is discussed in the proposed revision to Section 6.4.  
Action: See response to DOE Comment #4.

133. Commenting Organization: OEPA  
Section #: 6.5  
Original Specific Comment #: 18

Page #: 6-13

Comment: These statements are not entirely correct. According to DOE's Integrated Environmental Monitoring Plan (IEMP), there are no "regulatory drivers" and there is enough ample justification to discontinue monitoring of milk, fish, meat, grass, and soil. Please refer to the IEMP, Section #7.4.2, pages 7-4 - 7-6.

Response: We disagree with the comment. While the statements in the cited sections of the IEMP are true, this is NOT a guarantee that biological sampling will not be needed in the future. Based on the findings of the primary pathway analysis, biological sampling may be necessary in the future. References to biological sampling should remain in the SCQ to avoid revising the SCQ if biological sampling is resumed at some point in the future. These statements allow for, but do not require, the collection of biological samples based on the needs of a project, regulatory agency, or the public. A list of conditions which may require biological sampling is provided in the SCQ, however, the conditions are not justifications or regulatory requirements for sampling. The SCQ will be edited to clearly state that the technical requirements for biological sampling are given in Appendix K.7.

Action: Section 6.5 (page 6-13, line 35) has been changed as follows:

"... and/or grass. ~~Technical~~ requirements for collecting samples ...."

The following changes were made to Section K.7 (page K-50, line 43):

"Based on the needs of the project, the regulatory agencies, and/or the public, future biological sampling ~~may be~~ conducted at the FEMP to evaluate radiological parameters (e.g., uranium) in selected flora and fauna. ~~Based on the results from the periodic primary radiological pathway evaluation, biological sampling may be conducted in the future. These requirements are included here and have been retained in the event that biological sampling is deemed necessary. For example, milk sampling was discontinued since the local dairy ceased production, which eliminated a potential secondary pathway. However, if at some point it is determined that milk samples should be collected, the requirements for milk sampling have been retained. These requirements are addressed and considered in the Project Specific Plan for conducting any type of biological sampling.~~"

Section K.7.1 "Ongoing Sampling" (page K-50, line 48 through page K-51, line 5) was deleted, and subsequent sections were renumbered.

134. Commenting Organization: OEPA  
Section #: 6.7  
Original Specific Comment #: 19

Page #: 6-19

Commentor: OFFO

Line #: 22

Comment: What is meant by "natural waters"? Am I to assume groundwater and surface waters?

Response: The commentor is correct. Natural waters are assumed to be groundwater and surface water. Also, drinking water is no longer collected at the FEMP as an environmental sample.

Action: The following changes were made to Section 6.7.A & B (page 6-19, lines 20-22):

A. ~~Surface water;~~

B. ~~Groundwater;~~



138. Commenting Organization: OEPA Page #: E-1 Commentor: HSI GeoTrans  
 Section #: E Line #: 42  
 Original Specific Comment #: 23

Comment: Laboratory backlog is extremely unpredictable. How is FEMP assured that laboratories will meet sample hold times? Is there a contingency plan? Will the lab be allowed to use its other facilities in the event of unanticipated backlog? Does laboratory approval apply only to a specific location or does it extend to its other facilities?

Response: The Subcontract Technical Representatives (STRs) in the FEMP Sample Management Office receive notifications of planned sampling activities and work closely with the approved laboratories to ensure available capacity. If an sample backlogs threaten to occur, the STRs work with the projects and the laboratories to ensure that the samples do not exceed the stipulated hold times. The FEMP has contracted with multiple laboratories to perform our standard analyses, thus avoiding the danger of relying on the capacity of a single laboratory.

It is clearly stated in the SCQ that only those laboratory facilities that have been audited and approved may perform analytical services for the FEMP. Analyses from an unapproved facility will not be accepted, regardless of that facility's corporate affiliation with an approved laboratory.

Action: No action required.

139. Commenting Organization: OEPA Page #: E-3 Commentor: HSI GeoTrans  
 Section #: E.2.2 Line #: 6-14  
 Original Specific Comment #: 24

Comment: Will the blind QC samples be different for each lab or will they be splits of the same sample? It is not unusual for different laboratories to produce different results for the same sample. Regardless, the performance criteria should be clearly specified in this section. What action will occur if the performance criteria are not met?

Response: Laboratories receive identical samples for performance review analyses. The reported results are compared to the performance of all participating laboratories for the past twelve month period. Reported results must be within the acceptance range of  $\pm 3$  standard deviations. If a laboratory reports results that fail to meet these acceptance criteria, the FEMP QA group issues a Nonconformance Report to the laboratory (see Section 15.1.2.1). The Subcontract Technical Representative may decide to cease shipping FEMP samples to laboratories that continue to report IDC results that fail to meet these acceptance criteria.

Action: Section E.2.2 (page E-3, lines 6-16) has been changed as follows:

To assure data comparability, each laboratory must participate in the Interlaboratory Data Comparability (IDC) program. This program consists of analysis by each laboratory of blind QC samples, such as split samples, matrix spikes, matrix spike duplicates, duplicate samples, or traceable standards (i.e., USEPA, National Institute of Standards and Technology) prepared by FDF. ~~The reported results are compared to the performance of all participating laboratories for the past twelve month period. Reported results must be within the acceptance range of  $\pm 3$  standard deviations. The FEMP QA group will issue a Nonconformance Report (see Section 15.1.2.1) to a laboratory that fails to meet these acceptance criteria.~~

The group administering the IDC program shall supply a monthly report to the subcontract technical representative (STR), summarizing laboratory performance on FEMP-supplied blind samples during the month and over the life of the contract. This report shall include a narrative summary and copies of IDC program results, with a performance analysis, received during the month. ~~The STR may stop shipping FEMP samples to laboratories that repeatedly fail to meet these acceptance criteria.~~  
 Participation in the IDC program is not a requirement for geotechnical laboratories, due

to the limited availability of standard materials and due to the fact that analyses are not performed by multiple laboratories.

140. Commenting Organization: OEPA Commentor: OFFO  
 Section #: F.2.3 Page #: F-2 Line #: 23  
 Original Specific Comment #: 25  
 Comment: Are data qualifiers used in electronically transmitted data? Please describe if data qualifiers are used in data that is available to the public, or if only certain qualified data are made available.  
 Response: The laboratory qualifiers are included in any data that is electronically transmitted to the FEMP from contract laboratories. As specified by Section 4.4.2.3 (page 4-11, lines 40-42) all analytical data, including validated data, that was generated in support of CERCLA decision making, become part of the CERCLA Administrative Record of Post Record of Decision Files. As stated in Section 4.4.2 (page 4-10, line 15), these files are available to the public.  
 Action: No action required.
141. Commenting Organization: OEPA Commentor: OFFO  
 Section #: F.3.2 Page #: F-2 Line #: 49  
 Original Specific Comment #: 26  
 Comment: The text states that recorded data is referenced to a location through the state of Ohio planar coordinate system. Please further describe how this data appears, i.e., as points on a map, written coordinates, etc.  
 Response: When sample locations are created, the coordinates for these locations are surveyed by a professional surveyor using the State Planar Coordinate System 1983. The northing and easting of each sample location are entered into the FEMP environmental data management system and linked to associated sampling, QC, and analytical information. Any subsequent mapping or referencing of these locations is done using the coordinate data in the SED.  
 Action: The following sentence has been added to Section F.2 (Page F-2, Line 50): "The northing and easting of each sample location are entered into the FEMP environmental data management system (See F.4) and linked with all information for that sample, including sampling information, QC records, and analytical results."
142. Commenting Organization: OEPA Commentor: HSI GeoTrans  
 Section #: F.3.4 Page #: F-3 Line #: 13-16  
 Original Specific Comment #: 32  
 Comment: A consistent reporting format for laboratory data packages should be required and referenced here in the text.  
 Response: We disagree with the comment. Data reporting forms are specified in the laboratory contracts and vary according to the general type of sample (e.g., organic, inorganic, or radiochemical). Also, reporting formats are more rigid for CLP-type analyses and more flexible for others, such as water quality parameters (e.g., fluoride, nitrate, etc.). Given the diverse set of contaminants present at the FEMP and the broad applicability of this document (CERCLA, RCRA, CAA, NPDES), the SCQ cannot and should not dictate standard reporting formats for all analyses.  
 Action: No action required.
143. Commenting Organization: OEPA Commentor: OFFO  
 Section #: F.3.6 Page #: F-3 Line #: 24  
 Original Specific Comment #: 27  
 Comment: Who are the data validators that review data packages and assign qualifiers? Are these FDF/DOE employees or an independent group?  
 Response: Data validators are currently subcontractors and FDF employees. Note that Section F.3.6 provides a brief description of data validation. The requirements for the

validation process and the validators are identified in Appendix D. To clearly identify those requirements and better answer the concerns of this comment, we have moved the last paragraph of D.2.2 (formerly page D-2, lines 14-21) to Section D.3 "Organizational Responsibilities and Functions" as the new paragraph #2.

Action: The following has been moved from D.2.2 (page D-2, lines 14-21) to Section D.3 (page D-10, new lines 14-21):

It is not a requirement that all data validation functions be performed by the data validation group of the FEMP data quality organization. Validation functions can be done by other qualified groups at the direction of the FEMP data generating group. However, the data validators shall be independent of the data user and the laboratory producing the data, and they must meet the requirements of this SCQ and the sitewide data validation procedure. FEMP data validators must meet the training requirements listed in the FEMP Data Validation Procedure. Training requirements for subcontractor validators are listed within the individual contracts.

144. Commenting Organization: OEPA Commentor: OFFO  
 Section #: F.4.1 Page #: F-4 Line #: 36  
 Original Specific Comment #: 28  
 Comment: An explanation of the FACTS system and included subsystems may be easier to understand if a graphical explanation of the subsystems and how they are linked is included. This comment is also applicable to the SED section in F.4.3.  
 Response: We agree with the comment.  
 Action: Figure F-1, "Relationship of FEMP Environmental Databases" has been added to Appendix A, new page A-4. A copy of the new figure is attached at the end of these comments.

145. Commenting Organization: OEPA Commentor: OFFO  
 Section #: F.5.1 Page #: F-7 Line #: 17  
 Original Specific Comment #: 29  
 Comment: Please describe the various organizations that maintain the ORACLE database.  
 Response: The FEMP Information Management Project (IM) maintains the basic infrastructure for the electronic data management system. They manage the hardware, network, backups, licensing, and other basic functions required for a functioning system. The IM group performs their tasks in accordance with the applicable DOE Orders and FEMP procedures.

The Remedial Data Management group maintains the central functions of the ORACLE database, including access control, control of software applications, and the regular operation of the database. They perform their tasks in accordance with applicable DOE Orders and the guidelines of the IM Functional Area Manager.

User groups, such as Analytical Laboratory Services Project, Remedial Data Management, Sample Management Office, and Remedial Data Quality are responsible for entering data into the database. They perform their tasks in accordance with FEMP procedures and the guidelines of the IM Functional Area Manager.

However, many of these responsibilities are subject to organizational restructuring. This level of detail is beyond the scope of a QA requirements document such as the SCQ and should not be included in Appendix F.

Action: No action required.

146. Commenting Organization: OEPA Page #: F-7 Commentor: OFFO  
 Section #: F.5.1 Line #: 32  
 Original Specific Comment #: 30  
 Comment: Please explain the meaning of the term "normalized" as it applies to the ORACLE database.  
 Response: A "normalized" database design is one in which each table has exactly one primary key, there are no repeating groups, and all the fields in the table are dependent solely on the table's primary key. Normalization is a standard database design technique that results in well-designed tables.  
 Action: Section F.5.1 (page F-7, line 32) has been changed to "The ~~SED is designed to minimize data redundancy~~ to the highest degree practical..."
147. Commenting Organization: OEPA Page #: F-10 Commentor: OFFO  
 Section #: F.7 Line #: 14  
 Original Specific Comment #: 31  
 Comment: Please define the term "cut-over".  
 Response: The term "cut-over" refers to the process of making a software system available to the user community for general use. Section F.7, while consistent in intent with standard software development methodology, does not reflect the current wording of existing guidelines maintained by the FEMP Information Management group.  
 Action: Section F.7 (page F-10, lines 1-23) has been changed to the following:  
  
 "New software developed in support of environmental data management activities shall follow a standard, structured software development life-cycle methodology, which shall include the following phases:
- A: Project initiation;
  - B: Requirements definition;
  - C: Feasibility;
  - D: Analysis and design;
  - E: Generation;
  - F: Implementation;
  - G: Maintenance."
148. Commenting Organization: OEPA Page #: G-7 Commentor: HSI GeoTrans  
 Section #: Table G-1 Line #: Footnotes  
 Original Specific Comment #: 33  
 Comment: Add footnote to this table and/or Appendix A (page 23, References) that specifies the use of Update 3 (June 13, 1997) or most recent version for SW-846 methods.  
 Response: We agree with the comment.  
 Action: Reference F in Table 6-1 (page A-23) was changed to the following:  
  
 "SW-846, 1997, USEPA, Office of Solid Wastes, Washington, D.C."  
  
 The following note was added at the end of Table G-1:  
  
 "Note: The analytical and prep methods in Table G-1 are current as of 1/23/98. The most current promulgated methods shall be used."

149. Commenting Organization: OEPA Commentor: HSI GeoTrans  
 Section #: J.4.1.2 Page #: J-2 Line #: 16  
 Original Specific Comment #: 34  
 Comment: The lithologic log should also include the boring identifier, logging geologist, drilling rig make/model, and drilling company name.  
 Response: This information will be added to J.4.1.2., however, the lithologic log may be used to describe material from penetrations other than boreholes (e.g., trenches dug with a backhoe), so instead of "boring identifier" we suggest the term "Location identifier".  
 Action: The following changes were made to Section J.4.1.2 (page J-2, line 34):

- ~~A:~~ ~~Location identifier;~~  
~~B:~~ Date started and date completed;  
~~B:~~ ~~Geologist (logging);~~  
~~C:~~ ~~Drilling rig make/model;~~  
~~D:~~ ~~Drilling contractor;~~  
~~E:~~ Standard penetration test (if applicable);"

Subsequent items were renumbered as necessary.

150. Commenting Organization: OEPA Commentor: HSI GeoTrans  
 Section #: J.4.1.3 Page #: J-3 Line #: 17  
 Original Specific Comment #: 35  
 Comment: The borehole abandonment record should also include the borehole identifier.  
 Response: We agree with the comment.  
 Action: The following was added to Section J.4.2.3 (page J-3, line 17);

- ~~A:~~ ~~Borehole identifier;"~~

Subsequent items were renumbered.

151. Commenting Organization: OEPA Commentor: HSI GeoTrans  
 Section #: J.4.1.4 Page #: J-3 Line #: 33  
 Original Specific Comment #: 36  
 Comment: The well completion log should also include the well identifier, drilling rig make/model, drilling company name, and supervising geologist name.  
 Response: We agree with the comment.  
 Action: The following was added to J.4.1.4 (page J-3, line 33)

- ~~A:~~ ~~Well identifier;~~  
~~B:~~ ~~Geologist (field);~~  
~~C:~~ ~~Drilling rig make/model;~~  
~~D:~~ ~~Drilling contractor;"~~

Subsequent items were renumbered.

152. Commenting Organization: OEPA

Commentor: HSI GeoTrans

Section #: J.4.1.5

Page #: J-4

Line #: 16

Original Specific Comment #: 37

Comment: The plugging and abandonment form should also include the well identifier.

Response: We agree with the comment.

Action: The following was added to J.4.1.5 (page J-4, line 17):

~~A. Borehole identifier;~~

Subsequent items were renumbered.

153. Commenting Organization: OEPA

Commentor: HSI GeoTrans

Section #: J.4.1.6

Page #: J-4

Line #: 37

Original Specific Comment #: 38

Comment: The monitoring well development form should also include the well identifier and a description of the method of purge water containment and management. The list of information presented here should be consistent with the requirements presented in Section J.4.4.G.

Response: We agree that well identifier and purge water containment and disposition should be added to list. We also agree that J.4.1.6 should agree with list of information presented in J.4.4.G. However, the requirements list in J.4.4.G repeats information in J.4.1.6. We suggest deletion of list in J.4.4.G.

Action: The following changes were made to Section J.4.1.6 (page J-4, line 39 through page J-5, line 6):

“...At a minimum, the monitoring well development form shall provide the following information:

~~A. Well identifier;~~

B. Development start and completion dates and times;

C. Water level before and after development;

D. Total depth of well before and after development;

E. Total volume of water to be removed;

F. Type of development equipment used;

G. Description of development method;

H. Total volume of water removed ~~and time of removal;~~

I. Water quality field parameter data ~~taken at regular intervals during development;~~

J. Description of water/sediment removed;

~~K. Purge water containment and disposition;~~

The following changes were made to Section J.4.4.G (page J-19, lines 25-50):

“Include the following data on the form:” and items 1 through 10 were deleted.

154. Commenting Organization: OEPA Commentor: HSI GeoTrans  
 Section #: J.4.2 Page #: J-7 Line #: 22  
 Original Specific Comment #: 39  
 Comment: "Geoprobe" is a trade name and should be replaced with the term "direct push" for generality.  
 Response: We agree with the comment.  
 Action: We performed a global search for "Geoprobe" and replaced it with "direct push" in Sections J.4.2.A.11 (page J-7, line 23) and K.5.3.J - NOTE (page K-32, line 37).  
 We deleted the term "Geoprobe" from Sections K.4.2.2 (page K-9, line 32) and K.8.5 (page K-56, line 24).
155. Commenting Organization: OEPA Commentor: HSI GeoTrans  
 Section #: J.4.3.2 Page #: J-12 Line #: 41  
 Original Specific Comment #: 40  
 Comment: The 5-foot bentonite seal should be placed on top of the native collapse material consistent with Item 3 in this list.  
 Response: See response to DOE Comment #115.  
 Action: No action required.
156. Commenting Organization: OEPA Commentor: OFFO  
 Section #: K.3.1 Page #: K-1 Line #: 36-41  
 Original Specific Comment #: 41  
 Comment: Is the project manager responsible for coordinating project efforts that may involve Ohio EPA or USEPA, i.e., split sampling or oversight activities? Or is this project-specific?  
 Response: Comment noted.  
 Action: K.3.1 (page K-1, lines 36-41) was changed to the following:  
~~"The project manager is responsible for coordinating all project activities, including those involving OEPA and US EPA split sampling and oversight activities. At the project manager's discretion, this responsibility may be delegated to project team leaders directing the day-to-day activities to ensure the most efficient and effective lines of communication are established. The project manager is also responsible for ensuring that all activities are conducted in accordance with the ARARs for the project under his control."~~
157. Commenting Organization: OEPA Commentor: OFFO  
 Section #: K.4.1 Page #: K-2 Line #: 36  
 Original Specific Comment #: 42  
 Comment: Line 36 is confusing, please omit. The specific field measurements are already outlined in detail in the SCQ for each media.  
 Response: We agree with the comment.  
 Action: Section K.4.1 (page K-2, lines 36-37) has been changed as follows:  
 The sentence, "Dissolved oxygen, turbidity, and redox potential are also commonly performed field measurements." has been deleted.
158. Commenting Organization: OEPA Commentor: HSI GeoTrans  
 Section #: K.4.1.5 Page #: K-6 Line #: 35  
 Original Specific Comment #: 43  
 Comment: The referenced bullet states that the redox meter will be calibrated weekly while all other meters are calibrated on a daily basis. For consistency, the redox meter should also be calibrated each day.

Response: Calibration of instrumentation is not based on a "consistent" timetable for all instrumentation (i.e., not all instrumentation must be calibrated weekly). Calibration frequency depends on the manufacturer's recommendations.

Action: Section K.4.1.5. (Page K-6, line 35) "Weekly" was deleted.

159. Commenting Organization: OEPA Commentor: OFFO  
 Section #: K.4.2.2 Page #: K-9&10  
 Original Specific Comment #: 44 Line #: 49-14

Comment: Line 49 on page 9 begins by saying that certain conditions need to be avoided to collect a representative groundwater sample. Though, the following items listed explain what is "not" supposed to take place, they do not explain "how" to avoid it from happening. It would make sense to have both explanations included in the criteria listed.

Response: We agree with the comment. Explanations should be provided so that representative samples can be collected.

Action: Section K.4.2.2 A.4 (page K-9, line 35 through page K-10, line 4) has been replaced with the following, and these additional sections have been added:

~~4. Ensure sample temperatures do not change rapidly from collection to preservation to avoid affecting chemical reaction rates, reversing cationic and anionic exchanges in solids, and altering microbial growth. Temperature changes should be avoided by preserving analytes immediately following sample collection (i.e., chemical and temperature preservation) and protecting samples from temperature extremes.~~

~~5. Ensure volatilization and degassing are minimized during sample collection. Avoidance of volatilization and degassing can be minimized by using dedicated pumps or bladder pumps, and ensuring samples are collected to minimize turbulence.~~

~~6. Minimize the effects on organic samples of photo degradation and cross-contamination of airborne organic contaminants by ensuring that samples are collected immediately into amber bottles, as required in Table 6-1 and that all sources of airborne organic contaminants (e.g., vehicle exhaust, etc.) are removed from the area.~~

~~7. Eliminate cross-contamination by ensuring all equipment coming into contact with the samples is properly decontaminated; samples are collected from least contaminated areas to most contaminated areas, dedicated equipment is used where feasible, and equipment and materials coming into contact with the sample is minimized.~~

Subsequent sections have been renumbered.

160. Commenting Organization: OEPA Commentor: HSI GeoTrans  
 Section #: K.4.2.2 Page #: K-11  
 Original Specific Comment #: 45 Line #: 5

Comment: The SCQ should provide guidance as to when one of the well purging procedures is preferable to the other.

Response: We agree with the comment.

Action: The following changes were made to Section K.4.2.2.A.9 (page K-11, lines 5-9): The text was divided into two paragraphs.

~~"Two methods for purging...from the well casing and screen. Standard purge is used when the well is not equipped with dedicated equipment and when recharge rates are~~



165. Commenting Organization: OEPA Commentor: OFFO  
 Section #: K.4.2.3.2 Page #: K-15 Line #: 25-27  
 Original Specific Comment #: 50  
 Comment: This paragraph is unclear. There is no explanation on how it is determined that a sample requires additional preservative, when it is determined, i.e., in the field or laboratory, and where the sample is brought to its desired pH. Please clarify.  
 Response: We agree with the comment.  
 Action: Section K.4.2.3.2 D (page K-15, lines 25-27) was changed to read: "Preserve samples ~~in the field~~ in accordance with Table 6-1 (Appendix A). ~~Verify pH using pH paper by dropping drops from sample container or sample container lid onto pH paper. Do not immerse pH paper in the sample.~~ If sample requires pH adjustment, add appropriate preservative drop by drop to achieve desired pH value."
166. Commenting Organization: OEPA Commentor: OFFO  
 Section #: K.4.3.3.1 Page #: K-21 Line #: 27  
 Original Specific Comment #: 51  
 Comment: Sentence is incorrect. VOCs are to be collected into a preserved container according to Section K.4.2.3.1, page 14, Item C, Line 45.  
 Response: We agree with the comment.  
 Action: Section K.4.3.3.1. A (page K-21, lines 27-29) was deleted and the subsequent items were renumbered.  
  
 Original Section K.4.3.3.1. B (page K-21, lines 31-32) was changed as follows:  
  
~~"If collecting VOC samples requiring preservation, then use an unpreserved sample container (e.g., stainless steel, teflon, or glass scoop, ladle, bucket, or bailer) to collect the sample. Slowly pour the sample into a preserved vial as specified in Table 6-1 (Appendix A)."~~  
  
 Subsequent items were renumbered.
167. Commenting Organization: OEPA Commentor: OFFO  
 Section #: K.4.3.3.3 Page #: K-22 Line #: 1-10  
 Original Specific Comment #: 52  
 Comment: This section does not mention sample preservation. Please clarify.  
 Response: We agree with the comment.  
 Action: Section K.4.3.3.3 A (page K-22, line 2) has been changed to: "Collect samples for unfiltered metals into an unpreserved container. ~~Pour the sample into a preserved container as~~ specified in Table 6-1 (Appendix A)."  
  
 Section K.4.3.3.3 B (page K-22, line 6) has been changed to: "... into the bottle ~~(i.e., bottle is prepreserved)~~, use a stainless steel,..."
168. Commenting Organization: OEPA Commentor: OFFO  
 Section #: K.4.4.1 Page #: K-23 Line #: 50  
 Original Specific Comment #: 53  
 Comment: By definition, this does not describe a composite sample, Please clarify.  
 Response: We agree with the comment.  
 Action: The following was added to K.4.4.1 (page K-23, line 33): "... at outfalls 4001 and 4601. ~~The automatic sampler collects composite samples by measuring the flow of the sampled media and incrementally drawing a set volume of sample. Each increment is discharged into one large sample container. The automatic sampler collects the total flow-weighted composite volume over a 24-hour time period. At the end of 24 hours, samples are taken from the composited volume. Grab samples are required...~~"

169. Commenting Organization: OEPA Commentor: OFFO  
 Section #: K.4.4.2 Page #: K-24  
 Original Specific Comment #: 54 Line #: 48  
 Comment: A field measurement is not a type of sample that's collected. Field parameters are usually measured first from a separate container, but taken from the same volume of water that was also collected for the samples.  
 Response: We agree with the comment. Please note that the water volume from which the field measurements are obtained is discarded. This volume of water is NOT then collected as a sample. Additionally, we suggest another minor change to this section.  
 Action: The following changes were made:  
 Section K.4.4.2 (page K-24, line 41): "Characterization" was deleted.  
 Section K.4.4.2.A.1 (page K-24, line 48): the following was added, "~~water quality sample for determination of~~ field measurements..."  
 Section K.4.2.2.A.21.a (page K-13, line 8) was also changed for consistency: "~~Water quality sample for determination of~~ field measurements;"
170. Commenting Organization: OEPA Commentor: HSI GeoTrans  
 Section #: K.4.6 Page #: K-27  
 Original Specific Comment #: 55 Line #: 30  
 Comment: The minimum requirements for reagent-grade water should be specified in this SCQ and referenced in the indicated text.  
 Response: We agree with the comment. "Certified deionized water" and "certified deionized, organic-free water" are defined in Section K.11.1. The term "reagent-grade water" should be changed to either "certified deionized water" or "certified deionized, organic-free water" to reflect that which is specified in Section K.11.1.  
 Action: K.4.6.A (page K-27, lines 30-31) has been changed as follows: "~~Certified deionized or certified deionized, organic-free water (see K.11.1)~~ shall be poured into the sample container specified in Table 6-1 (Appendix A)."  
 K.4.6.C (page K-27, lines 36-37) has been changed as follows: "Field blanks are prepared at the sampling site by pouring ~~certified deionized or certified deionized, organic-free~~ water (see K.11.1) into the sample containers..."  
 K.4.6.D (page K-27, lines 43-44) has been changed as follows: "... by pouring (page K-27, lines 36-37) has been changed as follows: "~~or pumping certified deionized or certified deionized, organic-free water (see K.11.1)~~ through the sample collection device(s)..."  
 K.4.6.G (page K-28, lines 8-9) has been changed as follows: "...by filling an appropriate container with ~~certified deionized or certified deionized, organic-free water (see K.11.1)~~, properly preserving it and..."  
 K.5.4.B.1 (page K-34, lines 5-6) has been changed as follows: "... by pouring ~~certified deionized or certified deionized, organic-free water (see K.11.1)~~ over the equipment..."  
 Section 4.1.1 - Trip blank ( page 4-3, line 4) has been changed as follows: "... by pouring ~~certified deionized or certified deionized, organic-free water (see K.11.1)~~ into a volatile organic analysis (VOA) bottle..."  
 Section 4.1.1 - Field blank ( page 4-3, lines 15-16) has been changed as follows: "... by pouring ~~certified deionized or certified deionized, organic-free water (see K.11.1)~~ into appropriate containers..."

Section 4.1.1 - Preservative blank ( page 4-3, lines 32-33) has been changed as follows:  
 "... by pouring ~~certified deionized or certified deionized, organic-free water~~  
 (see K.11.1) into an appropriate sample container..."

171. Commenting Organization: OEPA Page #: K-27 Commentor: HSI GeoTrans Line #: 30  
 Section #: K.4.6  
 Original Specific Comment #: 56  
 Comment: For consistency with Section K.11.1, certified deionized water as defined in Section K.11.1 should be specified for the QA procedures described in this section in place of reagent water.  
 Response: We agree with the comment.  
 Action: See action for DOE Comment #132.
172. Commenting Organization: OEPA Page #: K-29 Commentor: OFFO Line #: 35-39  
 Section #: K.5.1  
 Original Specific Comment #: 57  
 Comment: Items G and H are unclear, especially transferring VOC samples from one container to another. This would cause the VOCs to volatilize and the sample would not be a representative one.  
 Response: When possible, VOC soil samples at the FEMP are collected using a direct-push coring tube as specified in K.5.1.F. Secondary handling is not necessary. However, when the direct-push method cannot be used, samples must be collected via previously used methods and the requirements of K.5.1.G apply.  
 Action: Section K.5.1.G (page K-29, lines 35-36) has been changed as follows:  
~~"If a VOC soil sample cannot be collected in a direct-push tube, transfer the VOC sample directly to..."~~
173. Commenting Organization: OEPA Page #: K-32 Commentor: HSI GeoTrans Line #: 24  
 Section #: K.5.3  
 Original Specific Comment #: 58  
 Comment: Head space VOC screening should also be required and described in this section. This procedure involves placing into a sealed container a portion of the soil sample and leaving an air head space above the soil. The organic vapor concentration in the head space is then measured after a prescribed length of time.  
 Response: We agree with the comment.  
 Action: The following was added to Section K.5.3.J (page K-32, line 35) as a new item 4:  
~~"4. If required, VOC screening of soil sample in container may be performed by placing a portion of the soil sample into a container and sealing the container with aluminum foil and an air-tight screw-on lid. The container is then placed in an area where the temperature is greater than 60°F for 5-10 minutes. The lid is then removed and the aluminum foil punctured with the sample line tip of the PPD. The sample measurement is obtained by noting the peak measurement obtained from the void space above the soil."~~
- The subsequent item was renumbered.
174. Commenting Organization: OEPA Page #: K-44 Commentor: HSI GeoTrans Line #: 22  
 Section #: K.6.2.4  
 Original Specific Comment #: 59  
 Comment: Are there specific types or brands of pumps, filters, and counting instruments that will be used?  
 Response: FDF has an approved technical basis document which implements the workplace air monitoring requirements of 10 CFR 835. This document specifies the use of sampling

and monitoring equipment commonly used throughout the nuclear industry. The selection of this equipment is not subject to the requirements of the SCQ.

Action: No action required.

175. Commenting Organization: OEPA  
Section #: K.6.4.1  
Original Specific Comment #: 60  
Comment: The text should also mention that high concentrations of methane will also affect PID readings.  
Response: We agree that high concentrations of methane will affect PID readings.  
Action: Section K.6.4.1 (page K-45, lines 29-30) Has been changed as follows: "...The instrument may be affected by humidity, electromagnetic fields, ~~high concentrations of many compounds (e.g., methane)~~ and certain instruments..."
- Page #: K-45  
Commentor: HSI GeoTrans  
Line #: 29

**New Figures and Forms**

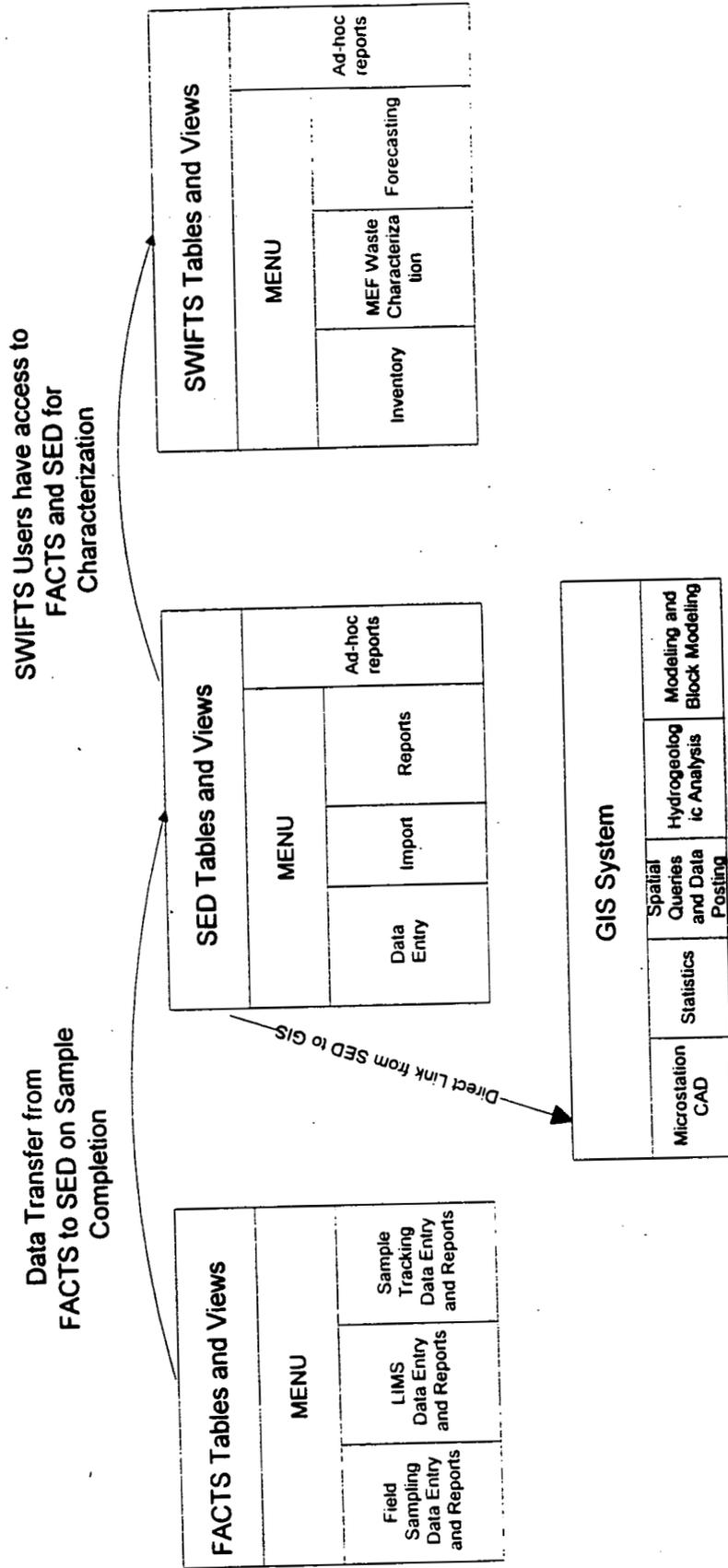


Figure F-1. Relationship of FEMF Environmental Databases.

NOTE: For "OBSERVATIONS", "OBSERVATIONS with CORRECTIVE ACTION RESPONSES" and "FINDINGS" not hardware/Record Deviations). This form may be used as a data input sheet and does not need to be issued as an official QA Record, per QA-0001

1304

ASSESSOR	
Nonconformance Number & Revision	
Dates	Date Discovered: _____ Date Report Issued: _____
Type of Nonconformance	<input type="checkbox"/> Observation <input type="checkbox"/> Observation w/CA Response <input type="checkbox"/> Finding (Processes and Programs) <input type="checkbox"/> Finding (Hardware/Record Deviation) <input type="checkbox"/> Concern
Facility, Location or Building	
Project/Activity @ Fac/Loc/Bldg	
Hazard Category	Nuclear: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> Radiological Non-Nuclear: <input type="checkbox"/> High Hazard <input type="checkbox"/> Moderate Hazard <input type="checkbox"/> Low Hazard Industrial: <input type="checkbox"/> Hazardous Waste Activity <input type="checkbox"/> Standard Industrial Hazard <input type="checkbox"/> FEMP SIH
PAAA PRESCREENING-Did event involve: HazCat 1, 2, 3 (830.120 QA Requirements) and/or Rad. Fac. & Occup. Rad. Protection?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
Assessment Number	
Assessment	<input type="checkbox"/> Internal <input type="checkbox"/> External (OEPA, DOE) <input type="checkbox"/> Supplier/Vendor _____
Assessment Type	<input type="checkbox"/> Audit <input type="checkbox"/> Surveillance <input type="checkbox"/> Inspection <input type="checkbox"/> Other _____
Responsible Division	<input type="checkbox"/> S&WP <input type="checkbox"/> WMT&SP <input type="checkbox"/> FC&DP <input type="checkbox"/> O&PI <input type="checkbox"/> PS
Responsible Department	
Responsible Project/Division Representative	
Functional Area (choose any that apply)	<input type="checkbox"/> CM <input type="checkbox"/> ED <input type="checkbox"/> RD <input type="checkbox"/> MS <input type="checkbox"/> QA <input type="checkbox"/> AC <input type="checkbox"/> PM <input type="checkbox"/> PI <input type="checkbox"/> FM <input type="checkbox"/> EP <input type="checkbox"/> EW <input type="checkbox"/> MT <input type="checkbox"/> OP <input type="checkbox"/> PT <input type="checkbox"/> SE <input type="checkbox"/> TR <input type="checkbox"/> CT <input type="checkbox"/> HR <input type="checkbox"/> PC <input type="checkbox"/> EM <input type="checkbox"/> FP <input type="checkbox"/> NS <input type="checkbox"/> SH <input type="checkbox"/> RP
QA Criteria (choose one that applies)	<input type="checkbox"/> 1 Program <input type="checkbox"/> 2 Training <input type="checkbox"/> 3 Qual. Improv <input type="checkbox"/> 4 Doc/Rec <input type="checkbox"/> 5 Work process <input type="checkbox"/> 6 Design. <input type="checkbox"/> 7 Procur <input type="checkbox"/> 8 Inspect/Test <input type="checkbox"/> 9 Mgmt Asmnt <input type="checkbox"/> 10 Indp Asmnt
Requirement (include the Procedure/Specification Number, page and/or paragraph number and QUOTE the requirement word for word)	<input type="checkbox"/> Attachment
Nonconformance (include details such as supplier names, container numbers, purchase order, work order, or requisition numbers) and clearly describe the deviation from the "Requirements")	Nonconformance Title or Short Description: _____ <input type="checkbox"/> Attachment
Tagging Required / Number of Tags	<input type="checkbox"/> Yes <input type="checkbox"/> No Number of Tags: _____
Prepared by: (print name, signature, phone, mail stop, and date)	Name: _____ Signature: _____ Phone: _____ Mail Stop: _____ Date: _____
ASSESSOR'S MANAGER'S REVIEW	
Assessor's Manager Prescreen for Potential PAAA (Use Attach. F & G of QA-0001)	HazCat 1, 2, or 3? <input type="checkbox"/> Yes <input type="checkbox"/> No Radiological Facility/Occupational Rad Protection? <input type="checkbox"/> Yes <input type="checkbox"/> No Potential PAAA Applicability <input type="checkbox"/> Yes <input type="checkbox"/> No
Assessor's Manager: (print name, signature, date)	Name: _____ Signature: _____ Date: _____
Response Due Date From Resp. Organiz.	

FOR TECHNICAL ASSISTANCE, CONTACT THE DATABASE ADMINISTRATOR AT 7526, FAX 7540, MS90  
FS-F-4370.RV8 (05/21/97)

000091

Deviations).

NOTE: For "OBSERVATIONS", "OBSERVATIONS with CORRECTIVE ACTION RESPONSES" and "FINDINGS" not Hardware Record this form may be used as a data input sheet and does not need to be issued as an official QA Record per QA 100.

RESPONSIBLE ORGANIZATION'S CORRECTIVE ACTION RESPONSE		<b>1304</b>
Root Cause (Concerns only)	<input type="checkbox"/> 1H (human perf.) <input type="checkbox"/> 1N (nat. phenom/sabotage) <input type="checkbox"/> 1E (equip.) <input type="checkbox"/> 1Z (other)	
Root Cause Code(s) (from TapRoot)(Concerns)		
Root Cause Analysis Report Number	<input type="checkbox"/> Attachment	
Corrective Action (CA) Description and Disposition (A disposition of Accept-as-is or Repair REQUIRES a written Technical Concurrence/Justification below)	<input type="checkbox"/> Accept-as-is <input type="checkbox"/> Repair <input type="checkbox"/> Rework <input type="checkbox"/> Reject <input type="checkbox"/> Other  Technical Justification (Accept-as-is or Repair): <input type="checkbox"/> Attachment	
Technical Concurrence/Justification (print name, signature, date)	Name: _____ Signature: _____ Date: _____	
Was a Design Change Notice Required?	<input type="checkbox"/> Yes <input type="checkbox"/> No    DCN # _____    Date Issued _____	
Was a USQD Performed?	<input type="checkbox"/> Yes <input type="checkbox"/> No    USQD # _____    Date Issued _____	
Actions taken to Prevent Recurrence	<input type="checkbox"/> Attachment	
Proposed Completion Date For CA		
Responsible Project/Division Representative (print name, signature, and date)	Name: _____ Signature: _____ Date: _____	
EVALUATION OF THE CORRECTIVE ACTION RESPONSE BY THE ASSESSOR		
Response Acceptable?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Assessor's Printed Name, Signature, Date	Name: _____ Signature: _____ Date: _____	
COMPLETION OF THE CORRECTIVE ACTIONS BY THE RESPONSIBLE ORGANIZATION		
Date Corrective Action Completed		
Responsible Project/Division Representative (print name, signature, and date)	Name: _____ Signature: _____ Date: _____	
VERIFICATION OF COMPLETED CORRECTIVE ACTIONS BY THE ASSESSOR		
Date Verified as Completed		
Verification Action (Describe what objective evidence was examined to verify completion of this action)	<input type="checkbox"/> Attachment	
Verified by (print name, signature, and date)	Name: _____ Signature: _____ Date: _____	
CLOSURE BY THE ASSESSOR'S MANAGER		
Assessor's Manager (print name, signature, and date)	Name: _____ Signature: _____ Date: _____	
Date Report Closed		

FOR TECHNICAL ASSISTANCE, CONTACT THE DATABASE ADMINISTRATOR AT 7526, FAX 7540, MS90  
FS-F-4370.RV8 (05/21/97)

Fluor Daniel Fernald  
PO Box 538704  
Cincinnati, OH 45253-8704

DATE:

TO: (Lab Manager)

COMPANY NAME: (Lab Name)

ADDRESS: (Address)

FAX NUMBER:

TELEPHONE:

FROM:

FAX:

TELEPHONE:

RIR ID: 3789

Priority?: No  
SDG Number:

Acknowledgement Due:  
Final Resolution Due:

Release Numbers Affected: 1000012345

FDF requests that you please submit a signed and dated CLP Inorganic cover page for this release.

If you have any questions or concerns, please call me.

Thank you,

RESPONSE TO RIR:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

RESPONDER'S SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

Requestor:

## RIR REVIEW SHEET

Date submitted to requestor:

RIR ID	Requestor	Laboratory	Release Number(s)
3789		(Lab Name)	1000012345

The attached is a copy of the response received for the requested RIR.

Upon review, please complete the following as applicable:

The response received was:

- Acceptable, and the RIR is closed
- Unacceptable, and the RIR is closed
- Unacceptable, and the RIR remains open

Actions to be taken:

- Resubmit RIR (provide text below)
- Resubmit RIR with attachment(s)
- Request conference call with TR and Laboratory

---



---



---



---

Requestor Signature

Date

**PLEASE RETURN TO RIR COORDINATOR UPON COMPLETION OF THE ABOVE**

### RIR COORDINATOR USE ONLY

Distribution, check as applicable:

- Records Management, original
- RIR file, copy
- Data Entry, copy
- Data Validation, copy
- Other
- None

1304

000095

# **ENCLOSURE 2**

## **MODEL QAPP CROSS REFERENCE TABLE**

### Model QAPP Cross Reference Table

The following table identifies the sections in the revised SCQ which address the requirements of the U.S. EPA Region 5 Superfund Model Quality Assurance Project Plan (QAPP), Revision 1, May 1996.

U.S. EPA Region 5 Model QAPP	FEMP SCQ
1. Project Description	Sections 1 & 2
2. Project Organization and Responsibility	Sections 3 & E
3. QA Objectives for Measurement Data	Sections 4 & E
4. Sampling Procedures	Sections 5, 6, J, K
5. Sample Custody	Sections 7, K
6. Calibration Procedures and Frequency	Sections 8 & I
7. Analytical Procedures	Sections 9 & G
8. Internal QC Checks and Frequency	Section 10
9. Data Reduction, Validation and Reporting	Sections 11, D, F
10. Performance and System Audits and Frequency	Sections 12 & E
11. Preventive Maintenance Procedures and Schedules	Section 13
12. Specific Routine Procedures Used to Assess Data Precision, Accuracy and Completeness	Section 14
13. Corrective Action	Section 15
14. Quality Assurance Reports to Management	Section 16