5-106.37

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OCT 29 1998

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

DOE-0095-99

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 THE INTEGRATED ENVIRONMENTAL MONITORING PLAN, REVISION 1

This letter serves to transmit the subject document for the U.S. Environmental Protection Agency (U.S. EPA) and Ohio Environmental Protection Agency (OEPA) review. The Integrated Environmental Monitoring Plan (IEMP) has been revised according to the revision schedule and technical strategy outlined in Section 8.0 of the document. As such, the document reflects the monitoring program design envisioned for 1999 and 2000. To facilitate the agencies' review of the document, an enclosure to this transmittal letter has been provided that includes information and summary tables which identify the proposed changes to the draft IEMP, Revision 1.

The target date for implementation of Revision 1 of the IEMP is January 1, 1999. This date supports the calender year reporting structure outlined in the document. To facilitate this schedule and support the U.S. EPA and OEPA's review of this transmittal, the Department of Energy (DOE) recommends meeting, as necessary, to resolve issues as quickly as possible.

Recycled and Recyclable

Should you have any questions regarding this submittal, please contact Kathleen Nickel at (513) 648-3166.

Sincerely,

Johnny Reising

Johnny W. Reising
Fernald Remedial Action
Project Manager

FEMP:Nickel

Enclosure

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ENCLOSURE

SUMMARY TABLE DESCRIPTION

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The enclosed summary table (Table 1) has been prepared to facilitate the U.S. Environmental Protection Agency's (EPA's) and the Ohio Environmental Protection Agency's (OEPA's) review of the proposed changes that have been incorporated into the Draft Integrated Environmental Monitoring Plan (IEMP), Revision 1. Consistent with the progressive two year focus of the IEMP, the document (Final IEMP, Revision 0) has been revised to reflect the monitoring program design envisioned for 1999 and 2000. Table 1 presents a brief description of the proposed major changes to the document and the location of specific changes within the document, along with the driver and technical justification for the proposed changes. Technical changes to the IEMP are primarily designed to:

- Address any major new remediation activities expected to begin during 1999 and 2000
- Incorporate data and findings from the IEMP monitoring programs conducted through 1997
- Incorporate any commitments made through the IEMP quarterly status reports and the 1997 Integrated Site Environmental Report or associated comment response documents
- Incorporate any new or revised regulatory requirements or agreements.

Specific technical changes are outlined in Table 1 and include changes to:

- Sample locations, frequencies, or constituents
- Analytical or sampling methodologies
- Data evaluation processes or reporting.

In addition to the specific technical changes that have been incorporated into the IEMP, Revision 1, a number of global changes to the document have also been made. While these changes are not necessarily reflected in Table 1, they are summarized below:

- The schedule of remediation activities and site organizational structure has been updated.
- Changes to program or plan titles referenced in the IEMP have been incorporated.
- References to the revised Sitewide CERCLA Quality Assurance Project Plan and applicable FEMP procedures have been updated.

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- Each media-specific plan has been updated to provide descriptions of decontamination and waste disposition activities, as well as to clarify data management requirements.

- The reporting subsections have been updated to reflect the current reporting structure and the reporting schedule for all media is provided in Section 8.0.

In addition to the changes described above, the following information is provided to assist in orienting reviewers to the document:

- Section 1.3 of the document has been revised to clarify the distinction between project-specific monitoring responsibilities and the monitoring scope encompassed within the IEMP.

- The FEMP's National Pollution Discharge Elimination System (NPDES) permit renewal application is currently being reviewed by the OEPA. Therefore, the NPDES monitoring program presented in Section 4.0 has not been updated and reflects a continuation of the current program. When the NPDES permit application is renewed by the OEPA, the IEMP will be revised accordingly and change pages will be issued. It is anticipated that the NPDES permit will be renewed/revised during the first quarter of 1999.

- Data summary tables within the document were updated with data through 1997. Data collected during 1998 have not been incorporated into the tables; however, the available 1998 data were considered in the development of the monitoring program design presented in the document.

- Supporting information for the proposed changes to the air monitoring program presented in Section 6.0 is provided as attachments to the summary table. This information includes the results of air modeling exercises used to evaluate the pattern of potential air particulate and radon emissions during 1999 and 2000.

The information provided above together with the information provided in Table 1 should assist in guiding reviewers through the document and highlighting the substantiative proposed changes.

TABLE 1

SUMMARY OF TECHNICAL CHANGES TO THE MEDIA-SPECIFIC SECTIONS OF THE DRAFT IEMP, REV. 1

Section/Subsection/ Appendix	Description of Revision	Driver/Technical Justification
Section 3, Global	The "South Plume Module" and the "South Plume Optimization Module" are now collectively referred to as the "South Plume Module".	Driver: DOE-initiated Technical Justification: Data from the South Plume Optimization wells and South Plume extraction wells will be reviewed and interpreted together.
Section 3, Global	The total number of wells being monitored for water quality in 1999 and 2000 is 130. This is an increase of two wells from the number of wells that were monitored in 1997 and 1998.	Driver: DOE-initiated Technical Justification: It was necessary to add and remove wells from monitoring programs in order to ensure adequate well coverage. Some wells were removed due to access problems or because it was necessary to plug and abandon them in order to facilitate remediation activities. Monitoring wells were added either to provide adequate well coverage or per agency agreement. Details are provided within each subsection.
3.2.2	New text has been added acknowledging that the modified Director's Findings and Orders will require DOE to follow the monitoring program described in the IEMP.	Driver: DOE-initiated due to anticipated revision of the Director's Findings and Orders Technical Justification: DOE-proposed revised language for the Ohio Environmental Protection Agency (OEPA) Director's Findings and Orders has been verbally accepted by the OEPA and a final revised order is anticipated.

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TABLE 1
(Continued)

Section/Subsection/ Appendix	Description of Revision	Driver/Technical Justification
3.4.2.3 Appendix A, A.3 and A.4 Table A-2	Boron has been re-categorized from ">MP" to "<MP" in Aquifer Zones 0, 1, 3, and 4.	Driver: DOE-initiated Technical Justification: A final remediation level (FRL) exceedance for boron was detected in Aquifer Zone 2 between 1996 and 1997. Prior to 1996, boron had not been sampled for in any aquifer zones and was therefore conservatively categorized as ">MP" in all five aquifer zones. In 1996 and 1997, 250 five aquifer zones. The only FRL exceedances for boron were detected in Aquifer Zone 2.
3.4.2.3 Appendix A, A.3 and A.4 Table A-2	Vanadium has been re-categorized from "<N" to ">N" in Aquifer Zone 2.	Driver: DOE-initiated Technical Justification: A FRL exceedance for vanadium was detected for the first time in Aquifer Zone 2.
3.4.2.3 Appendix A, A.3 and A.4 Table A-2	Chromium has been re-categorized from ">MP" to "<MP" in Aquifer Zone 0.	Driver: DOE-initiated Technical Justification: During 1996 and 1997 total chromium was conservatively analyzed for in place of chromium VI in all five aquifer zones. FRL exceedances were detected in Aquifer Zones 1, 2, and 3. Prior to 1996, chromium had not been analyzed for in Aquifer Zones 0 and 3 so chromium was conservatively categorized as being ">MP" in these two aquifer zones. No exceedances based on total chromium analysis were detected in Aquifer Zone 0 in 1996 and 1997.

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TABLE 1
(Continued)

Section/Subsection/ Appendix	Description of Revision	Driver/Technical Justification
3.4.2.3 Appendix A, A.3 and A.4 Table A-2	Chromium has been re-categorized from "<MP" to ">MP" in Aquifer Zones 1 and 2.	Driver: DOE-initiated and to incorporate chromium categorization changes identified in the 1997 Integrated Site Environmental Report Technical Justification: Based on chromium VI results from 1988 through 1995, chromium was categorized as "<MP" in Aquifer Zones 1 and 2. Between 1996 and 1997, FRL exceedances conservatively based on total chromium analysis were detected in Aquifer Zones 1 and 2.
3.5.1.1	Total number of wells being monitored for the South Plume Module (Activities 1 through 4) has decreased from 57 to 55: • Extraction wells 32308 and 32309 have been added to Activities 1 and 2. • Monitoring Well 21063 has been added to Activity 3. • Monitoring Wells 2548 and 3062 have been removed from Activities 2 and 4. • Monitoring Wells 2624 and 3624 have been removed from Activities 2 and 3.	Driver: DOE-initiated and to address Comment Response 8 on the 1997 Integrated Site Environmental Report which recommended removing Monitoring Wells 2624 and 3062 from monitoring list Technical Justification: New extraction wells have been installed as part of the South Plume Module (South Plume Optimization Module). Technical Justification: This monitoring well has been added to provide additional monitoring coverage in front of the leading edge of the northeast lobe of the total uranium plume. In addition, this well was already monitored as part of Activity 2. Technical Justification: Because both monitoring wells were not deemed critical to the program and due to off-property land access issues which could not be resolved, they have been removed from the South Plume Module monitoring list. Technical Justification: Because both monitoring wells were not deemed critical to the program and due to off-property land access issues which could not be resolved, they have been removed from the South Plume Module monitoring list.

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TABLE 1
(Continued)

Section/Subsection/ Appendix	Description of Revision	Driver/Technical Justification
3.5.1.1	A proposal to install new monitoring wells will be forthcoming in 1999 via an independent work plan to improve monitoring coverage along the eastern edge of the 20 μg/L total uranium plume south of Willey Road. Once installed, the new monitoring wells will be incorporated into the South Plume Monitoring Activities 2 and 3 to monitor for both uranium and non-uranium FRL constituent concentrations.	Driver: DOE proposal to address need for new monitoring wells Technical Justification: Geoprobe results from 1997 (reported in Appendix G of the Baseline Remedial Strategy Report, Remedial Design for Aquifer Restoration [Task 1]) reveal that the top surface of the 20 μg/L total uranium plume, at the leading edge of the plume south of Willey Road, is in some areas below the water table. The plume could migrate below a conventional Type 2 well screen depth and migrate above a conventional Type 3 well screen depth without being adequately monitored by existing wells in the area.
3.5.1.1	Text has been added to identify that information learned during the start-up of Extraction Wells 32308 and 32309 will be incorporated into future revisions of the IEMP.	Driver: DOE initiated and to address commitment made in the Integrated Environmental Monitoring Status Report for Second Quarter 1998

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TABLE 1
(Continued)

Section/Subsection/ Appendix	Description of Revision	Driver/Technical Justification
3.5.1.2	The total number of wells being monitored for the South Field Extraction (Phase 1) Module has increased from 21 to 33. • Ten new extraction wells (31550, 31560, 31561, 31562, 31563, 31564, 31565, 31566, 31567, and 32276) will be monitored for total uranium. • Monitoring Wells 21192 and 3046 will be monitored for South Field constituents as identified in Section 3.5.1.2.	Driver: DOE-initiated and to address recommendations made in the Integrated Environmental Status Report for First Quarter 1998 to add Monitoring Wells 21192 and 3046 to the monitoring program Technical Justification: The South Field Extraction (Phase 1) Module began operation in 1998. Technical Justification: Monitoring wells have been added to provide additional coverage around the South Field Extraction Module.
3.5.1.2	Text has been added to identify information learned during the start-up of Extraction Wells 31550, 31560, 31561, 31562, 31563, 31564, 31565, 31566, 31567, and 32276 will be incorporated into future revisions of the IEMP.	Driver: DOE initiated and to address commitment made in the Integrated Environmental Monitoring Status Report for Second Quarter 1988 Technical Justification: It is important that lessons learned from the start up of the wells will be considered in the future.
3.5.1.4	Monitoring Wells 2034 and 3034 have been removed from the monitoring list for the Waste Storage Area Module.	Driver: DOE-initiated Technical Justification: These wells are scheduled to be plugged and abandoned in 1999 in support of the Silos Project Note: Although these wells are not listed in the IEMP, Rev 1 version, sampling will continue until access to the wells is no longer possible, which will be documented in the appropriate IEMP quarterly status report.

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TABLE 1
(Continued)

Section/Subsection/ Appendix	Description of Revision	Driver/Technical Justification
3.5.1.6	Several monitoring wells have been removed and one has been added to the list of wells where water-levels are obtained, for a net decrease of six wells to 155.	Driver: DOE-initiated program enhancement
	• Monitoring Well 21192 has been added to the water-level monitoring list.	Technical Justification: The monitoring well has been added to provide additional coverage around the South Field.
	• Monitoring Wells 2034, 2066, 2548, 2549, 2624, 3034, and 3624 have been removed from the water-level monitoring list.	Technical Justification: Monitoring Well 2066 appears to be completed in a silty portion of the Great Miami Aquifer, and therefore, does not reflect the regional Great Miami Aquifer water level. Monitoring Wells 2548, 2549, 2624, and 3624 have been removed due to off-property access issues which could not be resolved. Monitoring Wells 2034 and 3034 are scheduled to be plugged and abandoned in 1999 prior to the Silos Project activity. These monitoring wells have been removed because they were not deemed critical to meeting monitoring objectives.
3.5.1.7	A colloidal borescope section has been added to the sampling methodology.	Driver: This section has been added to incorporate Comment Responses 11 and 12 on the Integrated Environmental Monitoring Status Report for Third Quarter 1997 which identified borescope verbage would be added. Technical Justification: Borescope measurements will be used to help assess aquifer conditions.
3.5.2.2	The activity title has been changed to "Property Boundary Monitoring Program".	Driver: DOE-initiated Technical Justification: DOE proposed revised language for the OEPA Director's Findings and Orders has been verbally accepted by the OEPA and a final revised order is anticipated.

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TABLE 1
(Continued)

Section/Subsection/ Appendix	Description of Revision	Driver/Technical Justification
3.5.2.2 and Appendix A, A.4.1	Five of the six 4000 series wells have been removed from the Property Boundary Monitoring Program, thus decreasing the number of wells being monitored from 33 to 28. Monitoring Well 4398 will continue to be monitored, as part of the Property Boundary Monitoring Program, in order to determine if re-injection is acting to push the uranium plume deeper into the aquifer.	Driver: Data analysis supports the change. Technical Justification: The Operable Unit 5 remedial investigation/feasibility study (Section 4.8) identified that the total uranium plume is located in the upper portions of the aquifer at Types 2 and 3 well depths, and that no uranium plume has been observed at the Type 4 well depth. Data from 1996 and 1997 continue to confirm that there are no FRL exceedances related to the FEMP at the Type 4 well depth. The lack of contamination attributable to the FEMP at the Type 4 well depth is due to two factors: 1) the contamination entered the aquifer from sources above, resulting in plumes that are most extensive and concentrated at the Type 2 well depth and successively less extensive and concentrated at the Type 3 well depth; and 2) the presence of a clay layer within most of the aquifer at a depth just below the Type 3 well depth. This clay layer has served to limit the downward migration of contamination.
3.7.1	A discussion of ongoing groundwater model upgrade and planned incorporation of data fusion has been added.	Driver: DOE-initiated Technical Justification: The necessity to upgrade the groundwater model and to incorporate data fusion has been identified through discussions with U.S. Environmental Protection Agency (EPA) and OEPA.
3.7.2	A discussion on-site disposal facility reporting has been added.	Driver: DOE-initiated to provide clarification and to address various comment responses on the quarterly status reports and the 1997 Integrated Site Environmental Report Technical Justification: A commitment has been made through IEMP quarterly status reports and their associated comment response documents to provide monitoring results through IEMP quarterly status reports and annual integrated site environmental reports.

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TABLE 1
(Continued)

Section/Subsection/ Appendix	Description of Revision	Driver/Technical Justification
Appendix A, A.5.1	The criteria for changing sampling frequencies has been incorporated.	Driver: DOE-initiated Technical Justification: Program enhancement to clarify how monitoring requirements will be re-evaluated.
Appendix A, A.5.2	A commitment to determine the presence of chromium VI in the aquifer has been added.	Driver: This discussion has been added to address the commitment made in the 1997 Integrated Site Environmental Report, Appendix A. Technical Justification: Water samples are currently being analyzed for total chromium, but need data for specific form of constituent. Total chromium results are conservatively considered to be chromium VI. FRL exceedances for total chromium in 1996 and 1997 could be false positive FRL exceedances for chromium VI. Therefore, hexavalent chromium and geochemical parameters (Eh and pH) will be measured and reviewed in order to determine if the monitoring approach for chromium in the IEMP is appropriate to determine FRL exceedances.
Appendix A, A.5.2	A planned investigation of the valance state of chromium in the Great Miami Aquifer will be conducted.	Driver: DOE-Initiated and to incorporate planned activities identified in the 1997 Integrated Site Environmental Report Justification: Water samples are currently being analyzed for total chromium. Total chromium results are conservatively attributed to chromium VI which has resulted in what are deemed to be false positive FRL exceedances for chromium VI. Therefore, as identified in the 1997 Integrated Site Environmental Report, Appendix A, hexavalent chromium and geochemical parameters (Eh and pH) will be measured and reviewed in order to determine if the monitoring approach for chromium in the IEMP is appropriate to determine FRL exceedances.

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TABLE 1
(Continued)

Section/Subsection/ Appendix	Description of Revision	Driver/Technical Justification
Section 4, Global	In general, Federal Facility Compliance Agreement (FFCA) discussions were updated, where applicable, to reflect the Operable Unit 5 Record of Decision as being a driver and design consideration.	Driver: DOE-initiated for clarification and consistency Technical Justification: The FFCA monitoring requirements are used to determine compliance with the limits stipulated in the Operable Unit 5 Record of Decision.
Section 4, Global Table Corrections	The constituent 4-methylphenol has been changed to p-methyphenol.	Driver: DOE-initiated Technical Justification: This change was made to provide consistency with how data will be presented.
4.2	The FFCA monitoring requirements at the inactive flyash pile leachate collection system have been updated to reflect current conditions.	Driver: DOE-initiated Technical Justification: As a result of decommissioning the inactive flyash pile leachate collection system, this project-specific location has been removed from FFCA requirements.
4.2.2	The Storm Water Pollution Prevention Plan (SWPPP) was removed as an IEMP regulatory driver, but retained as a project-specific regulatory driver.	Driver: DOE-initiated to correct an error Technical Justification: SWPPP was erroneously listed as an IEMP regulatory driver.
4.2 4.4.2	All but three benchmark toxicity value (BTV) constituents (barium, cadmium, and silver) have been removed from monitoring and data evaluation requirements.	Driver: DOE-initiated and to incorporate verbage identified in the Integrated Environmental Monitoring Status Report for Second Quarter 1998 Technical Justification: Through evaluation of surface water BTVs presented in Section C.4.2.1 of the Sitewide Excavation Plan and documented in the Integrated Environmental Monitoring Status Report for Second Quarter 1998, barium, cadmium, and silver were identified as the only constituents of ecological concern requiring further evaluation through the IEMP.

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TABLE 1
(Continued)

Section/Subsection/ Appendix	Description of Revision	Driver/Technical Justification
4.4.2.3	The monthly sampling frequency for constituents identified as "sporadic exceedances" has been reduced to quarterly, with the exception of sample location SWD-03.	Driver: DOE-initiated. Maintaining frequency at sample location SWD-03 is driven to address Comment Response 10 on the Draft Final Remedial Design Package For Operable Unit 1. Technical Justification: Sampling during 1997 indicated that constituents identified as "sporadic exceedances" do not indicate a persistent condition or increasing trend. The reduced sampling frequency will provide sufficient data for continued surveillance of these constituents. Maintaining the sampling frequency at sample location SWD-03 will support an evaluation of the effect of uncontrolled runoff from the Operable Unit 1 area on the surface water pathway, as construction activities are initiated.
4.4.2.4	Quarterly total uranium sampling was added to sample locations STRM 4003, STRM 4004, STRM 4006, and SWD-01.	Driver: This change has been incorporated to address Comment Response 34 on the 1997 Integrated Site Environmental Report. Technical Justification: Uranium is the primary constituent of concern at the FEMP; therefore, sampling of total uranium on all site drainages will better assess the effect of the site on the surface water pathway. These total uranium values will also be used to help refine the calculation for the pounds of total uranium attributed to uncontrolled runoff from the site per inch of rainfall.
4.4.2.8	In the past, treatment bypass sampling had been designated as project-specific. This sampling is now identified as being an IEMP requirement.	Driver: DOE-initiated for clarification and consistency Technical Justification: Because FFCA reporting has been incorporated into the IEMP, the treatment bypass sample location has been also incorporated and is no longer identified as being project specific.
4.5.2	Tables 4-4 through 4-15 have been consolidated into two tables (Tables 4-4 and 4-5).	Driver: DOE-initiated Technical Justification: The tables were consolidated in a more concise manner to eliminate redundancy.

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TABLE 1
(Continued)

Section/Subsection/ Appendix	Description of Revision	Driver/Technical Justification
Appendix B	Table B-1, Cross-Reference of Surface Water Sample Locations, has been added.	Driver: DOE-initiated for clarification Technical Justification: The maps contained in Appendix B identify surface water locations where FRLs or BTVs were exceeded. These maps use historical sample location numbers. Table B-1 cross-references the locations that have had multiple location numbers in order to eliminate any confusion.
5.1, 5.4.3	Two Great Miami River sediment sample locations (G7 and G9) and two Paddys Run (south) sediment sample locations (PS4 and PS5) have been removed, reducing the total number of sample locations to 16. Note: Contingency is included to sample the excluded locations if upstream locations indicate elevated results.	Driver: DOE-initiated in IEMP, Revision 0, to evaluate possible reductions in sediment monitoring locations based on low contaminant levels Technical Justification: Reduction is based on historically low total uranium levels observed at these locations. Additionally, based on the level of sediment controls employed on site and the associated inspection programs, it is not anticipated that sediment loading to the affected drainages will significantly increase.

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TABLE 1
(Continued)

Section/Subsection/ Appendix	Description of Revision	Driver/Technical Justification
5.4.3, Tables 5-2 and 5-3	The following bullets identify the changes that have been made to the sediment analytical program:	Driver: The section has been revised to address Comment Response 45 on the Draft Final Integrated Environmental Monitoring Plan, Revision 0.
	• Isotopic thorium and isotopic radium have been added to the sampling list of sediment sample location PS1, (located on Paddys Run), which in the past was only monitored for total uranium.	Technical Justification: The collection of isotopic data from this location will allow for an assessment of the impact on the sediment pathway from Areas 1 and 2 excavation activities from 1997 through 2000. This also aligns the analytical suite for this sediment location with the primary soil constituents of concern identified for Remediation Areas 1 and 2 as committed to in the comment response.
	• Radium-228 has been added to the sampling list for those sediment sample locations which radium-226 was already being sampled.	Technical Justification: The addition of radium-228 to the existing locations that are analyzed for radium-226 makes the sampling lists correspond to those soil constituents of concern identified in Remediation Areas 1 and 2.
5.6.1	The data evaluation section has been revised to include contingency for additional sediment sampling off property based on upstream results from the Great Miami River and Paddys Run.	Driver: This section has been revised in response to a commitment made in the IEMP, Revision 0, which identifies the need to evaluate possible reductions in sediment sample locations based on low contaminant levels. Technical Justification: This contingency is included in order to re-initiate sampling of those locations that have been removed if it is identified through data evaluation that upstream sample results become elevated.

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TABLE 1
(Continued)

Section/Subsection/ Appendix	Description of Revision	Driver/Technical Justification
6.2	The compliance section (summary of regulatory drivers) associated with air monitoring has been updated to more accurately reflect regulatory drivers.	Drivers: DOE-initiated Technical Justification: This section has been updated to better reflect actual drivers.
6.4.2.1	Two high-volume air monitors (WPTH-1 and WPTH-2), at the former location AMS-19 and at AMS-28, have been added to track thorium concentrations at the facility fenceline on a biweekly sampling schedule.	Drivers: DOE-initiated to address the potential thorium emissions from Operable Unit 1 waste pit excavation, waste processing and load-out operations scheduled to begin in 1999 Technical Justification: These monitoring locations were selected based on model-predicted particulate concentrations at the facility fenceline resulting from fugitive emissions associated with the waste pit remedial activities. Monitoring constituents are based on the thorium contribution to dose and the significant quantities of thorium in the waste pits. Additional justification and a modeling output is provided in Attachment 1.

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TABLE 1
(Continued)

Section/Subsection/ Appendix	Description of Revision	Driver/Technical Justification
6.4.2.2	The continuous radon monitoring program has been expanded from 19 to 29 monitors, with the following additions and deletions: ADDITIONS Location — Effective Operation Date AMS-03 — 08/01/98 AMS-08a — 01/01/99 AMS-09c — 06/04/98 AMS-22 — 06/04/98 AMS-23 — 08/01/98 AMS-24 — 01/01/99 AMS-25 — 01/01/99 AMS-26 — 06/04/98 AMS-27 — 06/04/98 AMS-28 — 01/01/99 AMS-29 — 01/01/99 TS4 — 01/01/99 DELETIONS Location — Removal Dates AMS-11 — To be determined Pit 5 — To be determined	Driver: DOE initiated to address potential radon emissions resulting from remediation activities scheduled during 1999 and 2000 Technical Justification (additions): This new configuration provides the following: • Continuous tracking of radon concentrations at the facility fenceline and on-property locations to demonstrate compliance with DOE Order 5400.5 radon concentration limits • Supports the remedial action decision-making process by providing frequent feedback to remediation projects, regulatory agencies and FEMP stakeholders on trends in ambient radon concentrations • Provides coverage of model predicted maximum radon concentrations at the facility fenceline and on-property locations. Attachment 2 provides additional justification and a modeling output. Technical Justification (deletions): AMS-11 provides data that are not needed to assess compliance with DOE Order 5400.5. Because AMS-11 is not a fenceline location, an on-site monitor located near radon sources, or considered a background location under the IEMP, it will be deleted from the monitoring program. During remediation activities, the waste pit 5 location will be removed because it is in a controlled area which will be monitored under Waste Pits Remedial Action Project remediation project.

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TABLE 1
(Continued)

Section/Subsection/ Appendix	Description of Revision	Driver/Technical Justification
6.4.2.2, 6.5.3,6.5.3.1, 6.6.2, 6.6.4 Table 6-3 Figure 6-3	Alpha track-etch cup detectors have been eliminated.	Driver: DOE-initiated change based on data evaluation Technical Justification: For environmental levels of radon, the alpha track-etch cup detector data are of limited value as described below: • Due to the lengthy exposure time of alpha track-etch detectors to acquire the needed sensitivity, data are not available for approximately eight months which does not allow for timely decision making regarding project activities. • Historically, sensitivity problems have affected the quality of the data. Correction factors based on blank detector data have been required to correct data for inconsistent performance by the analytical vendor (as identified in the 1997 Integrated Site Environmental Report). • Expansion of the continuous radon monitoring locations provides a sufficient radon monitoring network to ensure compliance with DOE Order 5400.5 requirements.
6.4.2.3	Thermoluminescent dosimeter (TLD) location 1B has been removed, decreasing the number of on-site TLD locations from seven to six. It should be noted that in the Final IEMP, Revision 0, TLD location 1A was identified in the document, however it had been moved and identified as 1B during 1997 and 1998.	Driver: DOE-initiated change based on data evaluation Technical Justification: TLD location 1B was the direct radiation component of the on-site environmental monitoring station designated as AMS-1B. With the implementation of the IEMP, air monitoring station AMS-1B has been removed from service. This direct radiation data are not needed to support the annual dose assessment required by DOE Order 5400.5; therefore, it will be removed.

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TABLE 1
(Continued)

Section/Subsection/ Appendix	Description of Revision	Driver/Technical Justification
6.4.2.3	Designation of TLD location 27 from off site to background direct radiation monitoring location has been changed.	Driver: DOE-initiated Technical Justification: The IEMP identifies AMS-12 as a background air monitoring station. TLD location 27 is collocated with this air monitoring station but was previously identified as an off-site direct radiation monitoring location rather than a background location. Because this location represents background conditions, and is identified as such within the air particulate monitoring program, TLD location 27 was re-designated as a background direct radiation monitoring location.
6.4.2.3	Non-background off-site TLD locations (TLDs 10, 11, and 12) have been eliminated.	Driver: DOE-initiated and in order to address Comment Response 18 on the Integrated Environmental Monitoring Status Report for First Quarter 1998 Technical Justification: These off-site TLD locations (TLD 10, 11, and 12) were collocated with pre-IEMP air monitoring stations (AMS-10, AMS-11, and AMS-13, respectively). With the implementation of the IEMP, these air monitoring stations have been removed from service; however, the TLDs remained. The TLDs remaining at these locations are not needed to support the annual dose calculations required under DOE Order 5400.5; therefore, they will be removed from service.

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TABLE 1
(Continued)

Section/Subsection/ Appendix	Description of Revision	Driver/Technical Justification
6.4.2.3	TLD locations 21 and 30 have been removed, decreasing the number of background locations from six to five (with the replacement of TLD location 27 as a background monitor).	Driver: DOE-initiated change based on data evaluation Technical Justification: DOE has been monitoring background radiation near the FEMP for many years, the results are well characterized and exhibit very stable levels (less than 10 percent variations for all background sampling points over the last six sampling years). TLD location 21 typically represents a median value of the background monitors; however, it is not in a readily accessible location and TLD location 30 will be replaced with TLD location 27 as a background direct radiation monitoring location.
Figure 7-1	The figure identifying potential produce sampling locations has been updated to reflect locations where continued produce farming and sample collection are anticipated.	Driver: DOE-initiated Technical Justification: This figure has been updated to better reflect where produce farming is conducted.
7, 7.5.2, Table 7-2	The sample size has changed to "≥ 500 grams".	Driver: DOE-initiated Technical Justification: A larger sample size was needed to improve laboratory analysis.

1801

TABLE 1
(Continued)

Section/Subsection/ Appendix	Description of Revision	Driver/Technical Justification
D.2.4, D.3.0, D.4.4, D.5.0 Table D-2	Natural resource reporting will be via IEMP annual integrated site environmental reports and correspondence between DOE and the trustees. The requirement for impacted habitat monitoring has been removed from the document with the qualification that narrative summaries will be provided in the in the IEMP quarterly status reports and in the integrated site environmental reports.	Driver: This section has been revised to address Comment Response 12 on the Integrated Environmental Monitoring Status Report for First Quarter 1998 and to reflect verbage identified in the quarterly status reports. Technical Justification: Pursuant to the tentative natural resource trusteeship agreement
D4.1.1 Attachment D.1	In support of Sloan's crayfish studies, visual observations of sediment loading to Paddys Run have been discontinued. Criteria have been established for when to resume observations.	Driver: This section has been revised to address Comment Response 46 on the Integrated Environmental Monitoring Status Report for Fourth Quarter 1997 and to reflect verbage identified in the quarterly status reports. Technical Justification: Reflect DOE agreement with the regulatory agencies
D.4.1.3	The recent Federal plans to delist Running Buffalo Clover from the federal endangered species list have been included.	Driver: DOE-initiated Technical Justification: This change was made to provide the most up-to-date information.
D.4.1.4	The 1998 floristic analysis for the northern woodlot and associated northern forested wetland were used in place of 1999 survey to support Spring Coral Root studies.	Driver: DOE-initiated Technical Justification: This section has been revised with the new information to a commitment made in the IEMP, Revision 0, for follow-up surveys prior to any wetland mitigation or remediation activities in the northern woodlot.

18011

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TABLE 1
(Continued)

Section/Subsection/ Appendix	Description of Revision	Driver/Technical Justification
D.4.3	Annual summary of all cultural resource field activities currently provided meets requirements for cultural resource reporting.	Driver: Programmatic Agreement for Archeological Activities at the FEMP Technical Justification: Not applicable

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Confirmatory Sampling of Thorium Emissions During Excavation of the Waste Pits

Remediation activities in the waste pits are expected to generate particulate emissions containing elevated levels of uranium and thorium. Based on the composition of the waste material (see IEMP Appendix C, Table C-3), thorium-230 has the potential to be the major contributor to air inhalation dose from waste pit emissions. While the application of administrative and engineering controls for fugitive dust abatement will minimize waste pit emissions, there is a need to confirm thorium-230 emissions remain at low levels during the excavation of the waste pits. Although thorium-230 is measured on a quarterly frequency under the existing IEMP air monitoring program, more frequent analysis for thorium is deemed necessary to provide regular confirmation of acceptably low thorium-230 levels.

Since required detection limits and limited sample volume prevent using the current biweekly air samples for uranium, thorium, and quarterly composite analyses, dedicated air monitors specifically established for thorium monitoring, are required. In order to select the optimum fenceline locations for the thorium monitors, waste pit emissions have been modeled using the ISCLT computer code (EPA approved). The five year wind pattern and waste pit excavation plan provided input data for the ISCLT code. Phase 2 of the pit excavation plan (NOTE: This information was provided in the Final Waste Pit Remedial Action Project Remedial Design Package, August 1998) has been modeled because it represents the largest exposed surface area during the waste pit excavation project. Due to limitations on how area sources are modeled by the ISCLT code, the overall exposed area in Phase 2 was approximated using four rectangular areas. For the purposes of locating the monitors, only relative concentrations are needed. Therefore, the actual release rate from exposed areas were not quantified. Instead, a uniform release rate was used as input to the ISCLT code. Figure 1 shows the relative distribution of waste pit particulate emissions.

The highest fenceline concentrations, as predicted by the ISCLT code, occur along the western boundary of the FEMP between AMS-6 and AMS-27. Although much lower than the western border, higher particulate concentrations were predicted to occur on the northern border in the area now served by AMS-28. Considering the results of the ISCLT model and the practical considerations; such as the availability of electrical power, ease of access to the monitor, and expedient exchange of filters, two locations for thorium specific air monitors were selected. The locations, designated WPTH-1 and WPTH-2 in Figure 6-1 of the IEMP, will be utilized as thorium monitoring locations. Full implementation is expected to be completed before January 1, 1999. Details of the thorium sampling and analysis schedule are provided in Table 6-2 of the IEMP.

As a subpart of the radiological air particulate monitoring program described in Section 6.4.2.1 of the IEMP, the thorium monitoring program will utilize the same equipment, data review, and quality control practices as the air particulate monitoring program. Data collected under the thorium monitoring program will provide confirmation of the emission control practices in use during waste pit excavation. Data from the air particulate monitoring program will continue to be used to track and demonstrate compliance with the NESHAP Subpart H standard.

ATTACHMENT 2

Radon Monitoring Location Assessment

As remediation activities continue at the FEMP, it is imperative to assess the appropriateness of the radon monitoring locations to ensure that monitors at these locations optimally collect relevant data based on changing site emissions from any radon source changes. It is also a requirement of the IEMP in its biennial review process.

To assess the appropriateness of the radon monitoring locations, modeling that incorporates current radon sources and expected sources during the next two years of project activities is employed. From the concentration isopleths produced from this model, the current radon monitoring locations are assessed for their appropriateness and the need for additional monitoring locations is examined. Radon source emissions have been modeled using the ISCLT computer code (EPA approved). The five year wind pattern and pit excavation plan (NOTE: This information was provided in the Final Waste Pit Remedial Action Project Remedial Design Package, August 1998) provides input data for the ISCLT code.

The following assumptions were used as input into the ISCLT model:

DRYER STACK (STACK 1)

Source Data:

Location:	
x-coordinate:	707.51 m (1379100 east)
y-coordinate:	- 407.42 m (481416 north)
Emission Rate:	3.6 E6 pCi/sec
Source Base:	0.0 m
Source Height:	60.0 ft
Stack Temperature:	540 ^{0}F
Exit Diameter:	2.17 ft
Exit Flow Rate:	4800 acfm
Process Rate:	30 ton/hr
Max. Ra Conc:	437 pCi/g (Pit 2)

MATERIAL HANDLING BUILDING (VOL 1)

Source Data:

Location:	
x-coordinate:	768.71 m (1379300 east)
y-coordinate:	- 381.82 m (481500 north)
Emission Rate:	4.0 E5 pCi/sec
Source Elevation:	0.0 m
Source Height:	21 ft
Horizontal Dimension:	170 ft
Vertical Dimension:	360 ft

RAILCAR LOADOUT BUILDING (VOL 2)

Source Data:

Location:	
x-coordinate:	798.95 m (1379400 east)
y-coordinate:	- 503.74 m (481100 north)
Emission Rate:	1.3 E6 pCi/sec
Source Elevation:	0.0 m
Source Height:	21 ft
Horizontal Dimension:	120 ft
Vertical Dimension:	240 ft

K-65 SILOS AND SILO 3 (VOL 3)

Source Data:

Location:	
x-coordinate:	524.65 m (1378500 east)
y-coordinate:	-701.65 m (480450 north)
Emission Rate:.	2.5 E6 pCi/sec
Source Elevation:	0.0 m
Source Height:	36 ft
Horizontal Dimension:	200 ft
Vertical Dimension:	500 ft

WASTE PIT 2 (AREA 1)

Source Data:

Location:
x-coordinate: 524.87 m (1378500 east)
y-coordinate: -381.82 m

Emission Rate: 6.82 E4 pCi/sec

Source Elevation: 0.0 m

Source Height: 0.0 m

Easternly Dimension: 50 ft

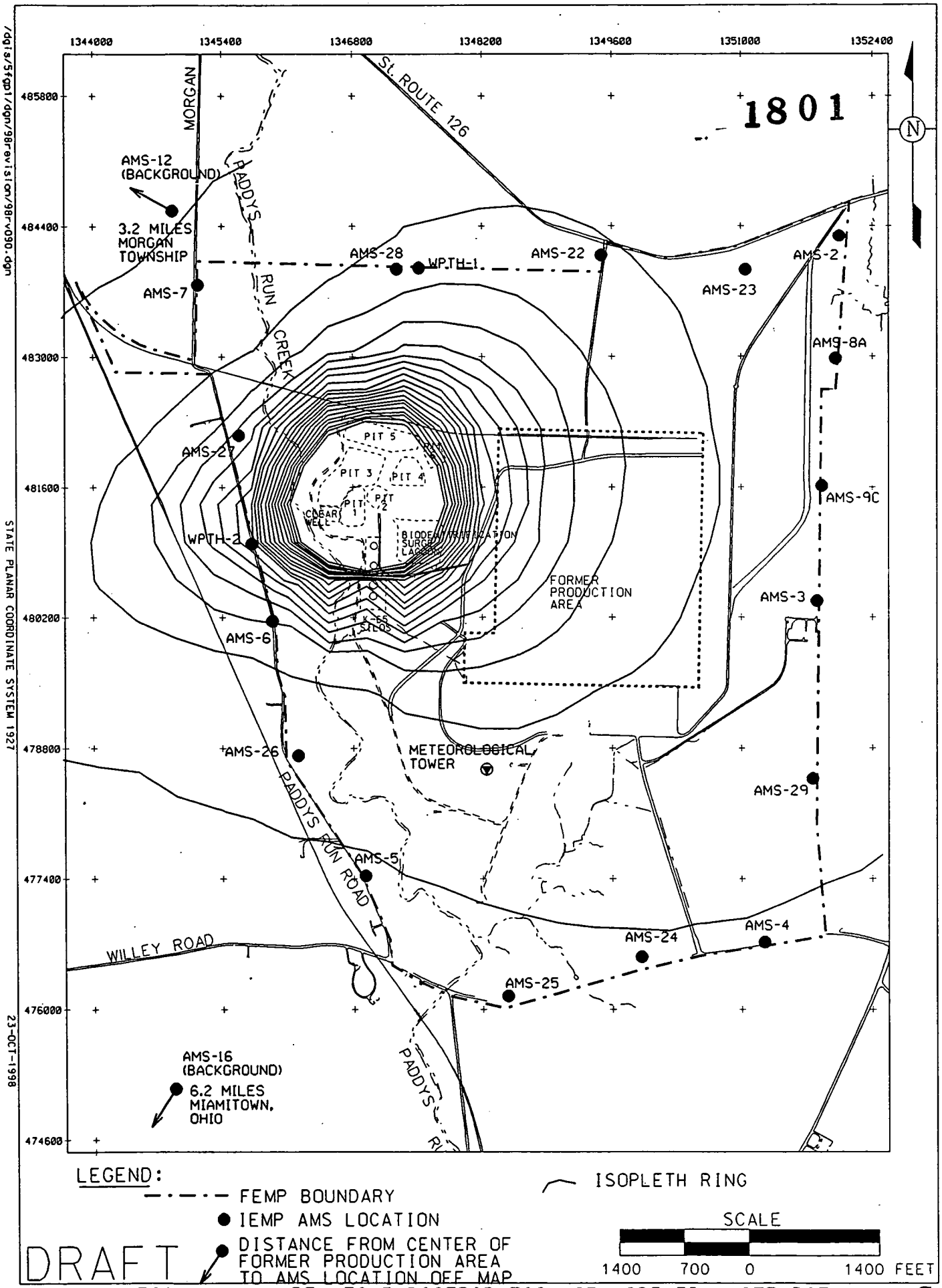
Northerly Dimension: 50 ft

Angle from North: 0.0

Initial Vertical Dimension: 50 ft

The highest fenceline radon concentrations, as predicted by the ISCLT code (presented in attached Figure 2), occur west of the K-65 Silos near AMS-6 and northeast of the railcar building between AMS-22 and AMS-23. The highest on-site radon predicted concentrations are east of the surge lagoon in the Waste Pits Remedial Action Project area. The proposed IEMP radon monitoring configuration provides coverage of predicted maximum radon concentrations at the facility fenceline and on-site locations.

Data collected under the revised radon monitoring program will provide confirmation of the emission control practices in use during waste pit excavation and processing. This data will continue to track and demonstrate compliance with the requirements of DOE Order 5400.5.



LEGEND:

- FEMP BOUNDARY
- IEMP AMS LOCATION
- DISTANCE FROM CENTER OF FORMER PRODUCTION AREA TO AMS LOCATION OFF MAP
- ISOPLETH RING

SCALE

1400 700 0 1400 FEET

DRAFT

FIGURE 1. RELATIVE DISTRIBUTION OF MODELED WASTE PIT EXCAVATION PARTICULATE EMISSIONS (RELATIVE SCALE)

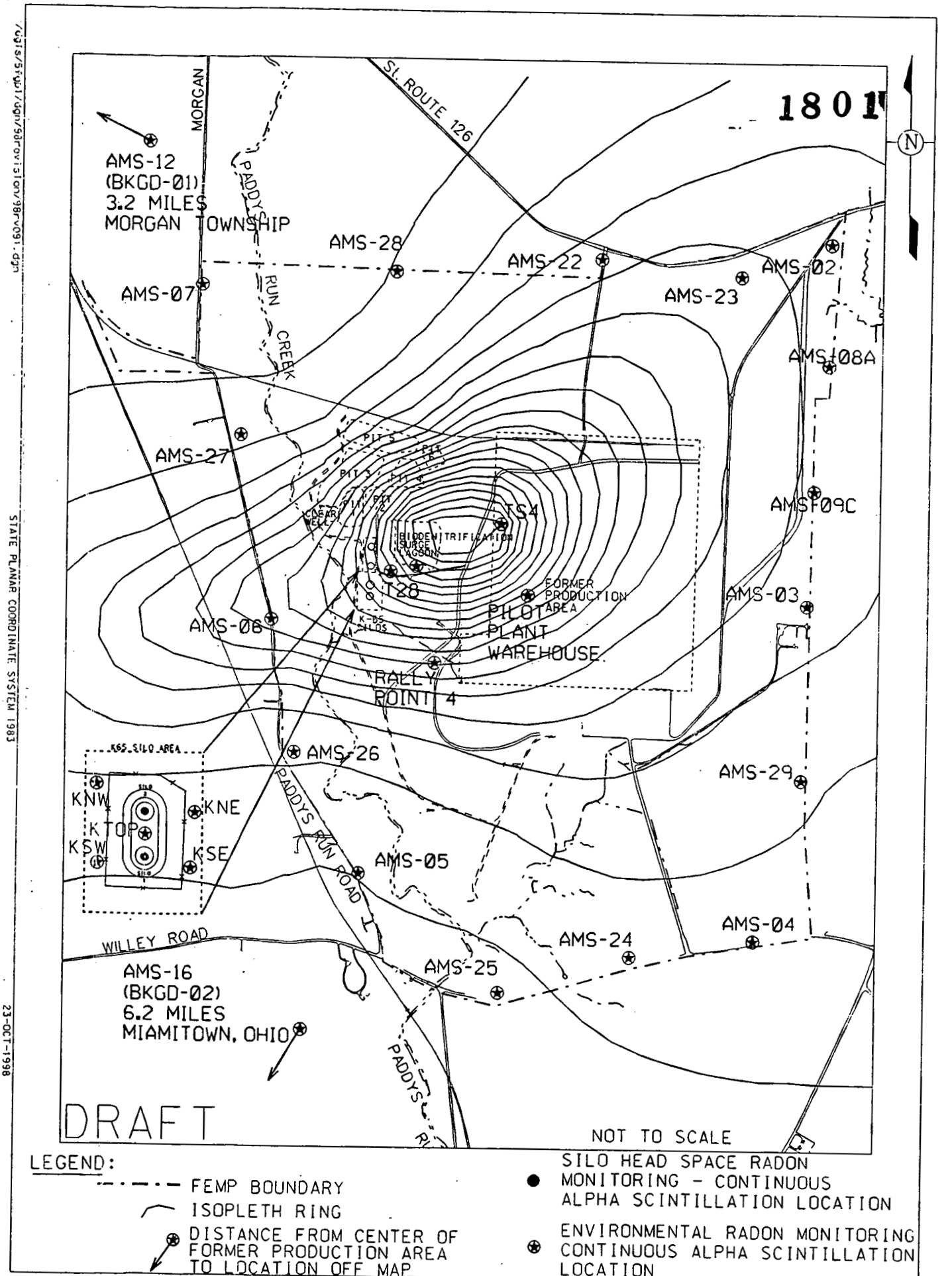


FIGURE 2. DISTRIBUTION OF MODELED RADON EMISSIONS (RELATIVE SCALE) AND IEMP RADON MONITORING LOCATIONS