

**TRANSMITTAL OF COMMENT RESPONSES AND REVISED WORK PLAN FOR
THE OPERABLE UNIT 1 DEWATERING EXCAVATION EVALUATION PROGRAM**

08/21/19

**DOE-2336-94
DOE-FN EPA
 20
OU1**



Department of Energy
Fernald Environmental Management Project
P. O. Box 398705
Cincinnati, Ohio 45239-8705
(513) 648-3155

0011

AUG 21 1994

DOE-2336-94

Mr. James Saric, Remedial Project Manager
U.S. Environmental Protection Agency
Region V - 5HRE-8J
77 W Jackson Boulevard
Chicago, IL 60604-3590

Mr. Thomas Schneider, Project Manager
Ohio Environmental Protection Agency
401 East Fifth Street
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

TRANSMITTAL OF COMMENT RESPONSES AND REVISED WORK PLAN FOR THE OPERABLE UNIT ONE DEWATERING EXCAVATION EVALUATION PROGRAM

The purpose of this letter is to transmit the United States Department of Energy (U.S. DOE) comment responses and revised work plan for the Operable Unit 1 (OUI) Dewatering Excavation Evaluation Program (DEEP). This is in response to the comments provided by the United States Environmental Protection Agency (U.S. EPA) and the Ohio Environmental Protection Agency (OEPA) along with the conditional approval of the Deep Work Plan, received August 5, 1994.

If you have any questions concerning the above or if there are any additional questions regarding the enclosed submittal, please contact Randy Janke at (513) 648-3123.

Sincerely,

for

Jack R. Craig
Fernald Remediation action
Project Manager

FN:Lojek

Enclosure: As Stated

000001

cc w/enc:

G. Jablonowski, USEPA-V, AT-18J
P. Harris, OEPA-Dayton
J. Kwasniewski, OEPA-Columbus
M. Proffitt, OEPA-Dayton
R. Owen, ODOH
L. August, Geotrans
F. Bell, ATSDR
J. Michaels, PRC
AR Coordinator, FERMCO

cc w/o enc:

D. Kozlowski, EM-423, QO
G. Mitchell, OEPA-Dayton
J. Craig, DOE-FN
R. Hansen, DOE-FN
J. Reising, DOE-FN
R. Fellman, FERMCO
T. Hagen, FERMCO
J. Thiesing, FERMCO
M. Yates, FERMCO/9

**RESPONSE TO OHIO EPA TECHNICAL REVIEW COMMENTS ON THE
OPERABLE UNIT 1 DEWATERING EXCAVATION EVALUATION PROGRAM
TREATABILITY STUDY WORK PLAN
RECEIVED JULY 15, 1994**

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 1.1 Page #: 1-1 Line # Code: C
Original Comment #: 1

Comment: Paragraph #2 of this section states that radioactive waste consisting of naturally occurring radionuclides generated from uranium ore processing are stored in OU1. Not all of the radionuclides found in OU1 are naturally occurring. Please modify the text accordingly.

Response: Agree.

Action: Page 1-1, Section 1.1. Reference to "naturally occurring" radionuclides has been deleted.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 1.2 Page #: 1-2 Line #: 2 Code: C
Original Comment #: 2

Comment: This section states that Waste Pits 1, 2, and 3 were selected for the DEEP. Yet, no rationale is given in the text as to why these waste pits were selected over the other waste pits. Please explain.

Response: Comment Acknowledged. Initially, all of the waste units in Operable Unit 1 were considered for inclusion in the DEEP. However, as described in the text on Page 1-2, there were specific reasons that other pits were excluded. In addition, Waste Pits 1, 2, and 3 were, based on known information, judged to be adequate to provide representative information for the material requiring excavation. The waste pits selected for DEEP represent approximately 80 percent of the total material requiring dry mechanical excavation during final remediation.

Action: Page 1-2. The following text was added: "Initially, all of the waste units in Operable Unit 1 were considered for inclusion in the DEEP. The waste pits selected for DEEP represent approximately 80 percent of the total material requiring dry mechanical excavation during final remediation. However, there were specific reasons that the other waste pits were excluded. In addition, Waste Pits 1, 2, and 3 were judged to be adequate to provide representative information for the material requiring excavation based on known information."

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 1.3.3 Page #: 1-3 Line #: 7 Code: C

Original Comment #: 3

Comment: The third bullet cross-references a section in which the physical features of Waste Pits 1, 2, and 3 are described in further detail. The appropriate section number has been omitted. Please modify accordingly.

Response: Comment Acknowledged.

Action: The text was deleted in the rewrite of the DQO's, in response to U.S. EPA Comment #1.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 1.4.2 Page #: 1-5 Line #: Code: C

Original Comment #: 4

Comment: This section states that magnetic anomalies were detected across 35% of Waste Pit #2. Please describe in further detail where these anomalies were detected as were the areas in the Waste Pit #1 discussion in Section 1.4.1.

Response: Agree. Magnetic anomalies were indicated across 35 percent of the waste pit. Anomaly maps were published in the Operable Unit 1 Final Remedial Investigation Report. EM data were evaluated over 70 percent of the pit. High conductivity values were found in the north central, south central, and far southwestern area of Waste Pit 2.

Action: **Page 1-7, Section 1.4.1.** The following text has been added: "Anomaly maps were published in the Operable Unit 1 Final Remedial Investigation Report. EM data were evaluated for more than 70 percent of the pit. High conductivity values were found in the northeast, southeast, and western areas of Waste Pit 1."

Page 1-8, Section 1.4.2. The following text has been added: "Anomaly maps were published in the Operable Unit 1 Final Remedial Investigation Report. EM data were evaluated for more than 70 percent of the pit. High conductivity values were found in the north central, south central, and far southwestern areas of Waste Pit 2".

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 2.1.3 Page #: 2-2 Line #: Code: C
Original Comment #: 5

Comment: Please explain the rationale for selecting sampling points around the anomalies in the waste pits. The goal of a treatability study is to see if preferred techniques will work on larger scale. Since the waste pit anomalies would have to be addressed in the future, no treatability data would exist regarding the areas identified by the magnetic anomalies.

Response: Agree. The text explaining the rationale for sample point selection was inaccurate. The role of waste pit heterogeneity, especially in regard to magnetic anomalies, should be clarified. DEEP sampling is being performed for geotechnical purposes. That is, the drilling and collection of the samples in question are designed to obtain data on the waste that requires evaluation relative to the waste's ability to dewater, support loads, and handle easily. From a geotechnical perspective, the controlling medium in such analyses will be the soil or sludge-like wastes, rather than solid debris. For this reason, the drilling will attempt to focus on areas where the geotechnical sampling program will not likely be disturbed as a result of debris. As an example, by avoiding areas where metals exist, the potential to contact a metal drum or beam with the SPT equipment is minimized. If the split spoon hits a metal object, then blow count data would be much higher and as a result, skewed for analysis. However, the new text should state that the sampling and trenching will be performed in areas with and without magnetic anomalies.

Action: Page 2-2, Section 2.1.3. The following sentence has been deleted: "The heterogeneity of the waste pit contents was a key consideration in selecting the number and locations of the DEEP sampling points."

The next sentence was revised to read: "Sampling points were selected to provide a maximum amount of data from a minimum amount of sampling locations, and to minimize disturbance to known magnetic anomalies in the waste pits."

The following text has been added: "Magnetic anomaly maps were consulted when sampling and trenching locations were selected. However, a comparison of the magnetic anomaly maps (provided in the Final RI Report for Operable Unit 1) with the sampling locations (shown in Figure 2-1) dewatering and trenching locations (shown in Figure 3-1) demonstrates that sampling and trenching will occur in areas with and without magnetic anomalies; wet excavation, but no drilling, will be performed in areas with magnetic anomalies. The sampling is for geotechnical purposes and encountering debris would skew results. From a geotechnical perspective, the controlling medium in such analysis will be the soil or sludge-like wastes rather than solid debris. For this reason, the drilling will attempt to focus on areas where the program will not likely be disturbed as a result of debris."

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 2.1.3 Page #: 2-2 Line #: Code: E

Original Comment #: 6

Comment: In the last sentence of this paragraph please change know to known.

Response: Agree.

Action: Page 2-2. "Know" has been changed to "known".

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 2.1.4 Page #: 2-3 Line #: 2 Code: E,C

Original Comment #: 7

Comment: Please delete the word drilling. Also, this sentence states that the approximate depth of the waste pit liners have been determined. Please include these liner depths in a discussion of the waste pit characteristics.

Response: Comment Acknowledged. The depths to the liners are discussed in Table 1-2, page 1-8. Additional maps can be provided if necessary.

Action: Page 2-3. The word "drilling" has been deleted. Reference to Table 1-2 was added, as follows: "Table 1-2 identifies the depth to the liner of each waste pit included in the DEEP."

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 2.1.5 Page #: 2-3 Line #: Code: C

Original Comment #: 8

Comment: The third bullet in this section is very run on and unclear as if words and/or additional sentences are missing. Please review and modify accordingly.

Response: Agree.

Action: Page 2-3. The last sentence of the section was reworded as follows: "Such a delay would be to the detriment of the Operable Unit 1 remedial design process and cause it to proceed at risk."

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 2.2.2.1 Page #: 2-5 Line #: Code: C

Original Comment #: 9

Comment: The third paragraph in this section states that existing information will aid in determining waste pit liner depth. Yet, Section 2.1.4 states that liner depths have already been determined. Please review and clarify which statement is correct and modify the text accordingly.

Response: Agree.

Action: Page 2-5. The referenced text was revised to state, "Pit cross-section....sampling, aided in identifying liner depth."

Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: 2.2.2.2 Page #: 2-5 Line #: Code: C
 Original Comment #: 10

Comment: This section states that drill cuttings will be placed on plastic sheeting and returned to the excavation site. Please discuss what will happen to the cuttings once they have been returned to the excavation site.

Response: Agree. The cuttings will be returned to the excavation as backfill and compacted. Ultimately, the cuttings will be addressed as part of the full scale remediation of Operable Unit 1.

Action: Page 2-5, Section 2.2.2.2. The following has been added: "...backfill and compacted. Ultimately, the cuttings will be addressed as part of the full-scale remediation of Operable Unit 1."

Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: 2.2.2.2 Page #: 2-5 Line #: Code: E
 Original Comment #: 11

Comment: Please change the second to last sentence in paragraph #1 to read "Grouting of completed boreholes will conform to (OAC) 3745-09-10(A).

Response: Agree.

Action: Page 2-5, Section 2.2.2.2. The OAC has been properly identified as "3745-09-10(A)".

Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: 2.4 Page #: 2-10 Line #: Code: C
 Original Comment #: 12

Comment: Please add time of sample to the list of descriptive information described on sample labels.

Response: Agree.

Action: Page 2-10, Section 2.4. The phrase "date of sampling" has been revised to read "date and time of sampling".

Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: Figure 2-1 Page #: 2-21 Line #: Code: C
 Original Comment #: 13

Comment: This figure is very light copy and was difficult to review in our copy. Please ensure a darker copy in the revised test.

Response: Agree.

Action: A darker copy has been included in the revised work plan.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.1.2.3 Page #: 3-3 Line #: Code: C
Original Comment #: 14

Comment: The last sentence in this section appears to be incomplete. Please review and revise the text accordingly.

Response: Agree.

Action: Page 3-4, Section 3.1.2.3. The sentence was revised as follows: "After surveying to ensure no contamination exists above the FEMP Radiological Control Manual criteria, the boxes shall be transferred to the Plant 1 storage pad, or to another suitable hard-surface storage pad at the FEMP, in keeping with the Amended Consent Decree with the State of Ohio."

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.1.2.4 Page #: 3-3 Line #: Code: C
Original Comment #: 15

Comment: The DOE must ensure that a trench backfill technique will be implemented which will result in soil permeability that is equal or less than the permeability prior to excavation. Please modify the text accordingly.

Response: Agree. The waste will be returned to the excavation and compacted with the track-hoe bucket, if necessary. The cover material, which will be segregated from the waste, will be returned and again compacted with the track-hoe bucket to the greatest extent possible. Any remaining cover will then be added and further compacted by repeatedly driving the track-loader over the returned cover material. These compaction actions will return the soil permeability to a state that is equal to or less than that which previously existed.

Action: Page 3-3, Section 3.1.2.4. The following text has been added to the end of the first sentence: "and compacted with the track-hoe bucket, if necessary. The cover material will be returned and again compacted to the greatest extent possible with the track-hoe bucket. Any remaining cover will then be added and further compacted by repeatedly driving the track-loader over the returned cover material. These compaction actions will return the soil permeability to a state that is equal to or less than that which previously existed."

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.1.2.5 Page #: 3-3 Line #: Code: C
Original Comment #: 16

Comment: Please describe in further detail the decon methods that will be implemented at the FEMP decon facility for DEEP equipment.

Response: Agree.

Action: Page 3-3, Section 3.1.2.5. The following text has been added to the end of the section: "The FEMP will utilize a high-pressure steam and detergent mixture illustrated in FEMP SOP 55-C-101, 'Operation of Steam Detergent Cleaner in the Decontamination and Decommissioning Building.' Subsequent to decontamination, the salvageable equipment will be radiologically surveyed and authorized for free release off site." The SOP55-C-101 has been added to the DEEP Preference list.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.1.4.2 Page #: 3-6 Line #: Code: C
Original Comment #: 17

Comment: Please include a schedule for the implementation of the Waste Pit #6 Drying Study.

Response: Agree.

Action: Page 3-6, Section 3.1.4.2. The following sentence has been added to the end of the section: "Drying is scheduled to begin April 1996 and completed November 1996."

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.2 Page #: 3-8 Line #: Code: C

Original Comment #: 18

Comment: The Ohio EPA recommends not pumping water into the waste pits for waste reslurry. This process would create a pressure head within the waste pit. Due to the lack of knowledge regarding liner integrity, this procedure could cause contaminant migration. Also, the presence of heterogeneous contents within the waste pits decreases the likelihood of success of a slurry pump working on a large scale. DOE should re-evaluate the appropriateness of using a slurry pump in the DEEP treatability study.

Response: Comment Acknowledged. More detail about the reslurrying test -- specifically, justification for the test and more information about the amount of water to be added during reslurrying -- should be provided. Reslurrying is not expected to result in contaminant migration, because water will only be added if insufficient run-in occurs; also, such water will be slurried immediately. Waste pit heterogeneity is not expected to be a factor, since heavy and large debris would be picked up by a backhoe or clam shell.

Action: Page 3-9, Section 3.2.1. The following text has been added after the second sentence: "Reslurrying was selected as a test because of the fine-grained nature of much of the waste in the waste pits and because of the potential for difficulty in dewatering the wastes. Most of the waste is fine material, perfect for reslurrying. (Heavy and large debris would be picked up by a backhoe or clam shell.) Previous studies of pit waste have shown that significant amounts of amorphous materials exist within the waste pits and that these amorphous materials may behave more like a liquid after water has been introduced. Thus, pit amorphous materials removal may be more efficiently performed by reslurrying. Additionally, it is likely that the presence of significant quantities of amorphous materials may hinder the effectiveness of conventional well dewatering."

Page 3-10, Section 3.2.2. The following paragraph was added after the first paragraph in this section: "The water to be used during reslurrying will be derived from existing water in the waste pits, which are located within the perched water table. Water run-in should be adequate to reslurry. Water would be added to the excavation only if insufficient run-in occurs; this water would be slurried immediately and there would be no standing water. When this occurs, only enough water would be added to support the reslurry and would be negligible relative to the amount of water already contained in the waste pits. The negligible amount of water to be added during reslurrying will be offset by the treatability information gained by performing an experiment to determine the viability of the technique. Decant water from the slurry settling tank is pumped to a temporary holding tank, then ultimately treated through the FEMP water treatment system. Solids resulting from decant operations are to be directed back into the respective waste pit of origin."

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 4.5.1 Page #: 4-16 Line #: Code: E

Original Comment #: 19

Comment: Located after the first sentence in this section is a repeated incomplete sentence which needs to be deleted. Please revise the text accordingly.

Response: Agree.

Action: Page 4-16, Section 4.5.1. The second "is estimated to be approximately 105, 000 gallons of water per day, to be pumped during the initial three to four days," has been deleted.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: General Comment Page #: Line #: Code: C

Original Comment #: 20

Comment: The document would be more user friendly if figures and tables were included within the text following its initial text reference in the appropriate sections. Please revise accordingly.

Response: Agree. Future documents of this type will be completed in accordance with the comment.

Action: None.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: General Comment Page #: Line #: Code: C

Original Comment #: 21

Comment: Document review would be made easier if DOE would use pages with numbered lines.

Response: Agree. Future documents of this type will be provided using pages with numbered lines.

Action: None.

**RESPONSES TO TECHNICAL REVIEW COMMENTS ON THE
OPERABLE UNIT 1 DEWATERING EXCAVATION EVALUATION PROJECT
TREATABILITY STUDY WORK PLAN
RECEIVED AUGUST 5, 1994**

Commenting Organization: U.S EPA Commentor: Saric
Section #: All Page #: NA Line #: NA Code:
Original General Comment #: 1 (1)

Comment: The U.S. Department of Energy's (U.S. DOE) Dewatering Excavation Evaluation Project (Deep) Treatability Study Work Plan (TSWP) does not include information required by the U.S. Environmental Protection Agency (U.S. EPA) guidance, "Guide for Conducting Treatability Studies under CERCLA." Specifically, significant deficiencies exist in the areas of (1) documenting how the data to be collected supports the test objectives; and (2) clearly presenting what data will be collected, how it will be collected, and how it will be interpreted. U.S. DOE should revise the text to provide this information, as well as to provide summary tables that correlate data collected with test objectives and example data collection log sheets.

Response: Comment Acknowledged. DOE agrees that some TSWP objectives do not clearly demonstrate how the field information to be gathered supports the objectives. Also, DOE agrees that the interpretation methodology may be unclear.

Action: DOE re-evaluated the TSWP in accordance with the EPA guidance "Guide for Conducting Treatability Studies under CERCLA," and the text has been rewritten to provide this information. DOE also refers EPA to the response to Specific Comment #8, for the submittal of example data collection log sheets.

Page 1-2, Section 1.3, has been changed as follows:

"1.3.1 Identify the Decisions to Be Made that Affect the Situation

The purpose of DEEP is to identify applicable excavation technique(s) to remove waste pit material and to determine how to optimize and refine these technique(s). Prior to excavation, further information from the following areas of investigation must be evaluated to support the excavation technique selected:

- Pre-dewatering condition of the waste pits of concern. For DEEP, the waste pits of concern include Waste Pits 1, 2, and 3.
- Homogeneity/Heterogeneity of the waste pits.
- Characteristics of the waste within the pits.
- Dewatering methods potentially applicable to the DEEP project.
- Changes in physical properties of the wastes observed during dewatering.
- Stability of the dewatered wastes following dewatering. Stability is related to the waste's ability to support excavation equipment, and the waste's ability to be safely and efficiently removed by conventional excavation methods.

Based upon the results of the field and laboratory investigations which the DEEP project addresses, more detailed information relative to the areas of investigation will allow DOE to determine the most suitable excavation technique(s) for removal of waste from the pits.

A literature search of potentially applicable dewatering and excavation techniques has been performed. The results of this research have shown that the potentially applicable techniques of choice which warrant further study are the following:

Dewatering

Trenching
 Driven well point
 Conventional well pumping
 Well pumping with a vacuum system
 Well pumping enhanced by electro-osmosis

Excavation

Wet excavation
 Dry excavation
 Slurrying

1.3.2 Identify Inputs that Affect the Decision

The listed dewatering and excavation techniques will be tested in the following order:

- Wet excavations, waste reslurrying and pump tests. Qualitative and quantitative observations of the behavior of the waste under these conditions will be made.
- Dewatering, to include well comparison and pumping tests, will be performed in areas adjacent to the wet excavations to evaluate waste material consistency and homogeneity/heterogeneity.
- Dry excavations, to include dry trench excavation and ramp excavation, will be performed to determine the efficiency of the dewatering techniques, amenability of the waste to excavation and handling, and the ability of the waste to support heavy equipment.

Geotechnical testing will be utilized to evaluate the characteristics and geotechnical properties of the waste before, during and after dewatering tests have been conducted. An analysis of the following geotechnical tests will provide waste characterization information:

- Grain-size analysis
- Atterburg limits
- Moisture content
- Specific gravity
- Triaxial shear strength test
- Unit weight test
- Standard Proctor compaction test

Additionally, during boring installation, Standard Penetration Tests will be performed. Standard Penetration Tests will provide useful information about the waste's stratification and strength.

The inputs that affect the decision about which dewatering technique(s) is selected are as follows:

- Safety
- Volume of water removed
- Ability of water volume to be sustained during pumping
- Area of influence of the dewatering technique being investigated
- Efficiency of vacuum collection system
- Cost/efficiency analysis
- Surface subsidence
- Waste stability during dewatering
- Waste permeability

Table 2-3 of this work plan provides additional descriptive information about geotechnical testing. Table 2-4 provides additional descriptive information about the frequency of testing within each pit.

1.3.3 Define the Boundaries of the Situation

The boundaries of the situation are Waste Pits 1, 2, and 3. Horizontal boundaries include the extent of the sidewall dimensions of each waste pit. Vertical boundaries include the cap material at the top of each waste pit, and a vertical depth of 5 feet above the liner material at the base of each waste pit.

Boundaries of dewatering and excavation include safety, stability, heterogeneity of the waste pit contents, the amount of water which can be removed from the waste pits in a practical, cost effective and technologically feasible manner, subsidence and the potential for mass movement of the waste during and following dewatering, and the need for each test to remain independent of other tests.

1.3.4 Develop a Logic that Applies to the Decision

Each dewatering and excavation test proposed is a method that has potential applicability for remediation of the waste pits. Each method will be tested and evaluated according to the procedures identified in this work plan. Data collected will be compiled into an interpretative analysis that will be used to support selection of excavation methods during remedial design/remedial action (RD/RA).

The necessary interpretative information will be obtained in the following sequence:

- Geotechnical testing
- Wet excavation
- Dewatering
- Dry excavation

1.3.5 Establish Constraints on the Uncertainty of the Decision

The following constraints affect the uncertainty of the decision:

- Waste pit heterogeneity
- Waste geotechnical properties
- Efficiency of dewatering
- Suitability of excavation method(s) selected within portions of the same pit or within different pits
- Validity of field and laboratory gathered information
- Uncontrollable project schedule impacts due to weather or other similar unforeseen circumstances
- Lack of consistency of field information gathered due to change in field objectives caused by encountering unanticipated objects or difficulties in the field which result in poor or no sample recovery, or the need to relocate field activities.

1.3.6 Optimize a Design for Obtaining Quality Data and Summary

The objectives of the DEEP program have been summarized as to the test technique, the purpose for performing the test, test inputs, and test interpretation. This dewatering test objectives information is shown in Table 1-2. This excavation test objectives information is shown in Table 1-3.

TABLE 1-2 SUMMARY TABLE SHOWING DEWATERING TECHNIQUES ASSESSMENT PURPOSES, INPUTS AND INTERPRETATIONS

TECHNIQUE	TEST PURPOSE	TEST INPUT	INTERPRETATION
Trenching	Evaluate as dewatering technique.	1. Sidewall angle of repose - will sidewall sloughing during excavation and pumping result in a trench which cannot be kept open? 2. Will excess fines lower efficiency of dewatering (water yield)?	1. Sidewall stability - determine a sustainable angle of repose. 2. Excess fines - will excess fines in settling tank lessen tank capacity or cause pumping and water yield problems?
Driven well point	Evaluate as dewatering technique.	1. Well installation. 2. Well development. 3. Water yield.	1. Installation (penetration resistance, clogging of well screen). 2&3. Development (water yield), relative to other techniques could eliminate as applicable technology.
Conventional well pumping	Evaluate as dewatering technique.	1. Well installation. 2. Well development. 3. Water yield. 4. Radius of influence.	1. Installation (penetration resistance, sidewall stability). 2&3. Development (clogging of well screen, water yield) could eliminate as applicable technology. 4. Measure adjacent well water levels.

TECHNIQUE	TEST PURPOSE	TEST INPUT	INTERPRETATION
Well pumping with vacuum system	Evaluate as dewatering technique.	<ol style="list-style-type: none"> 1. Well installation. 2. Well development. 3. Vacuum system installation and operation. 4. Water yield. 5. radius of influence. 	<ol style="list-style-type: none"> 1. Installation (penetration resistance, sidewall stability). 2&4. Development (clogging of well screens, water yield), 3. Bridging of vacuum system could eliminate as applicable technology. 5. Measure adjacent well water levels.
Well pumping with electro-osmosis (E-O) enhancement.	Evaluate as dewatering technique.	<ol style="list-style-type: none"> 1. Well installation. 2. Well Development. 3. E-O system installation and operation. 4. Water yield. 5. Radius of influence. 	<ol style="list-style-type: none"> 1. Installation (penetration resistance, sidewall stability). 2&4. Development (clogging of well screens, water yield). 3. E-O system installation and operation (safety, water yield, cathode deterioration) could eliminate as applicable technology. 5. Measure adjacent well water levels.

TABLE 1-3 SUMMARY TABLE SHOWING EXCAVATION TECHNIQUES ASSESSMENT PURPOSES, INPUTS AND INTERPRETATIONS

TECHNIQUE	TEST PURPOSE	TEST INPUT	INTERPRETATION
Wet excavation	Evaluate as excavation technique.	<ol style="list-style-type: none"> 1. Sidewall angle of repose - will sidewall sloughing result in a trench which cannot be kept open? 2. Can a stable surface for excavation equipment be maintained? 3. Will dewatering cause mass movement and subsidence within pits? 	<ol style="list-style-type: none"> 1. Sidewall stability - determine a sustainable angle of repose. 2. Evaluate bearing capacity of waste, test equipment on surface. 3. Measure subsidence during dewatering to determine degree and extent of subsidence.
Dry excavation	Evaluate as excavation technique.	<ol style="list-style-type: none"> 1. Sidewall angle of repose - will sidewall sloughing result in a trench which cannot be kept open? 2. Can a stable surface for excavation equipment be maintained? 3. Can dewatering cause mass movement and subsidence within pits? 	<ol style="list-style-type: none"> 1. Sidewall stability - determine a sustainable angle of repose. 2. Evaluate bearing capacity of waste, test equipment on surface. 3. Measure subsidence during and after dewatering to determine degree and extent of subsidence.
Slurrying	Evaluate as excavation technique.	<ol style="list-style-type: none"> 1. Can fines be suspended in water? 2. Can fines remain suspended in water? 3. Can slurry water source be solely from pit trench? 4. Heterogeneity of pit waste. 	<ol style="list-style-type: none"> 1. Perform settling tests. 2. Perform settling tests. 3. Perform water balance evaluation of slurry system. 4. Large material will not slurry.

The DEEP work plan represents an optimized design for obtaining quality data. The staged and phased approach to the project helps ensure that all information necessary before proceeding has been interpreted. Collection of quality data will be enhanced and ensured by following appropriate quality guidance documents during the process of obtaining the necessary data. Appropriate guidance documents include the FEMP Sitewide CERCLA Quality Assurance Project Plan (SCQ), American Society for Testing and Materials (ASTM) standards, applicable EPA guidance documents, and written and approved Standard Operating Procedures.

To provide project quality oversight, a rigorous internal self-assessment program, consisting of a system of audits, surveillances and inspections will be utilized. Any deficiencies in project activities, and any deviations from written procedures, work plans, or other guidance documents, will be identified, evaluated as to the best course of further action, and resolved as approved by project quality assurance and quality control staffs. Deviations noted will be documented, and incorporated into the project permanent record."

Commenting Organization: U.S. EPA Commentor: Saric
 Section #: All Page #: NA Line #: NA Code:
 Original General Comment #: 2 (2)

Comment: The TSWP contains numerous incomplete or incorrect references to documents, tables, and figures; incomplete sentences; inappropriately repeated text; and other typographical errors. U.S. DOE should conduct a thorough quality assurance review of the document and should revise the text, tables, and figures as appropriate.

Response: Agree.

Action: The document has been thoroughly reviewed to ensure that references are appropriate and that typographical errors in the document are minimized.

Commenting Organization: U.S. EPA Commentor: Saric
 Section #: 2.2.1 Page #: 2-4 Line #: NA Code:
 Original Specific Comment #: 3 (1)

Comment: The information provided in this section should be presented in a table correlating the data to be collected to the data uses.

Response: Agree. DOE has added Tables 1-2 and 1-3 which more clearly describe and correlate the data to be collected and the data uses (refer to Comment #1). In addition, refer to Tables 2-3 and 2-4 of the Treatability Study Work Plan.

Action: **Page 2-4.** The following text has been added: "Refer to Tables 2-3 and 2-4 of this plan for a discussion of the purposes, inputs, and data interpretation for each test."

Commenting Organization: U.S. EPA Commentor: Saric
 Section #: 2.2.2.2 Page #: 2-5 Line #: NA Code:
 Original Specific Comment #: 4 (2)

Comment: The text references a Sampling and Analysis Plan (SAP). However, the SAP is not adequately referenced in the text and is not included in the reference section. The text and references should be revised to include the SAP.

Response: Agree. The Sampling and Analysis Plan referenced is for the installation of 15 geotechnical borings to be performed before, during, and after dewatering in the waste pits. This plan has been prepared in coordination with other scheduled DEEP activities. The Sampling and Analysis Plan is actually a Project Specific Plan, the title of which is consistent with the Sitewide CERCLA Quality Assurance Project Plan (SCQ).

Action: References to the Sampling and Analysis Plan have been changed to Project Specific Plan throughout the Treatability Study Work Plan. The PSP has been added to the DEEP reference list.

Page 2-1, Section 2.1. The following text has been added: "Geotechnical boring installations are performed under a Project Specific Plan (PSP), which is a separate plan from the DEEP work plan. The PSP describes in more detail specific aspects of the field activities and health and safety considerations associated with the boring installations. The PSP, and accompanying Project Specific Health and Safety Plan (PSHASP) are listed in the references section of the DEEP work plan."

Commenting Organization: U.S. EPA Commentor: Saric
 Section #: 2.3.2 Page #: 2-9 Line #: NA Code:
 Original Specific Comment #: 5 (3)

Comment: "SCAPS Phasing" and "SCAPS Demonstration Project" are cited in the text, but are not defined. The text and the acronym section should both be revised to define the acronym, SCAPS.

Response: Agree.

Action: SCAPS, which stands for "Site Characterization and Analysis Penetrometer System," has been added to the List of Acronyms.

Page 2-9, Section 2.3.2. The following sentence has been added: "The CPTs are part of the U.S. Department of Energy (DOE) Site Characterization and Analysis Penetrometer System (SCAPS) Demonstration Project. SCAPS is designed to gather waste pit geotechnical information."

Page 2-9. The first sentence has been revised has been revised to read: "Phasing of CPTs in the Waste Pits: The phasing of the CPTs will depend on the availability of the equipment furnished by the SCAPS Demonstration Project. The SCAPS CPTs are scheduled to be performed in the waste pits August 22-26, 1994, in conjunction with the DEEP."

Commenting Organization: U.S. EPA Commentor: Saric
 Section #: 3.1.2.3 Page #: 3-3 Line #: NA Code:
 Original Specific Comment #: 6 (4)

Comment: The text states that 15-cubic-yard sample boxes will be stored on the "best available hard surface." The text should be revised to identify specifically where the sample boxes will be stored.

Response: Agree. The boxes will be moved to a concrete storage pad within the FEMP Operable Unit 3 area. At present the most suitable storage location is the Plant 1 pad. If the Plant 1 pad is unavailable, then another suitable storage pad at the FEMP will be used.

Action: **Page 3-3, Section 3.1.2.3.** The text has been revised to read as follows: " After surveying to ensure no contamination exists above the FEMP Radiological Control Manual Criteria, the boxes shall be transferred to the Plant 1 storage pad, or to another suitable hard-surfaced storage pad at the FEMP, in keeping with the Amended Consent Decree with the State of Ohio."

Commenting Organization: U.S. EPA Commentor: Saric
 Section #: 3.1.3 Page #: 3-4 Line #: NA Code:
 Original Specific Comment #: 7 (5)

Comment: The title of this section indicates that data collection, analysis, interpretation, and reporting will be discussed in the section. Sections 3.1.3.1 and 3.1.3.2 vaguely discuss data collection and analysis, respectively. Data interpretation and reporting are not discussed. The text should be revised to (1) provide more information on how the data will be collected, and (2) discuss how data will be interpreted and reported.

Response: Comment Acknowledged. The data collection discussion in Section 3.1.3 includes the most detail of all comparable sections; however, more information should be provided to describe data interpretation and reporting.

Action: As discussed in the response to comment #11, a consistent level of detail should be provided for text discussing each test's data collection, analysis, interpretation, and reporting in the final work plan. These revisions include:

Page 3-5. The title for Subsection 3.1.3.2 has been revised to "Wet Excavation Data Analysis and Interpretation" to more accurately reflect the text in this section.

Page 3-5, Section 3.1.3.2. The following text has been added at the beginning of the section: "Refer to Table 1-3 for a discussion of wet excavation technique, test purpose, test input and interpretation."

Page 3-6, Subsection 3.1.3.3, "Wet Excavation Data Reporting," has been added. New text is: "Data (as identified in Subsection 3.1.3.1, above) will be collected on field logs and retained for reporting purposes. The wet excavation videotapes will also be retained to provide a permanent record of visual waste characteristics. Wet excavation tests will be reported in the wet excavation test report."

Page 3-11, Section 3.2.3.1. The following text has been added at the beginning of the section: "Refer to Table 1-3 for a discussion of slurry test technique, test purpose, test input and interpretation."

Page 3-11. The title for Subsection 3.2.3.2, "Waste Reslurrying and Pumping Test Data Analysis and Interpretation" has been added. The first sentence of Subsection 3.2.3.2 has been revised to read: "This information will be analyzed and interpreted to support design for the pumping, thickening and filtration system."

Page 3-11, Section 3.2.3.3, "Waste Reslurrying and Pumping Test Data Reporting" has been added. New text is: "Data (as identified in Subsection 3.2.3.1, above) will be collected on field logs and retained for reporting purposes. The slurry pumping videotapes will also be retained for reporting purposes and will remain available for further technical review. Waste slurry and pumping tests will be reported in the wet excavation test report."

Page 4-13, Section 4.3.1. The following text has been added at the beginning of the section: "Refer to Table 1-2 for a discussion of dewatering test techniques, test purposes, test inputs and interpretations."

Page 4-14. The title for Subsection 4.3.2 has been revised to "Dewatering Data Analysis and Interpretation" to more accurately reflect the text in this section.

Page 4-15, Subsection 4.3.2.3, "Dewatering Data Reporting," has been added. New text is: "Data (as identified in Subsection 4.3.1, above) will be collected on field logs and retained for reporting purposes. Dewatering tests will be reported in the dewatering test report."

Page 5-6. The following text has been added to Subsection 5.4, Dry Excavation Data Collection, Analysis, Interpretation, and Reporting: "The Field Operations Manager or Lead Geologist will be responsible for analyzing and interpreting dry excavation field data during and following actual field activity. Dry excavation data will be reported in the dry excavation test report. Refer to Table 1-3 for a discussion of dry excavation technique, test purpose, test input and interpretation."

Commenting Organization: U.S. EPA Commentor: Saric
 Section #: 3.2 Page #: NA Line #: NA Code:
 Original Specific Comment #: 8 (6)

Comment: This section discusses reslurrying tests that will be used to determine if reslurrying the pit waste is a viable removal technology. This removal method seems more labor-intensive and generates more waste than the other removal methods proposed in the TSWP. Before conducting reslurrying tests, U.S. DOE should provide justification for conducting the test because it will involve adding water to the pits, dewatering the reslurried waste, and treating the slurry water. The text should therefore be revised to appropriately address this issue.

Response: Comment Acknowledged. More detail about the reslurrying test -- specifically, justification for the test and more information about the amount of water to be added during reslurrying -- should be provided.

Action: **Page 3-8, Section 3.2.1.** The following text has been added after the second sentence: "Reslurrying was selected as a test because of the fine-grained nature of much of the waste in the waste pits and because of the potential for difficulty in dewatering the wastes. Most of the waste is fine material, perfect for reslurrying. (Heavy and large debris would be picked up by a backhoe or clam shell.) Previous studies of pit waste have shown that significant amounts of amorphous materials exist within the waste pits and that these amorphous materials may behave more like a liquid after water has been introduced. Thus, PIT amorphous materials removal may be more efficiently performed by reslurrying. Additionally, it is likely that the presence of significant quantities of amorphous materials may hinder the effectiveness of conventional well dewatering."

Page 3-9, Section 3.2.2. The following paragraph was added after the first paragraph in this section: "The water to be used during reslurrying will be derived from existing water in the waste pits, which are located within the perched water table. Water run-in should be adequate to reslurry. Water would be added to the excavation only if insufficient run-in occurs; this water would be slurried immediately and there would be no standing water. When In this instance, only enough water would be added to support the reslurry and would be negligible relative to the amount of water already contained in the waste pits. The negligible amount of water to be added during reslurrying will be offset by the treatability information gained by performing an experiment to determine the viability of the technique. Decant water from the slurry settling tank is pumped to a temporary holding tank, then ultimately treated through the FEMP water treatment system. Solids resulting from decant operations are to be directed back into the respective waste pit of origin."

Commenting Organization: U.S. EPA Commentor: Saric
 Section #: 4.2.5.2 Page #: 4-9 Line #: NA Code:
 Original Specific Comment #: 9 (7)

Comment: The Phase 2, Stage 2 dewatering test discussion does not explain operation of the electro-osmosis system or the equipment involved. The text should be revised to include a discussion of the principles, equipment, and operation of the electro-osmosis system.

Response: Agree. A basic description of the electro-osmosis system should be provided. The new text provides a solid technical introduction to the DEEP E-O System proposed.

Action: Page 4-7, Section 4.2.5.1. The following text describing the electro-osmosis system has been added to the "E-O Systems" discussion:

"Electro-osmosis enhances dewatering and consolidation of some saturated fined-grained soils that cannot be effectively drained by gravity methods. The electric double-layer concept developed by Helmholtz (1926) and Freundlich (1926) helps explain how electro-osmosis works. Water near the soil particles is made up of two layers. One layer is bonded to the soil particles; the other layer is free moisture. The bonded layer has excess anions; the free moisture has excess cations. When a direct current voltage is applied across a given volume of soil by use of an anode (+) and a cathode (-), the unattached cations, and thus the free liquid, migrate toward the cathode. The electro-osmotic velocity of the water flow in the soil is related to the electrical conductivity, permeability, porosity, and the plasticity of the soil. If the cathode is installed next to a well casing, the water flowing out of the electrically charged area can be removed by in-well or suction pumps. If the anodes are placed near the excavation, the water flow induced by the electric current opposes the natural hydraulic gradient that contributes to harmful seepage. The following six paragraphs explain the E-O system proposed for the DEEP."

Commenting Organization: U.S. EPA Commentor: Saric
 Section #: 4.3.1 Page #: 4-12 Line #: NA Code:
 Original Specific Comment #: 10 (8)

Comment: The text lists several reports and logs to be completed during Phase 3 dewatering tests. In order to better present what data will be collected and how it will be collected, an example of each report and log should be included in an appendix.

Response: Agree.

Action: Page 4-13. The following text has been added: "The field information logs are provided in Section 4.3.1 of the PSP; examples are provided in Attachment F to this work plan. The information to be submitted includes the following:

- Field Activity Logs
- Lithologic Logs
- Sample Collection Logs
- Surface/Groundwater Sample Collection Logs
- Well Completion Logs
- Monitoring Well Development Form"

Commenting Organization: U.S. EPA Commentor: Saric
 Section #: 4.3 Page #: NA Line #: NA Code:
 Original Specific Comment #: 11 (9)

Comment: The title of this section indicates that data collection, analysis, interpretation, and reporting will be discussed in the section. Sections 4.3.1 and 4.3.2 vaguely discuss data collection and analysis, respectively. Data interpretation and reporting are not discussed. The text should be revised to (1) provide more information on how the data will be collected, and (2) discuss how data will be interpreted and reported.

Response: Comment Acknowledged. As discussed in the response to comment #11, a consistent level of detail should be provided for text discussing each test's data collection, analysis, interpretation, and reporting in the final work plan.

Action: **Page 3-5.** The title for Subsection 3.1.3.2 has been revised to "Wet Excavation Data Analysis and Interpretation" to more accurately reflect the text in this section.

Page 3-5, Section 3.1.3.2. The following text has been added at the beginning of the section: "Refer to Table 1-3 for a discussion of wet excavation technique, test purpose, test input and interpretation."

Page 3-6, Subsection 3.1.3.3, "Wet Excavation Data Reporting," has been added. New text is: "Data (as identified in Subsection 3.1.3.1, above) will be collected on field logs and retained for reporting purposes. The wet excavation videotapes will also be retained for to provide a permanent record of visual waste characteristics. Wet excavation tests will be reported in the wet excavation test report."

Page 3-11, Section 3.2.3.1. The following text has been added at the beginning of the section: "Refer to Table 1-3 for a discussion of slurry test technique, test purpose, test input and interpretation."

Page 3-11. The title for Subsection 3.2.3.2, "Waste Reslurrying and Pumping Test Data Analysis and Interpretation," has been added. The first sentence of Subsection 3.2.3.2 has been revised to read: "This information will be analyzed and interpreted to support design for the pumping, thickening and filtration system."

Page 3-11. Section 3.2.3.3. "Waste Reslurrying and Pumping Test Data Reporting" has been added. New text is: "Data (as identified in Subsection 3.2.3.1, above) will be collected on field logs and retained for reporting purposes. The slurry pumping videotapes will also be retained for reporting purposes and will remain available for further technical review. Waste slurry and pumping tests will be reported in the wet excavation test report."

Page 4-13, Section 4.3.1. The following text has been added at the beginning of the section: "Refer to Table 1-2 for a discussion of dewatering test techniques, test purposes, test inputs and interpretations."

Page 4-14. The title for Subsection 4.3.2 has been revised to "Dewatering Data Analysis and Interpretation" to more accurately reflect the text in this section.

Page 4-15, Subsection 4.3.2.3, "Dewatering Data Reporting," has been added. New text is: "Data (as identified in Subsection 4.3.1, above) will be collected on field logs and retained for reporting purposes. Dewatering tests will be reported in the dewatering test report."

Page 5-6. The following text has been added to Subsection 5.4, Dry Excavation Data Collection, Analysis, Interpretation, and Reporting: "The Field Operations Manager or Lead Geologist will be responsible for analyzing and interpreting dry excavation field data during and following actual field activity. Dry excavation data will be reported in the dry excavation test report. Refer to Table 1-3 for a discussion of dry excavation technique, test purpose, test input and interpretation."

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 4.5.1 Page #: 4-16 Line #: NA Code:
Original Specific Comment #: 12 (10)

Comment: The text states that 105,000 gallons per day (gpd) of water will be generated during initial dewatering activities. The text also states that two 20,000-gallon tanks; a 5,000-gallon tank truck; and the 30,000 gpd Plant 8 treatment system will be used for storage and treatment during testing. Based on the combined storage and treatment capacity of 75,000 gpd, an excess of 30,000 gpd of water will exist. U.S. DOE should indicate how it will handle the excess 30,000 gpd of water generated during the initial 3 to 4 days of dewatering.

Response: Agree. DOE should explain how the 30,000 gpd will be handled.

Action: Page 4-18, Section 4.5.1. The following text has been added to the second paragraph in the section: "The quantity of water that can be pumped in any one day is limited by the combined storage and treatment capacity of 75,000 gallons per day. Treatment will be provided for all wastewaters generated by the project. Rather than providing additional storage for the excess water produced during initial dewatering, the dewatering activities will be phased so the maximum quantity of water produced in any one day does not exceed the maximum storage and treatment capacity of 75,000 gallons."

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 6.1 Page #: 6-2 Line #: NA Code:
Original Specific Comment #: 13 (11)

Comment: The text references a Project Specific Plan (PSP). However, the PSP is not adequately referenced in the text and is not included in the reference section. The text and the references should be revised to include the PSP.

Response: Agree.

Action: The document has been edited to ensure that text and references include the Project-Specific Plan (PSP).

**RESPONSE TO OHIO EPA TECHNICAL REVIEW COMMENTS ON THE
OPERABLE UNIT 1 DEWATERING EXCAVATION EVALUATION PROGRAM
TREATABILITY STUDY WORK PLAN
RECEIVED JULY 15, 1994**

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 1.1 Page #: 1-1 Line # Code: C
Original Comment #: 1

Comment: Paragraph #2 of this section states that radioactive waste consisting of naturally occurring radionuclides generated from uranium ore processing are stored in OU1. Not all of the radionuclides found in OU1 are naturally occurring. Please modify the text accordingly.

Response: Agree.

Action: Page 1-1, Section 1.1. Reference to "naturally occurring" radionuclides has been deleted.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 1.2 Page #: 1-2 Line #: 2 Code: C
Original Comment #: 2

Comment: This section states that Waste Pits 1, 2, and 3 were selected for the DEEP. Yet, no rationale is given in the text as to why these waste pits were selected over the other waste pits. Please explain.

Response: Comment Acknowledged. Initially, all of the waste units in Operable Unit 1 were considered for inclusion in the DEEP. However, as described in the text on Page 1-2, there were specific reasons that other pits were excluded. In addition, Waste Pits 1, 2, and 3 were, based on known information, judged to be adequate to provide representative information for the material requiring excavation. The waste pits selected for DEEP represent approximately 80 percent of the total material requiring dry mechanical excavation during final remediation.

Action: Page 1-2. The following text was added: "Initially, all of the waste units in Operable Unit 1 were considered for inclusion in the DEEP. The waste pits selected for DEEP represent approximately 80 percent of the total material requiring dry mechanical excavation during final remediation. However, there were specific reasons that the other waste pits were excluded. In addition, Waste Pits 1, 2, and 3 were judged to be adequate to provide representative information for the material requiring excavation based on known information."

Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: 1.3.3 Page #: 1-3 Line #: 7 Code: C
 Original Comment #: 3

Comment: The third bullet cross-references a section in which the physical features of Waste Pits 1, 2, and 3 are described in further detail. The appropriate section number has been omitted. Please modify accordingly.

Response: Comment Acknowledged.

Action: The text was deleted in the rewrite of the DQO's, in response to U.S. EPA Comment #1.

Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: 1.4.2 Page #: 1-5 Line #: Code: C
 Original Comment #: 4

Comment: This section states that magnetic anomalies were detected across 35% of Waste Pit #2. Please describe in further detail where these anomalies were detected as were the areas in the Waste Pit #1 discussion in Section 1.4.1.

Response: Agree. Magnetic anomalies were indicated across 35 percent of the waste pit. Anomaly maps were published in the Operable Unit 1 Final Remedial Investigation Report. EM data were evaluated over 70 percent of the pit. High conductivity values were found in the north central, south central, and far southwestern area of Waste Pit 2.

Action: **Page 1-7, Section 1.4.1.** The following text has been added: "Anomaly maps were published in the Operable Unit 1 Final Remedial Investigation Report. EM data were evaluated for more than 70 percent of the pit. High conductivity values were found in the northeast, southeast, and western areas of Waste Pit 1."

Page 1-8, Section 1.4.2. The following text has been added: "Anomaly maps were published in the Operable Unit 1 Final Remedial Investigation Report. EM data were evaluated for more than 70 percent of the pit. High conductivity values were found in the north central, south central, and far southwestern areas of Waste Pit 2".

Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: 2.1.3 Page #: 2-2 Line #: Code: C
 Original Comment #: 5

Comment: Please explain the rationale for selecting sampling points around the anomalies in the waste pits. The goal of a treatability study is to see if preferred techniques will work on larger scale. Since the waste pit anomalies would have to be addressed in the future, no treatability data would exist regarding the areas identified by the magnetic anomalies.

Response: Agree. The text explaining the rationale for sample point selection was inaccurate. The role of waste pit heterogeneity, especially in regard to magnetic anomalies, should be clarified. DEEP sampling is being performed for geotechnical purposes. That is, the drilling and collection of the samples in question are designed to obtain data on the waste that requires evaluation relative to the waste's ability to dewater, support loads, and handle easily. From a geotechnical perspective, the controlling medium in such analyses will be the soil or sludge-like wastes, rather than solid debris. For this reason, the drilling will attempt to focus on areas where the geotechnical sampling program will not likely be disturbed as a result of debris. As an example, by avoiding areas where metals exist, the potential to contact a metal drum or beam with the SPT equipment is minimized. If the split spoon hits a metal object, then blow count data would be much higher and as a result, skewed for analysis. However, the new text should state that the sampling and trenching will be performed in areas with and without magnetic anomalies.

Action: Page 2-2, Section 2.1.3. The following sentence has been deleted: "The heterogeneity of the waste pit contents was a key consideration in selecting the number and locations of the DEEP sampling points."

The next sentence was revised to read: "Sampling points were selected to provide a maximum amount of data from a minimum amount of sampling locations, and to minimize disturbance to known magnetic anomalies in the waste pits."

The following text has been added: "Magnetic anomaly maps were consulted when sampling and trenching locations were selected. However, a comparison of the magnetic anomaly maps (provided in the Final RI Report for Operable Unit 1) with the sampling locations (shown in Figure 2-1) dewatering and trenching locations (shown in Figure 3-1) demonstrates that sampling and trenching will occur in areas with and without magnetic anomalies; wet excavation, but no drilling, will be performed in areas with magnetic anomalies. The sampling is for geotechnical purposes and encountering debris would skew results. From a geotechnical perspective, the controlling medium in such analysis will be the soil or sludge-like wastes rather than solid debris. For this reason, the drilling will attempt to focus on areas where the program will not likely be disturbed as a result of debris."

Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: 2.1.3 Page #: 2-2 Line #: Code: E
 Original Comment #: 6
 Comment: In the last sentence of this paragraph please change know to known.

Response: Agree.
 Action: Page 2-2. "Know" has been changed to "known".

Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: 2.1.4 Page #: 2-3 Line #: 2 Code: E,C
 Original Comment #: 7

Comment: Please delete the word drilling. Also, this sentence states that the approximate depth of the waste pit liners have been determined. Please include these liner depths in a discussion of the waste pit characteristics.

Response: Comment Acknowledged. The depths to the liners are discussed in Table 1-2, page 1-8. Additional maps can be provided if necessary.

Action: Page 2-3. The word "drilling" has been deleted. Reference to Table 1-2 was added, as follows: "Table 1-2 identifies the depth to the liner of each waste pit included in the DEEP."

Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: 2.1.5 Page #: 2-3 Line #: Code: C
 Original Comment #: 8

Comment: The third bullet in this section is very run on and unclear as if words and/or additional sentences are missing. Please review and modify accordingly.

Response: Agree.
 Action: Page 2-3. The last sentence of the section was reworded as follows: "Such a delay would be to the detriment of the Operable Unit 1 remedial design process and cause it to proceed at risk."

Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: 2.2.2.1 Page #: 2-5 Line #: Code: C
 Original Comment #: 9

Comment: The third paragraph in this section states that existing information will aid in determining waste pit liner depth. Yet, Section 2.1.4 states that liner depths have already been determined. Please review and clarify which statement is correct and modify the text accordingly.

Response: Agree.
 Action: Page 2-5. The referenced text was revised to state, "Pit cross-section....sampling, aided in identifying liner depth."

Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: 2.2.2.2 Page #: 2-5 Line #: Code: C
 Original Comment #: 10

Comment: This section states that drill cuttings will be placed on plastic sheeting and returned to the excavation site. Please discuss what will happen to the cuttings once they have been returned to the excavation site.

Response: Agree. The cuttings will be returned to the excavation as backfill and compacted. Ultimately, the cuttings will be addressed as part of the full scale remediation of Operable Unit 1.

Action: Page 2-5, Section 2.2.2.2. The following has been added: "...backfill and compacted. Ultimately, the cuttings will be addressed as part of the full-scale remediation of Operable Unit 1."

Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: 2.2.2.2 Page #: 2-5 Line #: Code: E
 Original Comment #: 11

Comment: Please change the second to last sentence in paragraph #1 to read "Grouting of completed boreholes will conform to (OAC) 3745-09-10(A).

Response: Agree.

Action: Page 2-5, Section 2.2.2.2. The OAC has been properly identified as "3745-09-10(A)".

Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: 2.4 Page #: 2-10 Line #: Code: C
 Original Comment #: 12

Comment: Please add time of sample to the list of descriptive information described on sample labels.

Response: Agree.

Action: Page 2-10, Section 2.4. The phrase "date of sampling" has been revised to read "date and time of sampling".

Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: Figure 2-1 Page #: 2-21 Line #: Code: C
 Original Comment #: 13

Comment: This figure is very light copy and was difficult to review in our copy. Please ensure a darker copy in the revised test.

Response: Agree.

Action: A darker copy has been included in the revised work plan.

Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: 3.1.2.3 Page #: 3-3 Line #: Code: C
 Original Comment #: 14

Comment: The last sentence in this section appears to be incomplete. Please review and revise the text accordingly.

Response: Agree.

Action: Page 3-4, Section 3.1.2.3. The sentence was revised as follows: "After surveying to ensure no contamination exists above the FEMP Radiological Control Manual criteria, the boxes shall be transferred to the Plant 1 storage pad, or to another suitable hard-surface storage pad at the FEMP, in keeping with the Amended Consent Decree with the State of Ohio."

Commenting Organization: Ohio EPA Commentor: OFFO
 Section #: 3.1.2.4 Page #: 3-3 Line #: Code: C
 Original Comment #: 15

Comment: The DOE must ensure that a trench backfill technique will be implemented which will result in soil permeability that is equal or less than the permeability prior to excavation. Please modify the text accordingly.

Response: Agree. The waste will be returned to the excavation and compacted with the track-hoe bucket, if necessary. The cover material, which will be segregated from the waste, will be returned and again compacted with the track-hoe bucket to the greatest extent possible. Any remaining cover will then be added and further compacted by repeatedly driving the track-loader over the returned cover material. These compaction actions will return the soil permeability to a state that is equal to or less than that which previously existed.

Action: Page 3-3, Section 3.1.2.4. The following text has been added to the end of the first sentence: "and compacted with the track-hoe bucket, if necessary. The cover material will be returned and again compacted to the greatest extent possible with the track-hoe bucket. Any remaining cover will then be added and further compacted by repeatedly driving the track-loader over the returned cover material. These compaction actions will return the soil permeability to a state that is equal to or less than that which previously existed."

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.1.2.5 Page #: 3-3 Line #: Code: C
Original Comment #: 16

Comment: Please describe in further detail the decon methods that will be implemented at the FEMP decon facility for DEEP equipment.

Response: Agree.

Action: Page 3-3, Section 3.1.2.5. The following text has been added to the end of the section: "The FEMP will utilize a high-pressure steam and detergent mixture illustrated in FEMP SOP 55-C-101, 'Operation of Steam Detergent Cleaner in the Decontamination and Decommissioning Building.' Subsequent to decontamination, the salvageable equipment will be radiologically surveyed and authorized for free release off site." The SOP55-C-101 has been added to the DEEP Preference list.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.1.4.2 Page #: 3-6 Line #: Code: C
Original Comment #: 17

Comment: Please include a schedule for the implementation of the Waste Pit #6 Drying Study.

Response: Agree.

Action: Page 3-6, Section 3.1.4.2. The following sentence has been added to the end of the section: "Drying is scheduled to begin April 1996 and completed November 1996."

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.2 Page #: 3-8 Line #: Code: C
Original Comment #: 18

Comment: The Ohio EPA recommends not pumping water into the waste pits for waste reslurry. This process would create a pressure head within the waste pit. Due to the lack of knowledge regarding liner integrity, this procedure could cause contaminant migration. Also, the presence of heterogeneous contents within the waste pits decreases the likelihood of success of a slurry pump working on a large scale. DOE should re-evaluate the appropriateness of using a slurry pump in the DEEP treatability study.

Response: Comment Acknowledged. More detail about the reslurrying test -- specifically, justification for the test and more information about the amount of water to be added during reslurrying -- should be provided. Reslurrying is not expected to result in contaminant migration, because water will only be added if insufficient run-in occurs; also, such water will be slurried immediately. Waste pit heterogeneity is not expected to be a factor, since heavy and large debris would be picked up by a backhoe or clam shell.

Action: **Page 3-9, Section 3.2.1.** The following text has been added after the second sentence: "Reslurrying was selected as a test because of the fine-grained nature of much of the waste in the waste pits and because of the potential for difficulty in dewatering the wastes. Most of the waste is fine material, perfect for reslurrying. (Heavy and large debris would be picked up by a backhoe or clam shell.) Previous studies of pit waste have shown that significant amounts of amorphous materials exist within the waste pits and that these amorphous materials may behave more like a liquid after water has been introduced. Thus, pit amorphous materials removal may be more efficiently performed by reslurrying. Additionally, it is likely that the presence of significant quantities of amorphous materials may hinder the effectiveness of conventional well dewatering."

Page 3-10, Section 3.2.2. The following paragraph was added after the first paragraph in this section: "The water to be used during reslurrying will be derived from existing water in the waste pits, which are located within the perched water table. Water run-in should be adequate to reslurry. Water would be added to the excavation only if insufficient run-in occurs; this water would be slurried immediately and there would be no standing water. When this occurs, only enough water would be added to support the reslurry and would be negligible relative to the amount of water already contained in the waste pits. The negligible amount of water to be added during reslurrying will be offset by the treatability information gained by performing an experiment to determine the viability of the technique. Decant water from the slurry settling tank is pumped to a temporary holding tank, then ultimately treated through the FEMP water treatment system. Solids resulting from decant operations are to be directed back into the respective waste pit of origin."

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.5.1 Page #: 4-16 Line #: Code: E
Original Comment #: 19

Comment: Located after the first sentence in this section is a repeated incomplete sentence which needs to be deleted. Please revise the text accordingly.

Response: Agree.

Action: Page 4-16, Section 4.5.1. The second "is estimated to be approximately 105, 000 gallons of water per day, to be pumped during the initial three to four days," has been deleted.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: General Comment Page #: Line #: Code: C
Original Comment #: 20

Comment: The document would be more user friendly if figures and tables were included within the text following its initial text reference in the appropriate sections. Please revise accordingly.

Response: Agree. Future documents of this type will be completed in accordance with the comment.

Action: None.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: General Comment Page #: Line #: Code: C
Original Comment #: 21

Comment: Document review would be made easier if DOE would use pages with numbered lines.

Response: Agree. Future documents of this type will be provided using pages with numbered lines.

Action: None.