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FINAL REPORT - FEED MATERIALS PRODUCTION CENTER - REMEDIAL INVESTIGATION/FEASIBILITY STUDY - COMMUNITY MEETING OF MAY 15, 1989 - (INCLUDES COPIES OF HANDOUTS AND AGENDA ALSO)

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FINAL REPORT

FINAL REPORT

FEED MATERIALS PRODUCTION CENTER

REMEDIAL INVESTIGATION/FEASIBILITY STUDY

COMMUNITY MEETING

OF

MAY 15, 1989

Submitted to:

U.S. Department of Energy
Feed Materials Production Center
Fernald, Ohio

Submitted by:

Advanced Sciences, Inc.
10845 Hamilton-Cleves Hwy.
Ross, Ohio 45061

Date Submitted:

January 23, 1990

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MAY 15, 1989

The U.S. Department of Energy (DOE) held a community meeting to discuss preliminary results of the Remedial Investigation at the Feed Materials Production Center (FMPC) in Fernald, Ohio, on May 15, 1989. The meeting, held in the Ross Middle School in Ross, Ohio, drew about 275 people and lasted from 7 p.m. to 11 p.m. Assisting the U.S. Department of Energy were Westinghouse Materials Company of Ohio (WMCO); as well as Advanced Sciences Inc. (ASI), DOE's RI/FS contractor; and International Technologies, an RI/FS subcontractor. The U.S. Environmental Protection Agency (U.S. EPA) and the Ohio EPA also participated.

The public was notified of the meeting through a direct-mail letter from DOE, through posters placed at public places in the vicinity of the plant, and through news stories and advertisements in local newspapers.

A small demonstration occurred early in the meeting when approximately 12 residents sitting in the front rows rose en masse to express their dissatisfaction with the way DOE handled their responses to community questions and concerns communicated on comment cards during the January 31, 1989 Community Meeting. The moderator acknowledged their protest; later, DOE committed to have responses to questions and concerns that audience members wrote on the comment cards within 30 days following the May 15 meeting.

The format for this meeting initially included a group welcome session, followed by three concurrent technical presentations, focusing on the Remedial Investigation findings, initiation of Feasibility Studies, and interim removal clean-up actions, in small group sessions. However, when the separate sessions were hindered by acoustical problems, the format of the meeting was changed and the three technical presentations were presented in an open forum. Later during the meeting, community residents said they preferred the large group format. Focused audience questions were asked after each presentation. A general question session lasted until nearly 11 p.m.

The question-and-answer sessions provided a useful forum for one-to-one information exchanges between DOE and the public. This format identified topics of interest that can be discussed in future fact sheets, focused community meetings, exhibits, reading room materials, and other informational materials and activities. Press coverage was fairly objective.

FEED MATERIALS PRODUCTION CENTER
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
MAY 15, 1989 COMMUNITY MEETING

FINAL REPORT

INTRODUCTION

The U.S. Department of Energy held a community meeting on May 15, 1989, to discuss the Remedial Investigation and Feasibility Study underway at the Feed Materials Production Center (FMPC) in Fernald, Ohio. The meeting was held in Ross Middle School and lasted from approximately 7 to 11 p.m. This meeting represents the second of three community meetings scheduled during calendar year 1989 to discuss the RI/FS, as specified in the RI/FS Community Relations Plan. Approximately 275 persons attended.

This final report summarizes meeting attendance, presentations and audience interaction that occurred during the meeting; analyzes the overall meeting effectiveness, and documents post-meeting follow-up activity. In addition, appendices provide the following documentation:

A. Pre-meeting publicity
B. Edited transcript of presentations and group question-and-answer session
C. Materials distributed during the meeting
D. Post-meeting coverage in local media
E. Summary of comment cards received and DOE responses
F. Questions recorded on the flip chart during the meeting and their prepared answers

ATTENDANCE

DOE and Contractor Participation

The following DOE and DOE contractor personnel participated in the meeting:

DOE Personnel:

James A. Reafsnyder, Site Manager
Margaret Wilson, Panelist

ASI Personnel:

Robert Lenyk, RI/FS Project Manager and Speaker's Assistant
Lewis Michaelson, Moderator
Rich Clark, Speaker/Panelist
Jeanie Loving, Flip Chart Recorder
Sue Wolinsky, Logistics

IT Personnel:

Joe Yeasted, Speaker/Panelist
Robert Galbraith, Speaker/Panelist
John Frazier, Panelist
Joe Poliziani, Speaker's Assistant

WMCO Personnel:

Robert Conner, Speaker/Panelist
Dennis Carr, Speaker's Assistant
Pat Hopper, Speaker's Assistant

Participation by Agencies with Oversight Responsibility

In addition, representatives of agencies with oversight responsibility for the RI/FS also participated. Catherine McCord of the U.S. Environmental Protection Agency (US EPA) and Graham Mitchell of the Ohio EPA (OEPA) were panelists during the group question-and-answer session. Anne Rowan of US EPA's community relations staff also attended.

Audience Participation

Approximately 275 persons attended the meeting. Attendance was comparable to the January 31, 1989 community meeting.

MEETING FORMAT AND AGENDA

The format for this meeting initially included a group welcome session, followed by three concurrent technical presentations, focusing on Remedial Investigation findings, initiation of Feasibility Studies, and interim removal or clean-up actions, in small group sessions. (This meeting format was selected in response to community concerns raised during and after the January 31, 1989 community meeting.) However, when the separate sessions were hindered by acoustical problems, the format of the meeting was changed and the three technical presentations were presented in an open forum. Later during the meeting, community residents said they preferred the large group format.

Moderator Lewis Michaelson called for another break shortly before 10 p.m. to allow persons who wanted to leave to do so. The panelists and approximately 20 audience members engaged in question-and-answer dialogue until nearly 11 p.m.

Following is a summary of the meeting. A transcript of the meeting minutes is presented in Appendix B.

Welcome — James Reafsnyder, DOE Site Manager

James Reafsnyder welcomed persons who came to the meeting, announced the focus of the meeting to be the RI/FS underway at the FMPC, and identified government agencies and support contractors participating in the meeting.

Introduction — Lewis Michaelson, ASI Moderator

Before Lewis Michaelson could begin his speech, approximately 12 residents sitting in the front rows of the audience rose en masse to express their dissatisfaction with the way DOE handled their responses to community questions and concerns communicated on comment cards during the January 31, 1989 community meeting. (During the January meeting, residents were asked to fill out cards with any questions that were not answered during the meeting. Responses to the questions were not received until shortly before the May 15 meeting.) Mr. Michaelson acknowledged their protest; later, Mr. Reafsnyder committed to have responses to questions and concerns that audience members wrote on the comment cards within 30 days following the May 15 meeting.

Following the protest, Mr. Michaelson introduced himself as master of ceremonies for the meeting. He told the audience that about 250 persons attended the January 31, 1989 community meeting, that questions and comments submitted on comment cards spanned a broad spectrum of topics, and that about 40 names were added to the RI/FS mailing list as a result of that meeting. He introduced the three topics for the meeting and explained how and why public input is an important part of the RI/FS process. He then presented the evening's format and explained a few "housekeeping details," such as location of rest rooms, no smoking in the gymnasium, and set the tone for showing respect and courtesy for each speaker. He also noted that due to pending litigation, some questions may not be able to be answered. He concluded by introducing the evening's speakers and thanking the audience for attending.

Topics and speakers for the meeting included:

Remedial Investigation

Rich Clark, ASI Biologist
Robert Galbraith, IT Geologist

Feasibility Study

Joe Yeasted, IT Physicist

Interim Removal Actions

Robert Conner, WMCO RI/FS Manager

Individual Technical Sessions

Individual technical sessions began, but were cut short by acoustical problems. Mr. Michaelson reconvened the audience as a large group in the main part of the gymnasium. The audience asked questions pertaining to each topic immediately following each presentation. Following is a summary of each presentation. Handout materials for each presentation are provided in Appendix C.

Remedial Investigation: Biology Presentation — Rich Clark, ASI Biologist

Rich Clark summarized the biological sampling portion of the Remedial Investigation, noting that sampling identified under the current RI/FS Work Plan has been completed. Samples were taken from garden produce, agricultural products, fish, bottom-dwelling aquatic organisms, both near the FMPC and near Brookville, Indiana, more than 20 miles away. He noted that results were similar for samples taken from both locations.

Remedial Investigation: Ground Water Sampling Presentation — Robert Galbraith, IT Hydrogeologist

Robert Galbraith described the Remedial Investigation ground water sampling program. He said new results show the highest concentrations of uranium to be on plant property in the area of the waste pits. He described how and where water flows beneath the surface -- information which hydrogeologists use to guide their studies.

He identified an area of uranium contamination that is south of the FMPC. This study area is known as the "South Plume." He said that DOE is talking to property owners in this area to drill more monitoring wells, so the RI investigators can get a more complete picture of the uranium levels in this area.

Mr. Galbraith concluded by noting that Remedial Investigation study results so far indicate that Paddy's Run shows uranium levels that are slightly higher than background but lower than minimum clean-up standards required by the Nuclear Regulatory Commission.

Remedial Investigation Question-and-Answer Session

Audience members asked 16 questions about the Remedial Investigation. These questions focused on:

- o Biology Program: the types of samples taken, the types of analyses used to evaluate the samples, when the samples were taken, and the various pathways that uranium can follow to lead to human ingestion.

- o Ground Water: the final disposition of effluent carried away from the FMPC.

Feasibility Study Presentation — Joe Yeasted, IT Physicist

Joe Yeasted explained what the Feasibility Study for the FMPC includes, how it is designed to analyze specific problem areas in a reasonable time frame, and gave an FS status report.

The Feasibility Study process includes analysis and reports based on that analysis, public review and comment, and a final clean-up plan known as the Record of Decision. To make this process more manageable and still meet government regulations that guide this process, FS investigators divided the FMPC into six areas, known as operable units, that focus on particular types of clean-up challenges. These operable units include the waste storage area, solid waste units, the production area and facility and suspect areas, the K-65 silos, the South Plume, and a category for all other areas quantified as other environmental media. An individual Feasibility Study will be prepared for each operable unit, he said.

Mr. Yeasted described how clean-up options, identified as alternatives, are identified, analyzed, and screened in this process. Screening is based on each alternative's effect, implementability, and cost. He noted that cost is a secondary factor. A report that lists alternatives for each operable unit has been submitted to US EPA and OEPA. Current activities focus on the K-65 silos and South Plume operable units.

For the K-65 silos, he said the FS investigators are looking at alternatives which include removal and non-removal of the silo contents, as well as a "no-action" alternative. No pre-decision had been made when the list of available alternatives was developed. For the South Plume, alternatives include non-removal (letting the ground water plume remain in the ground, but try to control its movement or ensure that there is no public health hazard associated with it; this could involve providing alternative water supplies or treatment of the affected water) and removal of the water to a location on FMPC property for treatment and/or discharge.

The detailed evaluation of each alternative for each operable unit, which has not yet been started, will weigh the benefits and other factors of each potential clean-up option. During this stage of the analysis, each alternative will be judged by nine specific criteria that focus on implementability, effectiveness, protection of human health and the environment, and community and government agency acceptance.

Feasibility Study Question-and-Answer Session

Audience members asked 11 questions about the Feasibility Study. These questions focused on the effect of the FMPC on local drinking water supplies especially in the vicinity of the South Plume study area, whether property owners have been contacted and whether anyone is currently drinking that water (Mr. Yeasted replied that no one is known to be drinking that water now), and the role of Paddy's Run in the South Plume studies.

Interim Removal Action Presentation — Robert Conner, WMCO RI/FS Manager

Robert Conner talked about environmental clean-up actions at the FMPC that are either underway right now or are planned for the near future. These activities are known as "removal actions" and focus on clean-up that can be done now as a way to protect human health and environment, if studies such as the Remedial Investigation and other environmental monitoring at the FMPC so indicate. He emphasized that each removal action is approved by both the US EPA and the OEPA before any clean-up work is started.

He described five removal actions that are planned or already started at the FMPC:

(1) The South Plume: He described the approximate South Plume study area on a map of the FMPC area, noting that additional monitoring wells need to be installed before a definitive analysis can be performed. Ten new wells are being installed, with more planned. Further study is needed before alternatives can be studied closely.

(2) Pumping perched ground water with high uranium concentrations from beneath FMPC facilities: He explained how ground water that is trapped beneath the surface, but above a rather impervious layer of clay, is being pumped and treated to ensure that it does not get into the aquifer that supplies local drinking water.

(3) Controlling stormwater runoff from the waste storage area: He described a series of trenches that will be dug to collect stormwater, so it can be channeled, pumped, and treated in a controlled manner before discharge off of FMPC property.

(4) Protective measures for the K-65 silos: The silos contain about 3-1/2 pounds of radium, Mr. Conner said. Scientists are investigating methods to ensure that radon gas does not escape into the environment. One such method is to place four feet of sand in each silo to reduce radon emissions. The method eventually used will have prior approval by the US EPA and the OEPA, he said.

(5) Control of off-site soil contaminated by an overflow of Manhole 180: Mr. Conner explained how a removal action can provide management of unexpected occurrences, such as overflow of the plant's effluent discharge system. He described such an overflow that occurred on land adjoining the FMPC a few weeks before this community meeting. He described the soil

sampling program that was initiated (with 48 of 150 planned samples already taken) and said that manhole cover repairs have begun.

He concluded his presentation by noting that each removal action precedes any final remedial action that may be recommended in the operable unit Feasibility Studies. He also invited audience members to give DOE their comments on the removal actions that have been presented.

After Mr. Conner's presentation, the audience asked 19 questions that focused on uranium levels in the aquifer, EPA approval of plans for removal actions presented, materials being used for the trenches as part of the stormwater control effort, and the Manhole 180 discharge occurrence and related effluent discharge system issues (inspection, repairs, location of Manhole 180).

Question-and-Answer Session

A general question-and-answer session was held after a short refreshment break. The following persons served as panelists:

Margaret Wilson, DOE
Rich Clark, ASI
Robert Galbraith, IT
Joe Yeasted, IT
John Frazier, IT
Robert Conner, WMCO
Catherine McCord, US EPA
Graham Mitchell, OEPA

Additional technical staff seated in the audience provided answers when requested by Mr. Michaelson or by panelists. A total of 34 questions were asked over a two-hour period. The questions and answers are documented in Appendix B.

MEDIA COVERAGE

Newspaper articles following the meeting were fairly objective in their coverage of the presentations, the question-and-answer session, and the small audience demonstration that occurred at the beginning of the meeting. Most of the accounts were accurate; however, the agency or corporate affiliations of the technical presenters were incorrect.

The fact that media coverage was fairly objective provides a marked contrast from the fairly biased coverage that followed the January 31, 1989 community meeting.

Copies of articles published in local newspapers immediately following the May 15, 1989 community meeting are provided in Appendix D.

DOE RESPONSIVENESS

Community members who attended the May 15, 1989 meeting communicated their questions and reactions via comment cards. A total of 16 cards were returned during the meeting and in the days that followed: five asked questions requiring answers (three from one person), nine asked to be added to the RI/FS mailing list, and one was a prank. Each card was answered within the 30-day time frame that Mr. Reafsnyder specified. Copies of these cards and DOE's responses are provided in Appendix E, as is a sample letter sent to the mailing list requestors.

In addition to the comment cards, several unidentified audience members asked questions that could not be answered during the meeting. These questions were identified on a flip chart that was placed near the front of the gymnasium during the question-and-answer session. Each question was then directed to the appropriate technical staff and answers were written. The entire package of questions and answers (Appendix F) was placed in the FMPC reading rooms, located in the FMPC Administration Building lobby and in the Lane Public Library in Hamilton. A press release announcing the availability of these questions and answers was distributed to local newspapers. A sample of the more common questions was also published in the summer issue of the FMPC Update, which was mailed in September to all persons on the RI/FS mailing list.

APPENDIX A

PRE-MEETING PUBLICITY FOR MAY 15, 1989 FMPC RI/FS COMMUNITY MEETING

6821

Department of Energy
FMPC Site Office
P.O. Box 398705
Cincinnati, Ohio 45239-8705
(513) 738-6319

April 13, 1989
DOE-923-89

Dear Neighbor:

The U.S. Department of Energy invites you to the next community forum to discuss the environmental study underway at the Feed Materials Production Center. The meeting will be held at 6:30 p.m. on Monday, May 15, 1989, in the auditorium of the Ross Middle School.

This meeting will continue the dialogue that began at the January 31 community meeting. We will begin with a group introduction before breaking into small, focused technical sessions, also in the auditorium. Again, DOE and its environmental contractor, Advanced Sciences, Inc., will provide you an opportunity for a one-on-one exchange of technical information about the environmental study. Specific topics will include biological and groundwater sampling results, recently identified remedial alternatives, and clean-up actions already underway at the FMPC.

In response to feedback from the last meeting, this meeting will conclude with a group wrap-up session. A panel will be available to answer your questions. The panel will feature the technical experts who are performing this study. Representatives of DOE, U.S. EPA, and Ohio EPA will be on hand to listen to your comments, questions, and concerns.

We expect the meeting to last about 2-1/2 hours. However, our environmental team will be available as long as it takes to answer your questions.

Your input is critical to the success of the entire environmental investigation. We look forward to seeing you on May 15.

Sincerely,

James A. Reafsnyder
FMPC Site Manager

DP-84:Wilson

6821

Community Meeting

- The U.S. Department of Energy will have a community meeting to discuss the environmental study now under way at the Feed Materials Production Center.
- The meeting will be at 6:30 p.m. on Monday, May 15 in the auditorium of the Ross Middle School.
- Your input is critical to the success of the entire environmental investigation.
- Following a brief introduction, three technical sessions will be held to discuss biological and groundwater sampling results, recently identified remedial alternatives, and clean-up actions already under way at the FMPC.
- The meeting will wrap up with a general session, with a panel of technical experts on hand to hear your comments, questions and concerns regarding the environmental study.
- Representatives of the DOE, U.S. EPA, Ohio EPA and Advanced Sciences, Inc. will be present to hear your input.

Ross Middle School is located on Route 128, (Hamilton-Cleves Road) one mile north of Route 27.

MONDAY, MAY 15, 6:30 P.M. • ROSS MIDDLE SCHOOL

Feed Materials Production Center

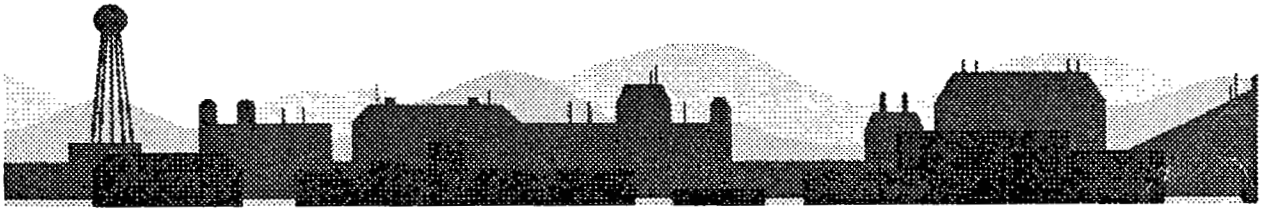
000014

Community Meeting

- The U.S. Department of Energy will have a community meeting to discuss the environmental study now under way at the Feed Materials Production Center.
- The meeting will be at 6:30 p.m. on Monday, May 15 in the auditorium of the Ross Middle School.
- Your input is critical to the success of the entire environmental investigation.
- Following a brief introduction, three technical sessions will be held to discuss biological and groundwater sampling results, recently identified remedial alternatives, and clean-up actions already under way at the FMPC.
- The meeting will wrap up with a general session, with a panel of technical experts on hand to hear your comments, questions and concerns regarding the environmental study.
- Representatives of the DOE, U.S. EPA, Ohio EPA and Advanced Sciences, Inc. will be present to hear your input.

Ross Middle School is located on Route 128, (Hamilton-Cleves Road) one mile north of Route 27.

MONDAY, MAY 15, 6:30 P.M. • ROSS MIDDLE SCHOOL



Feed Materials Production Center

THE CINCINNATI ENQUIRER

MONDAY, MAY 15, 1989 PAGE A-5

Fernald update tonight in Ross

BY M.A.J. McKENNA
The Cincinnati Enquirer

Government officials, environmental experts, local residents and operators of the Fernald uranium plant will gather in Ross tonight for an update on environmental problems at the plant.

The 6:30 p.m. meeting at Ross Middle School is second in a series that the U.S. Department of Energy must conduct as part of its environmental investigation and cleanup planning.

Residents are hoping it's more informative than the first.

"I hope they tell us everything this time," said Lisa Crawford, spokeswoman for Fernald Residents for Environmental Safety and Health, a citizens' group critical of the plant. "I don't want to have to wake up and read it in the paper next day."

DOE and the U.S. Environmental Protection Agency (EPA), which oversees cleanup plans, disagreed over the content of the first meeting, held Jan. 31. In fact, after DOE declined to place items on the agenda, EPA officials privately released them to reporters.

The subsequent revelations — DOE had asked for a 19-month extension in the cleanup schedule and a Miami University study appeared to have discovered animal mutations — resulted in sharp criticism of DOE by the residents' group.

James Reafsnyder, DOE's on-site representative at Fernald, said the agency plans some changes in this meeting's format.

"We'll have a little introduction, three concurrent technical sessions and end with a technical panel that can respond to questions from the media and the public," he said. "We've been coordinating agenda items and topics to be discussed with EPA."

Topics of the three technical sessions:

- Biological and ground water sampling results.
- Current cleanup projects.
- Alternatives being considered for some of the plant's most difficult cleanup tasks, including removing radioactive water that has pooled beneath buildings and temporarily filling the K65 silos, which leak radon, with a buffer of sand.

The final session, in which everyone will gather in one large group, is the major change in the format, Reafsnyder said.

"But it's still a divide-and-conquer strategy," Crawford objected. "And they still haven't answered questions we sent in after the last meeting. They just aren't telling us enough."

The Journal-News, Monday, May 15, 1989 A4

Fernald update tonight

Associated Press

ROSS — Residents around the Fernald uranium processing plant expect to be given an update tonight on environmental problems at the facility.

The 6:30 p.m. meeting at Ross Middle School is the second in a series of discussions the U.S. Department of Energy must conduct as part of its environmental investigation and cleanup planning at the plant.

Residents hoped it would be more informative than the first such meeting. At that time, they said they weren't being given all pertinent details about the cleanup plans.

"I hope they tell us everything this time," said Lisa Crawford, a spokeswoman for Fernald Residents for Environmental Safety and Health, a citizens' group critical of the plant.

The DOE and the U.S. Environmental Protection Agency, which oversees the cleanup plans, disagreed over the content of the first meeting, held Jan. 31.

James Reafsnyder, the Energy Department's on-site representative at Fernald, said the agency planned some changes in the second meeting's format.

"We'll have a little introduction, three concurrent technical sessions, and end with a technical panel that can respond to questions from the media and the public," he said.

Topics of the technical sessions were to include biological and groundwater sampling results and current cleanup projects.

APPENDIX B

TRANSCRIPT OF THE PROCEEDINGS OF THE MAY 15, 1989 FMPC RI/FS COMMUNITY MEETING

FEED MATERIALS PRODUCTION CENTER
RI/FS
MAY 15, 1989 COMMUNITY MEETING
APPENDIX B

WELCOME - Jim Reafsnyder, DOE Site Manager

Good evening. I'm Jim Reafsnyder, DOE Site Manager, and I would like to welcome you to this public meeting on behalf of the U.S. Department of Energy. The purpose this evening is to discuss the status of DOE's Remedial Investigation/Feasibility Study. What that is, in my terms, is we study what's out there at the site and we present and develop proposals for cleaning it up. We have with us this evening several organizations, DOE's environmental contractor - ASI, and their support subcontractor, IT Corporation. WMCO is represented this evening. We also have representatives from U.S. EPA and the Ohio EPA. I would like to introduce the following persons in particular and maybe if they stand up, we can acknowledge them:

Catherine McCord - U.S. EPA
Graham Mitchell - OEPA

They will be available and accessible throughout the evening, and they will be available at a panel discussion later this evening to respond to any of your questions.

I'd like now to introduce Lewis Michaelson of ASI who will be moderator for this session.

F.R.E.S.H. DEMONSTRATION
[Eight persons stood up and began asking questions before Lewis Michaelson reached the microphone]

Catherine McCord: Could you repeat the question (that was asked by F.R.E.S.H member)?

Lewis Michaelson: The question? Sure, that's a good idea. The question had to do with questions that were submitted on the comment cards at the last public community meeting and I was going to talk about that in a couple of minutes, but it's a good idea to answer it right now.

[Several questions were asked at one time by F.R.E.S.H members.]

Michaelson: If I could answer one question at a time.... [He was interrupted by a F.R.E.S.H member.]

F.R.E.S.H Member: The last time January public meeting I was appalled at the pictures and diagrams and things that were --

I would rather this money was spent on cleanup instead of showing us these pictures.

Michaelson: I was going to talk a little bit about the format. We're going to be breaking up into individual sessions and then coming back for a group session that will allow you to ask any and all questions you want. We're also prepared to stay here tonight as late as it takes to answer all of

your questions. But right now is a very difficult time; we have some presentations to make and we'd like to make them. You can ask these questions again, but at an appropriate time.
Lisa Crawford (F.R.E.S.H. member): We want our questions answered now; we don't want to wait.

Michaelson: Well the session, as you see on the agenda, is scheduled from 6:30 to 9:30. And we plan on having three different opportunities for asking questions during tonight.

Crawford: We don't want to wait until later to tell you that the last time we had a meeting, January 31, 1989, the very next morning in the newspaper, I had to get up and read about two very important items that should have been discussed that night. The following day after that, I have to learn from the morning paper that you have asked the EPA for an 18-month extension. Another example of something that should have been told to these people that Monday night at the community meeting.

Michaelson: Madame, these are all very good questions and what we're not prepared to do...

[The moderator was interrupted again as F.R.E.S.H. members persisted in criticizing length of time it took to answer questions from comment cards submitted at the previous public meeting. The exact wording of their comments, however, was difficult to ascertain.]

Michaelson: You're prepared to stay until midnight and we're prepared to stay until midnight. If you'll sit down, we'll get started and answer all your questions. [The eight F.R.E.S.H. members sat down.]

INTRODUCTION - Lewis Michaelson, ASI Facilitator

Michaelson: Good evening. It's obvious there's a tremendous amount of interest in this issue and a lot of people came with intentions to get their questions answered, and that's what we intend to do. We have the very best people available to share the very best information that is available to you and we're going to do that in smaller sessions that allow you to ask more focused questions and get a response to comments at the last meeting, January 31, 1989. We're also going to get together as a group, as a whole, to consider everything in an integrated, cohesive way. So, I think if you'll bear with us and give us the benefit of the doubt, we will answer your questions. And if we don't, let us know at the end, but please don't prejudge this meeting before we've even had a chance to get started.

Welcome to tonight's Community Meeting. This meeting is going to focus on the RI/FS being conducted at the FMPC. As Mr. Reafsnyder mentioned, my name is Lewis Michaelson. I'm going to be the moderator. My role is a sort of master of ceremonies. I'm going to introduce presenters, explain the format for the meeting, and direct the flow of questions during the open forum at the end, after we've had our individual technical sessions.

Tonight is the second in a series of meetings about this subject. Those of you who were at the first meeting, many of you sitting in these first two rows here, will recall that we had separate classroom discussions on air, surface water, groundwater, soil, and environmental improvements. One of the

comments we did receive on the comment cards is that the people didn't get a chance to attend all of the sessions. So we have adopted a format to make sure that you get the full flow of information that is going to be offered tonight. The last meeting was attended by about 250 people. We were able to add about 40 names to the mailing list for the RI/FS and we received, as some of these people sitting in the front row mentioned, some comment cards. I can't apologize for DOE. I don't work for them personally, but I will tell you that most of those comments were answered in just the last week and were either hand-delivered by a courier for people in the vicinity or were mailed to people outside the area. And later on we can talk about the timing of that which some people did not find acceptable. In any case, there are some that are still being worked on. Some of the questions are easy, some of them aren't so easy. They ranged anywhere from requests for various reports to questions about human tissue testing, questions about what chemicals are on site and comments on meeting format itself; and a few of those questions are yet to be answered because we're trying to use the best available data and most recent data to answer those questions.

We do have tonight for people to look at during any one of the breaks, a copy of the comments and the responses that have been developed so far, if people are interested in taking a look at them. We're going to use the cards again tonight and we're going to try and do a better job of getting back answers faster the next time around. I hope we can assure that will take place this time.

As I mentioned, the focus of tonight's meeting is on three related topics:

- The Remedial Investigation, which was talked about at the January 31, 1989 meeting. We're going to give an update on this tonight, both in terms of biological sampling and groundwater results.

- The Feasibility Study has been initiated and we'll have somebody talk about what that process means.

- And finally, we're going to talk a little bit about interim cleanup activities that are either ongoing or about to be undertaken.

To help you understand this a little bit better on how these are related, I have another overhead here. As you can see, the Remedial Investigation is what started this whole process off. It's important for two reasons. It is used as a data and information source from which to generate possible alternatives for the final cleanup and, therefore, it's used for the Feasibility Study. It is also used to help activities that may need to take place because of their urgency before a final cleanup is effected. And finally, as you can see, both the Feasibility Study, through the Record of Decision, and the interim cleanup activities will support the final FMPC cleanup.

We are happy you were able to make it here tonight. Your input is important to DOE, particularly at this stage of the process, because you may be able to provide information that will help the people working on the Feasibility Study to evaluate those alternatives, to figure out which ones may

be most practical, most implementable, and preferential. Also, learning your concerns and opinion which we hope to tonight -- early in the feasibility study really makes the process easier for those people conducting the study because they (the public's comments) can be incorporated now rather than try and incorporate them later on.

I mentioned that I was going to be discussing the format for tonight. The format has been changed in a couple of ways from the first meeting that was held January 31, 1989, in trying to make this a more meaningful experience for you. The format is going to work this way. I'll be done in just a few minutes and then we're going to start through an hour-and-a-half of three 30-minute concurrent technical sessions. We have already mentioned what the three topics are. And what we're going to do is have one or more presenters present the basic results or information they have on each one of those topics for about 10 minutes and then we'll have 15 minutes to ask questions about those specific topics. Then I'll announce that it's time for the grand shuffle and we'll ask you to move on to a second room and finally a third room until you've had a chance to hear all of the information that our technical people have brought here with them tonight to share with you. And at that time, we'll have refreshments in the cafeteria. We're hoping that will give you time to digest the information a little bit, integrate it a little bit, so that we can come back as a group, having had all the information and all the topics shared, and try and figure out how all of these pieces interrelate. And, as I said, we should get back into here about 8:45 and we'll go for 45 minutes; I'll be moderating that session. We'll have a panel of people up here to answer those questions and we'll take a break at 9:30 for those of you who have babysitters or have to be at an early job, whatever, so you can exit gracefully. Then we'll resume after about 5 or 10 minutes and keep going for as long as it takes. And we hope that by doing this we'll ensure that everyone will get a chance to ask their questions and get them answered. Just a few housekeeping details and groundrules I'd like to cover. I hope everyone figured out where the bathrooms are. Women's is over here [he points] and the men's is over here [he points]. There's no smoking allowed in this auditorium and the refreshments are fine in the cafeteria but we have been asked not to bring them back into the auditorium with us. As I mentioned, there should be plenty of opportunities tonight to ask questions. So please be patient with the presenters and each other and allow everyone to finish what they are saying.

All of our presenters and technical support people here tonight were selected because they are the most knowledgeable people and want to share the best information that is available to them and to you. However, what they can't do is predict the future. As a consequence, they're not really in a position to try to answer any speculative questions. Also, because of ongoing litigation regarding some aspects of operations at the FMPC in the past, there may be an occasional question that one of the presenters may have to decline to comment on. That will be kept to a minimum, and other than that, however, the people we have gathered here tonight are anxious to answer your questions as fully as they can.

Let me just briefly introduce the three teams for the three topics to you.

Remedial Investigation: Rich Clark - Task Leader for Biological Sampling; Bob Galbraith - On-site Technical Coordinator; assisted by Dennis Carr of WMCO and Sue Wolinsky of ASI

Feasibility Study: Joe Yeasted - Technical Director for RI/FS; assisted by Bob Lenyk and Joe Poliziani
Interim Cleanup Actions: Bob Conner - Remedial Investigation/Feasibility Study Manager; assisted by Pat Hopper and Jeanie Loving.

What we'd like to do in order to make this work out as best as possible -- these are all interdependent sessions, all important sessions -- and we want you to go to all three, so it really doesn't matter which one you start with. So spread yourselves out to start with, so we have roughly the same number of people in each session and we're not all bunched up into one and it makes it more difficult for a larger group to get all their questions answered. With that, I'd like you to each decide which one of the three you'd like to start with and, again, I'll notify you every 25 minutes that it's time to make a shift to another room. Then we'll go to the cafeteria and we'll go into the open forum session.

Thanks very much for coming here tonight.

INDIVIDUAL SESSIONS

[The group moved to three areas of the gymnasium for three separate technical presentations in small group setting. The acoustics in the gymnasium made it difficult for any of the speakers to be heard so Lewis Michaelson, with the agreement of Jim Reafsnyder, announced to each group that the meeting would reconvene in the main area of the gymnasium.]

RECONVENED LARGE GROUP SESSION

Michaelson: Thank you very much. If we could get everyone to take their seats as quickly as possible, we appreciate your understanding. We appreciate your indulgence. Mr. Reafsnyder came to me a few minutes ago and said this isn't working, we've got to do something different, we've got to make sure people can hear what's going on. And, we're sorry for the inconvenience. We won't get to ask quite as many questions as quickly, but since we're going to be here for as late as it takes anyway, we're still going to get to all of your questions. And we're going to do this sequentially from the standpoint of the Remedial Investigation, Feasibility Study, and Interim Cleanup Activities, in which case Rich, that means you would be first. If we could get your materials over here, the ones that you were using for your session. Each one of you will have had the benefit of listening to one of these presentations, although I fear you may not have caught every word they had to say.

Audience Question: Why were we split into different groups?

Michaelson: Well, you are no longer. As I explained, one of the advantages of putting people into three groups is that it gives the people in a smaller, more informal atmosphere an opportunity to ask more questions. If you have three groups, you can be asking three times as many questions than if you're in a big hall. You can run a meeting any way you want, but that's one of the advantages.

[The woman who asked above question, also made a comment, but it was unclear on the tape recording.]
Michaelson: And we apologize for that. We'd like to get going as soon as we can here so we don't waste any more time. Rich, are you ready to go?

[Presenter Rich Clark was setting up his materials.]
Michaelson: The other difficulty, of course, is that with any kind of graphic, the farther away you get, the more difficult it is to see, which is another advantage of doing it in smaller groups. So, bear with us. You may need to come up and take a look at some of these if you're not sitting in the first few rows. And I'd ask each one of the presenters to be cognizant of the fact that the people in the back rows can't see these, so you try and do a little bit more explanation of what it is that you're showing them on the chart, or whatever the graphic might be. Thanks, Rich.

REMEDIAL INVESTIGATION - Part I - Rich Clark, ASI Biologist

Rich Clark: Good evening. As Lewis said, I'm a biologist and I have been involved with the FMPC Remedial Investigation since 1986. And I'd like just to talk to you about the current status of our program and some of the things that we found out there. Our sampling is complete and we sampled grasses and other vegetation from the FMPC site. We looked at garden produce and agricultural products. And we took samples of fish and bottom dwelling aquatic organisms, such as crayfish and snails from Paddy's Run, under EPA guidelines, to determine if FMPC discharges from the (FMPC's) water treatment plant are affecting aquatic organisms in the Great Miami River. The water treatment plant is on the east side of the FMPC and although you can't see the Great Miami River on here [he points to his chart], it's right on the outside of this. The effluent line travels across here and empties into the Great Miami River here. The garden produce we sampled and agricultural products we looked at included peppers, cucumbers, tomatoes, cabbage, and potatoes -- the sort of thing you grow in your own garden. And we also looked at alfalfa, soybeans, and field corn. We sampled in the immediate vicinity of the FMPC; we looked at the gardens that were closest to the FMPC to the north of the site, and to the northeast of the site, which is in the direction of the prevailing winds from the center and just to the east of the site.

And to compare that with, we chose a site near Brookville, Indiana, which is 25 miles to the west of the FMPC. We chose that site because the FMPC does not affect that area. And what we found in the Brookville, Indiana samples -- about 35% of them had detectable levels of uranium; that compared with only 25% of the samples around the immediate area of the FMPC. The maximum concentrations of uranium in these samples was similar for both areas. And I would like to emphasize that you have uranium that naturally occurs in soils and also in the fertilizers that you use in your gardens and farms. We think we're finding similar, we are finding similar amounts of uranium in the samples that we looked at from here [he points to this chart] and those that we looked at near Brookville, Indiana. Vegetation that we sampled from the FMPC site included grasses, cattails, pine needles, and mosses, and a few other things. We sampled a number of locations that are represented by these dots [he points to his chart] that you people in the back I'm sure can't see. And the areas we found with the highest levels of radionuclides were in places where we expected to find them, near the old incinerator site and just below the fly ash pile and in the northeast portion of the site. Generally radionuclide concentrations were lower as distance

from the FMPC increased. So, when you get out in this direction [he indicated further away from the plant on his chart], you find no detectable levels of radionuclides.

In the fish that we looked at in the Great Miami River, we found no detectable levels of radionuclides. And in the fish that we sampled from Paddy's Run, we found in about 20% of the samples low, but detectable, levels of radionuclides. We have other Remedial Investigation biological results that we're currently interpreting. These results and the results of other studies, including the FMPC annual monitoring studies and the Miami University biological study of the FMPC will be incorporated into our relevant literature section of the RI document. The Remedial Investigation Report will be available in public reading rooms.

With that, I will give you Bob Galbraith, who will talk about groundwater issues. When he's finished, we'll take questions from everyone.

Remedial Investigation - Part II - Bob Galbraith, RI On-Site Technical Coordinator

Bob Galbraith: Thank you Rich. I'm the On-Site Technical Coordinator for the RI. I am a hydrogeologist and I'm going to briefly bring you up to date on some of the things we've continued to develop on the groundwater sampling program. This is an extension of what we presented in January. This slide shows the distribution of wells -- these black spots [he points to the overhead] - that we have installed in the till, which is a thick clay layer at the FMPC, this [he points to the overhead] is the surface material at the FMPC. This [he points to the overhead] is the material that the waste pits are installed in and it's the material the buildings are constructed on top of. From these wells, we have collected water samples. These samples represent the third round of water sampling and you can hopefully see that the highest concentrations are in this area right here [he points to the overhead], which is the waste pit area. The highest concentrations are on the order of 10,000 parts per billion. A part per billion is roughly equivalent to one Chinaman in China. This contour out here [he points to the overhead] which surrounds most of the production areas is 10 parts per billion, so we go from 10 parts per billion to 10,000 in this small area here [he points to the overhead].

Now the way this material can get to other people and be a hazard to people is to move with the groundwater system and the underlying sands and gravels. This is what the water table looks like [he points to the overhead] in the sand and gravel. You can't see those contours at all I'll bet. There are a series of red lines on this diagram and the highest levels in the water table are to the west and the lowest are to the east, under the waste storage area and production area. As you can see, the flow is to the east [he points to the overhead]. So any of the material that leaks from the till overlying the aquifer would be expected to move to the east in this area [he points to the overhead]. The groundwater changes direction in the south and moves to the south to come down and flow into the Great Miami River down here [he points to the overhead]. If we look at levels in the sand and gravel aquifer, to the next level of wells -- this is the distribution of wells we have in the sand and gravel aquifer. These are used as background wells. These wells are all well away from the FMPC and upgradient that we derive the concentrations of natural groundwater from.

This is the plume map [he points to the overhead], or the concentration map for uranium values. You see we have a different pattern. We have here the waste pit area, but the pattern is elongated near Paddy's Run. And it's our understanding at this point that the reason for this pattern is more because of water flowing off the surface of the FMPC into Paddy's Run or flowing off the production area into the little tributary of Paddy's Run, than this water, which became contaminated from falling on the ground surface, seeping into the aquifer, which is the bed of Paddy's Run. There is no clay underneath most of Paddy's Run, so from here south to here south [he points to the overhead] all the way down through here, Paddy's Run flows on the aquifer. This contaminated water seeped into the aquifer. As a result, our highest values of uranium concentration are down here, at the south end of the FMPC. This is the area we're calling the South Plume. Our data cuts off here [he points to the overhead] where we've proposed a series of wells in here and we're seeking landowner permission now to get on those sites to drill more wells to complete the definition of that plume. One of the other considerations is if there was contaminated water flowing down Paddy's Run, then if there is contamination in Paddy's run, is it a good idea to go walking in the creek? And so we've compiled all the samples and again it's a distribution of black spots along Paddy's Run [he points to the overhead] that shows you where all the samples are. While all the samples are slightly elevated -- they're a little bit higher than background -- at least none of the samples are even close to the minimum cleanup standards required by the Nuclear Regulatory Commission. So, I guess that's basically what I have to say. Are we going to have questions now or go on to the next presentation?

Michaelson: No, I think rather than ask everyone to retain three presentations, let's go ahead and take questions that relate specifically to your presentations right now. What we'll do is take questions for about 10 minutes.

Questions from the audience are denoted by "RI" followed by a consecutive number, i.e., RI-Q1, RI-Q2, etc. Answers are denoted by "RI-A1" and the speaker's last name is given.

REMEDIAL INVESTIGATION Q/A

RI-Q1: You gave the results in parts per billion for the water samples. Were yours (Rich Clark's) in parts per billion also on the vegetables?

RI-A1: Clark: No, they were picocuries per gram.

RI-Q2: Picocuries per gram of what? Soil? Vegetables?

RI-A2: Clark: Picocuries per gram of whatever media we were sampling.

RI-Q3: With picocurie being the amount of radiation being emitted from that sample? Is that what you are saying?

RI-A3: Clark: Yes.

RI-Q4: Have you finger-printed any of those isotopes and what they contain since some isotopes are more volatile than others in a health respect, especially in naturally occurring U238, which I understand is not as volatile as an enriched material?

RI-A4: Clark: We looked at U234, U235, U236, U238, we also looked at strontium 90 and cesium 137.

RI-Q5: Okay, the amounts you were able to lift from your samples, did they have any enrichment that would indicate they came from the plant?

RI-A5: Clark: Well, the vegetation samples we took from the FMPC have what we consider to be elerated levels of uranium. We found very little evidence of strontium and cesium in any of the samples that we looked at. Levels that were found in produce around the FMPC, the highest number we found were about 4.5 picocuries per gram and the highest number we found in the Brookville, Indiana area was about 4.1 picocuries per gram. There were more samples from the Brookville, Indiana site, which is 25 miles west of the FMPC, that had detectable levels of radionuclides. The only two samples we found with strontium in vegetables were from Brookville. And the one sample we found with detectable levels of cesium -- and these are very low amounts I'm talking about, .5, .6 picocuries per gram -- that was also found near Brookville. We didn't find any detectable levels of cesium 137 or strontium 90 near the FMPC. That to me just says that the amounts of radionuclides in produce near the FMPC is similar to what we consider to be background near Brookville that wouldn't be affected by the FMPC operations.

RI-Q6: Regardless of whether it's affected by the FMPC or not, if it contains enriched materials, I'd want to know where they came from, whether they were in Brookville or Hoboken.

RI-A6: Clark: Well, in Brookville, if it gets into a vegetable there, you have naturally occurring uranium in soils and in fertilizers. That would be my guess as to where the uranium came from. And that's my guess for what we found in the samples near the FMPC.

RI-Q7: Okay, but didn't you also say you found U234 in Brookville?

RI-A7: Clark: We found -- yes we did. Most of the uranium that we found is 234 and 238.

RI-Q8: And U234 occurs naturally?

RI-A8: Clark: Yes.

RI-Q9: I have another question about the effluent pipe that carries the groundwater off the site. Where does it actually enter the river?

RI-A9: Galbraith: [He points to an overhead map.] The outfall comes over here to the boundary line and goes right straight out to the Great Miami River. You know where Strickers Grove is? It goes right along the south side of Strickers Grove below the ground.

RI-Q10: Does the water come out of there gravity-pushed or is there a pump on it or a blower? How is the water pumped off of there?

RI-A10: It's gravity flow. There's quite a head coming down from the elevation of the FMPC, up here [he points to the overhead] down to the river there is probably 20 or 30 feet of difference just in the elevation.

RI-Q11: In my situation, I've had soil samples taken because I have two kids with cancer in my family. And my garden site is about one-and-a-half miles or two miles east of the plant across the river. I'm finding amounts of uranium in my soil that are around 3.0 picocuries, around that level. Also, I'm finding some enriched U235, which the chemists that did my tests said couldn't come from anywhere else but the plant. Now, I've also got, one of my sons lost his leg to [tape is inaudible here]... why don't in soil samples that you do, like the water, and put it in parts per billion and also fingerprint and tell the public just what isotopes you're dealing with. Also tell us how the analysis is arrived at, especially with water or soil samples. In the case of the water samples, what is your filtering system? How do you go about extracting the isotopes involved? What are the isotopes involved? There is a lot of disagreement as to what safe levels are. And I don't like anybody determining what a safe level is.

RI-A11: Clark: So you're interested in the laboratory techniques we used to determine? Well I don't have those off the top of my head but those will be in our report.

RI-Q12: Well, I read in the (Cincinnati) Enquirer that the EPA tells us that these are fine, but they don't tell us what their analysis procedures were, what isotopes were recovered, and what we're dealing with. I also know from reading the Enquirer that even just barely traceable amounts of plutonium isotope can cause cancer in one out of a 100 in a population. Now I would imagine that the picocuries emitted from that probably would be less than your one man in China, but I just don't feel comfortable having your one or two or 10 men in China in my son's leg.

RI-A12: Clark: I'm not qualified to answer health-related questions, but we will have someone later on who can.

RI-Q13: What was the time period in which you collected your produce?

RI-A13: Clark: It was collected in August/September of 1987.

RI-Q14: And what level was the plant running at at that time, was it low, or high?

RI-A14: Clark: I don't know the answer to that question.

RI-Q15: Second part of my question, what about concentration in the food chain. Isn't it true that whatever is in the grass can be concentrated in the bodies of the animals that eat the grass and intensifying further concentration in the bodies of humans at the top of the food chain who would eat those animals that eat the grass?

RI-A15: Clark: Okay, the FMPC monitors the milk from the Knollman Dairy Farm. To this date, they haven't found any detectable levels of uranium in their milk samples. We haven't looked at any cows, we haven't looked at the meat from any of those animals to see if there were levels of uranium or any other radionuclide in them.

RI-Q16: Why not?

RI-A16: Clark: It wasn't initially part of our sampling plan.

RI-Q17: Then you only did partial studies of just certain things and didn't follow through with other...?

RI-Q18: [Interrupting previous question] You ought to test those cows and see if they're the same every three months...[the rest of comment was inaudible].

RI-Q19: Is that milk sold in the Cincinnati area? Is that sold locally?

RI-A19: Clark: I don't know where it is sold.

Michaelson: Do you know what would be helpful? Could we get somebody to record on flip charts some of these questions, because some of these questions are ones that we need to answer, but people up here may not have. I know we've got flip charts that are set up in the other rooms. Sue? Anybody? Jean? There are also not just questions here, but obviously comments, and ones that we should be looking at and take into account as the studies continue, so we'll go ahead and try to capture those while we get the next speaker started. If we missed something, let us know if we missed it up there, but we've already taken more than the allotted time for this question-and-answer... [The moderator was interrupted by members of the audience but comments were inaudible. This session ended with several questions by the audience member who was at the microphone at the time.]

RI-Q20: I guess my question is along the lines of what has been asked about the biological. I'm curious if there is any correlation similar to what Joe asked? Is there any way to check a correlation between the samples you took and releases? I think that's crucial in any kind of biological study. Secondly, were all your species annuals? Were any perennials or plants of indeterminate growth, like trees? And of the animal species, what organs were tested, was it bone? What parts were tested?

RI-A20: Clark: For animal species, we looked at organs and muscles.

RI-Q21: No bones?

RI-A21: Clark: Some of our fish samples included bones. The plants that we looked at included a number of things. They included perennial plants, annual plants, grasses, forbs, pine needles, mosses, algae.

RI-Q22: How about the fish or the [inaudible word]. Were there any that were at the tops of food chains, because the ones you mentioned are not?

RI-A22: Clark: Fish that we looked at? Catfish -- that's a [inaudible word] fish. We caught some catfish out of the Great Miami. There obviously weren't any in Paddy's Run. It's too small for them.

RI-Q23: I do think that besides lookinh sy these details, an especially important thing is trying somehow to get a correlation between release and samples, because if you are sampling annuals when there are no releases, that may or may not be significant. There may be something in the soil that is taken up, but on the other hand, there may be something more at other times.

RI-A23: Clark: We looked at 107 different samples of plants from the site. And I would say, just off the top of my head, at least 60% of those were perennial grasses.

Michaelson: Okay. We're going to have a section here at the end where you can ask any question that you want. [Next sentence is inaudible.] If we could go ahead and have you guys (Clark and Galbraith) take your seats. One suggestion was made that since there are a number of handouts, that where possible, presenters could refer to something that's in one of the handouts, for those of you who are sitting in the back. Next, we will go with the Feasibility Study -- Joe Yeasted. Let's get Joe up here.

[Joe Yeasted sets up his presentation.]

<u>FEASIBILITY STUDY PRESENTATION</u> - Dr. Joe Yeasted, RI/FS Technical Director

Joe Yeasted: The topic I would like to address tonight is the Feasibility Study portion of the RI/FS. This is the portion in which the information gained in the Remedial Investigation is used to develop, evaluate, and eventually select remedial alternative for the site. The process itself [he points to a chart] shows on the bottom row that the major critical techical portions are three-fold:

1. A series of remedial alternatives are developed for the site. At this point, we try to maintain a comprehensive view and try to keep a full range of alternatives for future evaluation.

2. A second interim step then comes into play where we take that full set and go through an initial screening to deal with the actual conditions at the site and the problems at the site to try to refine the list down to a more workable number.

3. We perform a detailed evaluation of remaining alternatives according to very specific criteria; and it is that information from that detailed evaluation that is used by decision-makers to select a preferred remedy and to then go out for the appropriate public comment on that.

The Feasibility Study process itself, in addition to the three technical steps, has several administrative steps afterwards: you have the physical preparation of the reports, multiple agency reviews of those reports, the public review of them, and then there is a preliminary decision made called a proposed plan that goes back out for public review and eventually the record of decision is issued. We heard comments earlier tonight about the length of time the process takes, and in recognizing that, the FMPC has taken two steps to promote a more reasonable schedule and more responsive set of actions at the site.

The first of those steps are the so-called interim or removal actions which we'll hear about tonight. The second step was breaking up the site into six different units. The primary reason for this was a recognition that if we kept the site as one unit and studied as one whole, that the final decision would have to wait until the final piece of data was collected, the final processing of that data into a Feasibility Study, and a single decision somewhere down the road. To accommodate a more responsive schedule, we decided, as an FMPC team, to address six different units. Each of these units will have a remedial investigation and feasibility study performed and, at this point, it is anticipated that a ROD will be issued on each of these six independently.

The first is the main Waste Storage Site. This is where the waste pits are located in addition to some other waste disposal units. The second operable unit is known as the Solid Waste Units. The reason that this was differentiated was that these units involve a large volume of waste material but only small levels of radionuclides or chemicals. They are more contaminants of a larger matrix rather than a waste disposal area for those materials themselves -- that is, fly ash piles in the southern end of the site and the sanitary landfill for the FMPC which is located to the northwest. The third unit, the Production Area and Facility Suspect Areas, incorporates the main operating production part of the facility. The reason we broke this up was that the types of issues we are dealing with in the production area are expected to be localized problems, for example, a historic spill area or some pipe that had leaked in the past. The (perched) water under Plant 6 that you will hear about later tonight is an example of the type of conditions that we are studying in this area. We are looking at those as very specific problems, very localized problems that will have localized solutions. In addition to that facility itself, we have areas around the site that are known from past activities to have very localized problems associated with them. For example, the incinerator area to the east is one. Rich Clark mentioned that the soils and vegetation in that area are elevated in uranium. We also have areas, for example, in the north we have the fire training area; because of the types of activities, we feel there is a likelihood that soil and possibly groundwater contamination occurred. So again, these areas have been broken out because they can be locally studied and locally dealt with at the remedial action basis. The fourth unit is the K-65

Silos and these have been broken out primarily because they represent a very specific and unique technical problem that will be dealt with in ways different than how we deal with other units. The fifth unit is termed Environmental Media. This is not shown specifically (on the overhead) because it essentially covers the entire area. This is where we deal with the regional groundwater issues, the soil issues across the site and the surface water. For example, the Great Miami River will be dealt with in that operable unit. This will be the last unit studied and decided on primarily because it requires [tape recording dropped out for a brief length of time] which we call the South Plume, as Bob Galbraith mentioned, an area off-site to the south of the plant that has elevated uranium concentrations in groundwater. This sketch should not be taken as gospel. This is just to give you a representation of approximately where the plume is located [he points to the overhead.] We currently, as Bob mentioned, have a series of wells proposed, but we're trying to gain access from landowners to put them in to refine our understanding of this plume both to its nature and extent. But this is being dealt with as a separate unit because of its off-site location and because we feel it will be a well-defined problem that we can address.

Here is a quick status of where we are in the Feasibility Study before I get into the process itself. As I mentioned earlier, there are three [FS] steps:

1) Development of Alternatives
2) Screening
3) Final Detailed Analysis

We have completed the development of alternatives for all six operable units. A single report was prepared on this and is currently under review by both U.S. EPA and Ohio EPA. In order to keep proceeding, we have initiated the screening of alternatives for both the K-65 Silos and the South Plume. The reason these are being accelerated, again, is because they are very well defined problems, we feel we have enough information to proceed, and that the data on the South Plume will be coming in time to properly incorporate it into the FS process. We expect that this screening will be done -- the work itself and evaluation will be done -- within the next month and it will then start the review process.

The screening for Operable Units 1 and 2, the Waste Storage Area and the Solid Waste Units, will be beginning in the next couple weeks to months and it will proceed through the summer. The remaining two, (1) the Facility Suspect Areas - the field work on this unit is still underway; and (2) the Environmental Media Unit I mentioned earlier -- we are still collecting data. We have to wait for some early indication of what will happen with the others before we get into a detailed evaluation of these. So these two are not expected to begin probably until early 1990 at this level of screening.

In the development of alternatives process, the report that is currently in U.S. EPA's hands for review, we utilized a multi-step process to get to a set of alternatives for the site. We started out with identifying a universal or global set of technologies that are typically utilized for hazardous waste and radiological waste cleanups. We then looked at those with respect to the actual site conditions, not only the hydrogeology of the site, but the type of wastes we are dealing with and the types of problem issues. We selected only those which are potentially applicable to this site.

Those that are used for various kinds of wastes that we don't have or something similar were dropped at this point because they were determined not to be applicable at all to the FMPC.

We took what was left and did a comparative screening. We looked at their effectiveness in meeting the types of remediation goals that we have for the site, whether they could physically be implemented at the site and be reliably maintained in the future, and in a very secondary mode, (we looked) at the cost. The cost only came into play if a given technology was very similar to another technology and, of these two, one had a much higher cost associated with it.

Technologies that remained after this step were combined into various alternatives. An alternative is nothing more than combining various technologies. A removal technology, treatment technology, and a disposal technology would be a typical type of example. At this point, we tried to get down to on the order of 10 different alternatives for future consideration. Let me describe some of those for the K-65 Silos and the South Plume, since those are the two that we are proceeding with right now.

For the K-65 Silos, we are maintaining, just to cover the full gamut of actions, a non-removal option which would include stabilizing the material which is in the silos, improving the isolation of the silos, either by putting an improved cap or some similar thing on the silos. This is the non-removal option being maintained at this point. We also have various removal options where we physically remove the material out of the silos, then either treat it or separate out the most problematic materials, and then dispose of the treated or separated waste either onsite or offsite. There has been no predecision made on the final disposition of material at this point. Note that a no-action alternative also remains. This is required under (U.S.) EPA's guidance on conducting RI/FSs. It provides a baseline condition against which the other alternatives are compared throughout the screening and evaluation process. And you will see that on any of the operable units.

For the South Plume, we again have no-action and removal and non-removal options. Non-removal in this case means letting the groundwater plume remain in the ground but trying to control its movement or, at a minimum, assure that there is no public health effect associated with it, either by providing alternative water supplies or treatment -- something along those lines. We do not know of anyone currently using any water to represent a public health risk in the South Plume. This would be more for future protection. The other option is to physically remove the water from the ground and then treat it or discharge it to the surface water course. Again, you may have a problem with some of these alternatives, but again this is still at the screening level. This will be worked out with the agencies and with public comment as time goes on.

The second step in the process that we are currently undergoing for the K-65 Silos and the South Plume Units again deal with the same criteria as before, effectiveness, implementability, and cost. However, at this step, you get into more details and look at it much more from a site-specific standpoint. You look at particular technologies, what you may do with residues, and things like that. The effectiveness includes not only the ability of the option to protect human health and the environment, but under the current guidance, there has been emphasis and preference for any option that would reduce either the toxicity or the mobility of the waste itself. This is the so-

called preference for treatment alternatives. We also have implementability -- can it be built, can it be properly maintained to remain reliable in the future? Also, there is administrative implementability. Can the necessary permits be obtained, will this be acceptable to the agencies if proposed? So there is both a technical and administrative issue here. And also, public input is part of the administrative implementability. And again a secondary factor is cost. If you find options that are very similar up here [he points to overhead], then the most costly would drop out at this stage.

Finally there is a step that has not yet been initiated. This will be initiated for these two units (the K-65 Silos and the South Plume) later this summer, that is, the detailed evaluation of alternatives. According to current U.S. EPA guidance, there are nine specific criterig to be utilized. These span the technical issues of implementability and effectiveness that deal with protection of human health and the environment. You have to consider whether the current regulatory requirements are satisfied, both federal and state, and then obviously down here [he points to the overhead], we have state and community acceptance. I'm going to end the talk on this because I want to assure you that state acceptability is worked into the process right now. The Ohio EPA is on board as a team member with the U.S. EPA. They are reviewing all documents and providing their comments as each deliverable document is produced. Community acceptance will be gained, not only by meetings such as tonight, but all reports will be issued to the public reading rooms. There are also several instances in the process where the community has very direct formal involvement. The final reports are issued for a public review period. The proposed plan -- which again is a next step in proposing the preferred alternative and why -- goes out for formal public comment. There is also a companion process under the Environmental Impact Statement which will involve several levels of public involvement, which will have a direct tie back into the FS. So, there are several methods in which, when we get to the decision process, that the community input will have been received and properly responded to. With that, I'll close or welcome any questions.

Questions from the audience are denoted by "FS" followed by a consecutive number, i.e., FS-Q1, FS-Q2, etc. Answers are denoted by FS-A1 and the speaker's last name is given.

FS-Q1: [Questioner was difficult to understand; did not use microphone] ...what flowing from the site contacts groundwater? Is it the silos? Does it contact the water supply through the groundwater?

FS-A1: Yeasted: There are various ways at the site. This is based on our current knowledge of the site and you've probably heard this from other talks. We feel that there was some level of leaching from the waste pits at and this point in time, we feel that contamination is moving to the east [he points to the overhead]. There is also material in the Production Area that, under (certain) conditions, would seep into the groundwater; again we feel that what was released -- most of the problem in the South Plume we believe is due to water that came down Paddy's Run either as surface water runoff from the pits, or as leakage from the pits or as runoff water from this area that came down through the stormwater outfall. As Bob Galbraith mentioned, the bottom of Paddy's Run in this area is just sand and gravel that is in direct contact with the aquifer. So the water goes down through the bottom of the

stream and becomes part of the groundwater reservoir. Just as a point right now and at the last public meeting, there was a presentation on the stormwater management processes occurring at the site. We feel that those two major pathways have effectively been eliminated at this point in time, and that most of this situation is more an artifact of past practices rather than a continuing situation.

FS-Q2: Are you now saying that the South Plume is a problem? That it contains high levels of uranium that exceed current standards? And if there were people who actually had to drink this water, you would now provide them with clean water? I want to make sure I heard this correctly, because in 1985 we were all told that water was well below standards and they wouldn't provide anyone with water.

FS-A2: Yeasted: If they knew of anyone drinking water that had levels above proposed limits there should be an action taken to serve them. I can't speak to 1985; there's a difference between the level of protection of a proposed standard that is usually more conservative and what would actually be a harmful dose based on risk calculations. I would ask you maybe to ask that of the panel where Dr. Frazier could respond to that better than I can.

Frazier: We are currently looking at trying to define a level in this plume that would exceed proposed standards. We are also doing a second or third level survey to make sure there are no wells penetrating the areas that we identify. We do not know of anything today that is penetrating that plume in that area and even a public health study has also determined that it accepts that the three wells were the only contaminated wells over several years and no one is drinking that water today.

FS-Q3: What about the two families who drank that contaminated water for over three years? What can you do to help those people? Every time we have a meeting and we talk about the contaminated wells, I always hear from you guys that no one drinks this water now.

FS-A3: Yeasted: The RI/FS is a study of the current situation. There's not currently anyone drinking it. If there was, action would be taken.

FS-Q4: What about the children who play in it?

FS-A4: Yeasted: Children don't play in groundwater.

FS-Q5: Yes, they do -- in Paddy's Run.

FS-A5: Yeasted: Paddy's Run is being monitored and based on the data we have to date -- we have maintained a continual look at the information from a risk standpoint -- there has never been an indication that the water in Paddy's Run presents a risk to anyone playing in it, either that or the sediments.

FS-Q6: Why don't you post signs to keep people from this area (Paddy's Run)?

[Yeasted referred the question to the panel but no answer was offered.]

FS-Q7: [A TV reporter expressed concern about there being a potential problem since she was in the Paddy's Run area that day] If people did drink this water that was contaminated, are you informing those people and doing health studies? This is conceivably a dangerous problem!

FS-A7: Yeasted: There were two questions. One was concern regarding having been near Paddy's Run today, whether that could pose a problem. The second one was whether there are health studies being conducted of the people that were known to have drunk that water in the past. The first answer -- I believe I can say that, again, from the data we have to date on our studies and past studies and analyses we have run from a risk standpoint -- Dr. Frazier can go further into this later -- we did not find anything at levels that would indicate a public health risk.

[The moderator again asked people to come to the microphone to ask questions because of the difficulty people were having hearing them.]

FS-Q8: You were just stating that you have found levels above the proposed standards. So are these standards not safety standards?

FS-A8: Yeasted: They are proposed EPA standards.

FS-Q9: Safety standards. Can we agree on terminology?

FS-A9: Yeasted: Yes.

FS-Q10: Now, are you notifying those people and doing health studies on those people?

FS-A10: There is no direct health study being done. There is a request, I believe, from Senator Glenn to determine the feasibility of doing that study. We have the EPA and Centers for Disease Control looking into that issue right now.

FS-Q11: So even in the area of Paddy's Run where you've determined that the water is contaminated, you haven't even posted warning signs yet?

FS-A11: I didn't say the water was contaminated. We're dealing with groundwater versus surface water.

[Comment from audience: "That's how the groundwater got contaminated." Several other inaudible comments were made. Moderator again asked audience members to speak one at a time and use the microphone.]

FS-Q12: I have a question for you. If the South Plume property owners shouldn't drill a well, have you informed those property owners that they should not spend their money and bother drilling wells because the water is unsafe to drink? And if it is unsafe to drink, I think all those property owners should be compensated for their loss of not being able to drill a well on their property.

FS-A12: Yeasted: I can't answer [inaudible word] it's not a technical issue.

FS-Q13: So you don't know if people have been informed that they should not drill wells? [Several persons clapped]

FS-A13: Yeasted: I don't know. We have approached the owners of the properties where we would like to drill wells for investigative installation.

Michaelson: We have time for one more.

FS-Q14: You talked about a possible solution would be to take some of the liquid waste onsite, treat them on site and then discharge into the groundwater...uh, surface water. Are you talking about the effluent pipe?

FS-A14: Yeasted: There's several options we're looking at. One option is to bring it back from the South Plume to the FMPC, treat it at the site, and discharge it through the effluent pipe. There's another possibility where we would treat it down near the plume itself and discharge it from that point.

FS-Q15: What does the word treatment mean -- does that mean dilution?

FS-A15: Yeasted: There is still one option that is in there that represents dilution, but again, we're still at the very early stage where we want to maintain a wide range of alternatives. And removal of groundwater and discharge to surface water of course would be direct discharge. If you want to consider that treatment by dilution, that's your interpretation. The other option would be to treat it through a [inaudible word] chemical process at the site.

[Three more questions and answers were given but were not comprehensible. The last question was followed by a brief break in the recording. When the recording resumed, an audience member was finishing a statement in which he referred to the "persistence of two housewives" and his contention that "we're not going to let you get away with it either." This statement drew applause.]

Michaelson: As Joe (Yeasted) pointed out, where we are in the process is looking at various alternatives and this is what we're here for tonight and will continue to be here for you, and then find out what you think about these alternatives, so we appreciate hearing about them. So right now we're going to move on to the last presentation which is interim cleanup activities. We'll take some questions on that, then a break

for refreshments, and then we'll come back and, as we said, we will take questions for the rest of the night.

INTERIM ACTION PRESENTATION - Bob Conner, RI/FS Manager

Bob Conner: Good evening, once again my name is Bob Conner. I work at the Feed Materials Production Center which we're talking about tonight. My colleagues here with me tonight are Pat Hopper sitting here in the front and John Frazier sitting here in the front row. They're here to help me answer questions you might have after my discussion this evening.

I want to talk about near-term environmental activities we plan to undertake at the FMPC. Following that, we'd like to hear your thoughts, opinions, and concerns, so that we can integrate them into what we are doing in response to the environmental concerns at the FMPC.

We have underway at the FMPC a Remedial Investigation/Feasibility Study, or as we call it, an RI/FS. The RI portion of this study is designed to identify environmental problems caused by the last 37 years of operations at FMPC. The FS portion is designed to identify the cleanup actions to correct those problems. The RI and FS have already been discussed in some detail in the other technical discussions tonight. What I'm going to focus on are cleanup actions that are being taken now or will soon be initiated. And these go hand and hand with the RI/FS. These interim cleanup actions are called removal actions in regulatory terms.

We're performing removal actions so that as environmental sampling identifies potential problems at the FMPC, we can respond quickly. I want to emphasize that all these planned actions are reviewed both by the U.S. EPA and the Ohio EPA prior to being implemented at the FMPC. A removal action is a cleanup action which is necessary, but just might not be sufficient, that is, while we know that a particular cleanup action is necessary to prevent further spread of contamination or to minimize continued emissions, we do not have all the information necessary to say that's all that's going to be required to complete that cleanup action. Any removal action we initiate, however, must be a part of and support the final remedial action as shown here [he points to RI/FS process graphic]. With each criteria in mind, let's take a look at the removal actions we've either started or those we plan to undertake in the near future at the FMPC. I've listed the four of them here. They are:

1) Pumping the groundwater from the region to the south of the FMPC which contains elevated concentrations of uranium. You have already heard (this area) referred to tonight as the South Plume.

2) Pumping perched groundwater from beneath FMPC facilities which contain elevated concentrations of uranium.

3) Controlling stormwater runoff from the waste storage area.

4) Installing sand in the K-65 Silos.

And I'm going to go into each one of these in somewhat more detail.

Through our RI/FS investigations, our remedial investigations, we know that certain regions of the aquifer contain concentrations of uranium which are above those normally found in this area. We know approximately where those regions are located. The South Plume's northern boundary starts on FMPC and it extends south of FMPC by approximately 2500 feet. Its western boundary is Paddy's Run and its eastern boundary is about 1000 feet to the east. Now I use those words "approximately" and "about" intentionally. We do not presently know the exact boundaries of the South Plume. We are installing 10 additional wells in the southern plume region to better establish those boundaries at this time. However, it takes time to fully evaluate a plume and develop final cleanup actions. In the interim, the plume may be moving to the south; that is, it may be migrating and we would like to prevent further migration of that plume. However, we don't know how we're going to do this.

But what I can show you is the approach we take to problems of this nature. And what we're doing to define a solution. We begin by performing an environmental investigation to identify the problems. Now we've done that. We know there is a problem in the south plume area.

We are now working with the U.S. EPA and the Ohio EPA to define alternatives for correcting that problem. Once an alternative has been selected, we'll do the engineering design and then execute a cleanup action. We'll keep you posted on this one through future public meetings and through our quarterly newsletters.

The second item is perched groundwater. During construction activities at the FMPC in 1988, we encountered a region of perched groundwater underneath a facility with concentrations which were above background. Now by "perched" I mean this is an isolated pocket of groundwater that is being held up by clay. Now water doesn't flow through clay very easily. Therefore, that water has not moved from this area. It has not migrated down into the aquifer and that region is not affecting the drinking water. The FMPC has been pumping and treating this water since it was found in July 1988. The removal action we are performing now is to install additional wells to further characterize the area and to remove any additional perched groundwater that may be present in that area. Once again the overall intent of this second removal action is to remove the perched groundwater. We do this to prevent its potential migration downward where it might contaminate the aquifer.

The third removal action is the Waste Pit Area/Stormwater Runoff. It involves collecting and treating stormwater runoff from the waste pit area. The action is designed to contain the stormwater, which would otherwise run off the waste storage area, and pump it through the FMPC water treatment system prior to discharge offsite. To do this, a series of trenches collect the stormwater before it runs offsite. The collected stormwater will then be channelled, pumped, and treated before discharge from the site. Engineering design of this stormwater runoff control has already begun. Construction is scheduled to begin in the summer of next year.

The fourth remedial action is the K-65 Silos. The primary concern with the residues contained in these silos is the fact that they contain about 3-1/2 pounds of uranium [he corrected this to "radium," but someone asked him how many pounds of uranium were in the silos; he said he would answer the question later]. Now, why is that a concern? Because radium decays radioactively into radon, which is a gas, and since the silos aren't airtight, the radon can exit the silos. Now, although radon occurs naturally, and you will find it in the air throughout the country, we would like not to add to the natural levels of radon in the atmosphere. Our planned action is to install a four-foot layer of sand in the silos to reduce these radon emissions. We're trying to complete this project by the end of this year.

In summary, the FMPC is involved in various stages of the removal action process in four different areas. Removal actions we've discussed tonight are listed here in brief:

- Once again, we're identifying alternatives to correct and contain problems associated with the South Plume;

- Second, we're pumping pockets of water on plant property; that has begun. We are further studying effects of this perched groundwater through additional environmental investigation in the FMPC Production Area;

- Control over stormwater runoff in the waste pit area is in engineering design; and

- We will be installing a four-foot layer of sand in the K-65 silos to reduce radon emanations.

The four removal actions presented here tonight represent those we've identified to date. Now, we fully anticipate that as our Remedial Investigation continues and we collect more information about environmental conditions at the site, there will be additional removal actions. As we identify additional removal actions, they will be addressed at future public meetings.

This is one example [a new overhead was shown on the screen] of an additional removal action that came about as we were preparing for this public meeting. During a recent heavy rainfall event, our water discharge to the Great Miami River, due to back pressure in the line, overflowed at Manhole 180 into a nearby field. Following that event, we stopped the overflow activity, reduced discharge from the site to prevent it from overflowing again, and took soil measurements in the area. The soil samples ranged from less than 11 to 127 parts per million of uranium in the soil. The average concentration there was 37 parts per million of uranium and two of the eight samples collected were above 30 parts per million.

We wanted to tell you what we're doing about that area right now:

- We've completed the first round of sampling and gotten results of those eight samples.

- Based on that, we initiated a full characterization of that surface soil area; our walkover surveys are complete.

. We now have soil sampling in progress; we have collected 48 of 150 samples:

. Our manhole cover repairs are in process. There are four manhole covers in that line that require repair; two of the four have been repaired and the other two will be repaired by the end of the week and hopefully by the end of tomorrow.

. Our soils cleanup is in design in the event we do need to clean up soils in that area.

Now each of the removal actions I've talked about precedes the final remedial actions that will be taken at the FMPC site. Each of these removal actions we've discussed tonight have been discussed with representatives from the U.S. EPA and the Ohio EPA. Once again, they approve all of our plans and designs before we begin each of these corrective actions.

We also want your comments and suggestions. This is not the only opportunity you will get for public participation. We will be publishing information describing these actions and placing it in what we call the Administrative Record for our Remedial Investigation and Feasibility Study. When these documents are published, you will be notified through newspaper announcements. Watch for these announcements. Another source of information will be community meetings such as this, and any interim remedial action we undertake will be discussed at these meetings. With that, I'd like to solicit your comments, opinions, as well as answer any questions you might have.

Questions from the audience are denoted by "IA" followed by a consecutive number, i.e., IA-Q1, IA-Q2, etc. Answers are denoted by IA-A1 and the speaker's last name is given.

IA-Q1: Okay, I have three questions. One of them came when we were sitting back here and we couldn't hardly hear you, How much above background of uranium have you found in the aquifer?

IA-A1: Conner: Okay, I'm sorry I don't understand your question.

IA-Q2: When we were sitting back here you said -- and I wrote it down -- you said the uranium you found in the aquifer, in the groundwater, was above background. How much?

IA-A2: Conner: I'm going to let John Frazier address that one. John, would you go over what background would be in this area?

Frazier: A question came up earlier about the conversion from parts per billion for water and pico curies per liter. If you will take the parts per billion for uranium...[A lapse in the recording occurred]...the water in the highest level in the South Plume of the three wells that are "above background" as determined by the Ohio Department of Health was 200 picocuries per liter; so that is clearly above the 1 to 2 picocuries per liter of uranium in groundwater, which is background. Now, the current, as of January 1st, DOE criteria for concentrations offsite is depending on the radionuclide, the ballpark range, is around 500 picocuries per liter. [someone

in the audience asked if that was a DOE standard, to which Mr. Frazier replied] Yes. The "proposed" that Dr. Yeated mentioned earlier, was a proposed EPA groundwater standard, proposed assuming that that groundwater would be used as drinking water and that is 30 picocuries per liter. Neither of those should be construed to indicate that they are a definite cutoff above which there is any adverse health effects, but those are derived concentrations based upon an acceptable radiation dose. Now you asked about whether or not the levels to the south are above background; yes they are.

IA-Q3: Secondly, you keep talking about how EPA has reviewed your interim plans, but has EPA accepted them or approved them?

IA-A3: Conner: We have not taken any action or interim action yet that U.S. EPA has not approved or concurred with. We will be providing formal documentation and getting their approval before we proceed with formal removal actions.

IA-Q4: You talked about digging these trenches. How are you going to dig these trenches? Are they going to be lined with anything? Are they going to have plastic, or clay, or is it just going to run through the groundwater like it always has?

IA-A4: Conner: I don't have the designs with me tonight, but they will pass engineering design approval and will be reviewed and approved by both U.S. EPA and Ohio EPA before they are put in. The intent here is to collect stormwater runoff so that it doesn't exit the site in the direction of Paddy's Run from the Waste Storage Area. Now, if we do not line those trenches and collection systems, and allow it to enter the aquifer from our site, they would not complete their design objective and they would not be accepted by us and would not be proposed to EPA.

IA-Q5: So, you're telling me they will be lined?

IA-A5: Conner: I'm telling you something will be done to assure that the water is collected rather than seeping into the ground or running off into Paddy's Run. There is a design objective and they will have to meet that design objective before they are accepted.

IA-Q6: Next, I want to know if F.R.E.S.H. can have copies of all of your overheads that you've shown us tonight.

IA-A6: Conner: Let me ask that of Paul Mohr. The request was made to Paul Mohr for F.R.E.S.H. to have copies of all overheads that are being used tonight. [Mohr nodded his assent] And that will be just fine, Ms. Crawford.

IA-Q7: And then when we break and come back here, will you have your doctor here on the panel?

IA-A7: Conner: Yes. We will be having a panel discussion this evening and John Frazier's one of the members of the panel.

IA-Q8: You mentioned the perched groundwater and I would like to know at what depth did you find the perched groundwater and where?

IA-A8: Conner: Perched groundwater was encountered at a level of 6 to 8 feet.

IA-Q9: Where?

IA-A9: Conner: In depth, underneath of our facilities on the site, a building.

IA-Q10: The reason I'm asking is because I am aware of that the Ohio Department of Natural Resources did a cross-section of the aquifer; in the spring time of the year, the level of the aquifer may very well be within nine feet of the surface at the location of the buildings.

IA-A10: Conner: I will call upon Bob Galbraith as we will be having a panel discussion up here and Bob will be here. Please address that question to him at that time, as he is a hydrogeologist and does know the water levels under the site.

IA-Q11: Four manhole covers are currently in a state of disrepair you said?

IA-A11: Conner: That some repair action is being taken on, yes.

IA-Q12: Is there any way that you can tell us what the construction of the effluent line is? Is it in disrepair also?

IA-A12: Conner: I cannot tell you about the exact construction of the line, but we did inspect it using TV cameras about 1-1/2 years ago.

IA-Q13: Is the purpose of the manhole covers for clean-out purposes, for maintenance purposes?

IA-A13: Conner: Clean-out and maintenance purposes, yes.

IA-Q14: Is that the only clean out that you have of the effluent line, the accessibility through the manhole covers? There's no other way of cleaning them other than that if there's blockage in them?

IA-A14: Conner: I don't know, I'm not an expert on cleaning pipes, but I'm sure we've got one (an expert) here tonight. Please ask that during our panel discussion.

IA-Q15: Can you show us on the map where the manhole cover is located? Is it on site?

IA-A15: Conner: No, it's offsite. [He describes the location of Manhole 180 on an overhead].

IA-Q16: I wanted to know if the overflow occurred approximately three weeks ago during the excessive rainfall?

IA-A16: Conner: The overflow was reported April 4, 1989. Water measurements were taken at that time, and subsequent soil samples were taken on April 5th. We obtained sample results May 2nd.

IA-Q17: In the 40+ year history of the plant, is this the first overflow?

IA-A17: Conner: I cannot say at this time whether it's the only overflow or not; but people in the vicinity have reported that this is not a singular occurrence, that it has occurred in the past.

IA-Q18: Does the effluent line continue down into the river, or does it end right at the edge?

IA-A18: Conner: I personally cannot answer that question.

[At this point, the moderator asked each person to limit their questions to no more than two at a time to give everyone who wanted to ask questions the opportunity to do so.]

IA-Q19: You mentioned that you wanted input from us recommendations and comments. I have a recommendation and comment regarding cleaning up the environment. The recommendation is to here at Fernald start basic and applied research on how to clean up the environment nondestructively, both on and off Fernald. And this consists of two areas of applied research on how to (1) neutralize the radioactive contamination in the environment, again nondestructive and (2) on how to extract the radioactive contamination nondestructively from the environment. However, to be able to do all of this, Fernald would have to permanently stop all nuclear weapons production to make this possible.

IA-A19: [No answer given]

IA-Q20: My question is just a follow-up on whose property are the manholes on? Are they on Strickers Grove property, or are they in the cornfields?

IA-A20: Conner: I can't answer your question. Those are FMPC manholes and we have leeways to obtain access to the manholes from the property owners.

IA-Q21: These things could have leaked before though and gotten onto the corn or whatever is grown South of Strickers Grove and perhaps been on the grass for the cattle at Knollman's Farm?

IA-A21: Ma'am, I don't know the answer to your question, but we can address your question during the panel discussion. Would you follow up with a question then?

[After this question, the entire group took a break for refreshments before returning for the following session.]

GENERAL QUESTION-AND-ANSWER SESSION

Panel Members:
Graham Mitchell - OEPA
Catherine McCord - U.S. EPA
Margaret Wilson - DOE
Richard Clark - ASI
Bob Galbraith - IT
Joe Yeasted - IT
John Frazier - IT
Bob Conner - WMCO

During this general question-and-answer session, the exchanges were more complicated than in previous sessions. For example, questioners sometimes asked a series of follow-up questions, remarks were added to (or interrupted) by other audience members, or more than one panel member answered a question. To make it easier to understand the flow of questions, answers, and comments, a different format has been adopted for this section. Questions and remarks by audience members are denoted by "AM" followed by a consecutive number, i.e., AM-1, AM-2, etc. The number is changed every time the identity of the audience member who is speaking changes -- not every time a new question is asked. Further, panel member responses are identified by their last name only, rather than a number.

AM-1: You talked about the South Plume -- can someone tell me at what rate the plume is migrating to the south per year, how many feet per week, whatever?

Galbraith: Unfortunately, we cannot tell you how many feet per day or feet per year the South Plume is moving. That's one of the reasons we want to drill the additional wells to find the boundaries of the plume to monitor its migration. We suspect that most of the uranium that created the South Plume was injected into the subsurface or went into the subsurface principally during the 1960's, so we have some estimates on how far it's moved. But since Paddy's Run was a source over most of its length, it's hard to define the starting point for the plume, to determine how far it's moved.

AM-1: But you do know that it's moving?

Galbraith: We do know it's moving to the south.

McCord: Part of the problem is there are still some additional monitoring wells that need to be installed in the South Plume area. The Department of Energy is in the

process of having those wells installed, but there has been some problem in gaining access to some of those properties for the installation of the wells. Once the groundwater monitoring wells are installed, they'll get a better idea of what groundwater flow is in this area. There is some complication too that the contaminants may flow at different rates at different locations; also, there are some other contaminants in the South Plume at the southern end, and that may actually change the migration rates of the uranium.

AM-1: My other question is to Mr. Clark. If you have tested everything as you said, have you done anything at all with the birds?

Clark: No.

AM-1: Why not?

Clark: We had never planned to look at any of the birds onsite when the biological sampling plan was approved as part of the (RI/FS) work plan. At this point, birds don't present much of a pathway to human beings. There are some ways for raptors...

AM-2: [Interrupting] We use cistern water and birds fly over the cistern and leave droppings, etc.

[A lapse in the recording occurred.]

Frazier: I'd like to comment about the bird droppings in your drinking water. The Ohio Department of Health did an evaluation and sampling of the cisterns in the area. They found only one cistern with above-background uranium in that cistern water, and that was to the north (of the FMPC). I do not know what testing they did for bird droppings, though.

[Someone spoke from the audience: "They did not test everyone's cistern?" It was difficult to hear persons in the audience who were speaking. The moderator asked people to ask their questions from a microphone.]

AM-1: I want to continue this question. You said it wasn't feasible to do the birds or it wasn't in your plan. I have a flock of birds over my house every day and they land in my yard. I have a cat, dog, and two horses and those birds are in the grass and in the field and I want to know how much danger there is to my animals. Those birds roost over there at the FMPC, we watch them.

Clark: What we are planning to do as part of the Remedial Investigation is we will look at all the data we have and if we think -- and your comments will be included in what we think -- that it's appropriate to try and find out what effect the birds are having on your property, then that will be something that is done in the future.

AM-4: Concerning the effluent line that overflowed -- the one reading had 127 part per million. Is that considered within background levels?

Frazier: No. I mentioned earlier that the conversion factor for water involves taking the part per billion and multiplying it by two-thirds to get picocuries per liter. If you have soil sediment, or any other solid, if you will multiply the part per million by two-thirds, you get picocuries per gram, for uranium of course. So if you had 127 parts per million, two-thirds of that would roughly be about 84 picocuries per gram. The background range of uranium in soil in this area as determined by the Ohio Department of Health, ranges from approximately 1 picocurie per gram up to approximately 4-1/2 picocuries per gram.

AM-4: Well trying to interpret this, are you saying then that the water that runs through that pipe on a daily basis is above background?

Frazier: Yes.

AM-4: And that goes directly into the river?

McCord: That's a baseline. You have to remember that that's liquid effluent, or the wastewater that's being discharged from the plant. That's not considered clean water. That's water that's being discharged under the permit from the state.

AM-4: But that is in an acceptable range?

McCord: For those soils, yes it is. In fact, with respect to that, we have discussed this issue with DOE over the last week-and-a-half since we were informed of it. We will be discussing it in depth tomorrow on what kind of actions they (DOE) have to take. We have asked DOE to give us a proposal for a fifth removal action for this. We have asked them to mark the contaminated area and fence that area off until we know how bad the contamination is.

Michaelson: Graham (Mitchell), did you have something you wanted to add?

Mitchell: Usually the effluent from the wastewater treatment plant and from the plant, itself, is usually around approximately one part per million. So the finding of 127 parts per million indicates either in the past there were higher concentrations in the effluent line or there's been a buildup of material from successive overflows. What the outcome of that is we really don't know. What impact that's having on the groundwater in those particular areas, how far down the material goes, are all things that need to be determined.

AM-4: Okay. Thank you. I do have one more question. Someone said that there were results from algae testing. I know that Dr. Gilbert is on the advisory committee and

he has been asking for this for years. And I'd be very interested in seeing the results of these tests.

Michaelson: Rich (Clark), do you have that at your disposal?

Clark: No, I don't have that number off the top of my head. The only places we looked at algae were from Paddy's Run and some samples I collected last fall. I can have the numbers shortly.

AM-4: Will there be any further testing in the Great Miami River or anywhere, do you know?

Clark: We're not planning any right now.

AM-4: Okay. Thank you.

McCord: I would just like to add something to what you've been asking about the biological testing. Now, there's been some other biological testing that was done independent of this CERCLA investigation, the RI/FS. The results of the investigation under the RI and this other work contracted with Miami University will be evaluated and U.S. EPA and Ohio EPA will then propose to DOE what other work needs to be done. And we'll negotiate that with them, so I'm not saying that's all the testing that'll ever be done.

AM-5: I have one rather broad question, I guess. We know that these waste contaminants that have been coming from Fernald for the past 38 years have been for production and Fernald continues to be in production. What I would like to know is what has WMCO done since taking over the FMPC to curb the amount of contaminants going into the atmosphere, to the groundwater, and into the river? What has it done, in so far as the amount of uranium dust going into the atmosphere? What has it done in terms of reducing the amount of uranium and other radionuclides going into the river? Not just diluting it [a lapse in the recording occurred] as the best remedial action at this point?

Michaelson: Bob Conner, were you going to take the first part of that question?

Conner: The question was, as I understand it, what are some of the things that Westinghouse has done since taking over the operation of the site to improve air emissions and water emissions from the site? And I just thought I'd go down a few of them here:

- Air Discharges - We've instituted the installation of HEPA filters on our air discharge points and monitoring of those discharge points. We have a new air cleaning system in Plant 9. In 1987, the air emissions from the FMPC were at an all-time low.

AM-5: Can you tell what that all-time low figure is?

Conner: I can't quote it right now. I don't have it off the top of my head -- the exact value. Would you do me a favor and fill out a comment card and I will send that information to you?

AM-5: I would like everyone to hear these answers if we can answer them now.

AM-5: Conner: Okay, I wish I had the data and I don't in front of me.

- o With regard to discharges to the Great Miami River of effluents -- we have put in new stormwater collection system -- we have a new stormwater retention basin on site. Not only did we install a stormwater retention basin, but we expanded it this year so that we can collect and allow it to settle out a 24-hour storm event.

- o Treatment of Nitrates - We have the biodenitrification system on line and operating now to remove nitrates from the water prior to discharge to the Great Miami River. We also have in design an advanced wastewater treatment system to further reduce the levels of uranium in our water discharge from the site.

AM-5: I'm glad you've tried to do something, but what I'm interested in is knowing what these levels are, specifically. I think the public needs to know what these levels are right now because that continues to be a problem. I want to know if the FMPC is continuing to produce these wastes. Why is it still open?

Conner: I wish I could answer your question on emission levels right now, but as I told you before, I don't have those figures off the top of my head.

AM-5: Maybe the Ohio EPA or U.S. EPA could answer whether they have considered closing the facility because of the continued contamination.

Mitchell: From what I know of the facility -- I have been working on this facility for about four years --the contribution from current production is fairly minimal. The real problems we're seeing out here is over the past 37 years and the early years of operation were the worst. For instance, 90% of the air releases occurred in a period from 1951 to 1969. That doesn't say there aren't current releases both to the surface water, groundwater, and to the air, but the releases in the early years are when most of the material accumulated. We're still dealing with those problems.

Conner: I'd like to add one more thing there too, Graham (Mitchell), the values that you're searching for, as I said, I don't have them off the top of my head, but they are in our (WMCO's) Environmental Monitoring Report which is issued annually. It is a public document and you may obtain a copy of it. It shows not only our air and water emissions from the site, but it also shows sampling on and around the site for both soil and groundwater.

AM-6: I have a question concerning the independent biological studies just mentioned. I know that the study by Rich Clark that he and his team did, did not specifically search for americium, as a by-product of plutonium decay, and did not look at bones of animals for strontium 90 and cesium 137. So I would like to know whether you know if this independent study has looked at these two things because...

McCord: Do you mean the Miami Study? If so, no, that was not in the scope of that project.

Clark: No, none of the studies I am aware of looked at strontium or americium in bones.

AM-6: I recommend that you do it.

Michaelson: John (Frazier), did you have something to add to that?

Frazier: The results of the strontium 90 and cesium 137 that were mentioned earlier were found in the biological sampling both in Indiana and this area. As you are probably aware, strontium 90 and cesium 137 are both a consequence of atmospheric weapons testing. They are in the soil. They are in your body now. They are in my body now. And they are in vegetation, so the levels that we find and that we have found in this area as part of the Remedial Investigation represent naturally or manmade contributions of strontium 90 and cesium 137 since about 1951. Now in regard to americium 241, we have sampled extensively as part of the Remedial Investigation/Feasibility Study and have never found any americium 241 on site or off site.

AM-6: Did you look specifically for it?

Frazier: Yes, we did. You may be aware that americium 241 emits a gamma ray which is of sufficient energy to be detected with the sensitive instruments that we use. We've looked for that in all the samples, and did not find it in any sample.

Michaelson: Which samples did you look at, John?

Frazier: Those samples specified in the RI/FS Work Plan for a full radiological analysis. And gamma ray spectroscopy is performed on all samples specified as having full radiological analysis. That media included many of the groundwater samples, surface soils, and some of the biological samples.

AM-7: It must be extremely difficult for DOE officials and Westinghouse managers and scientific subcontractors to have their integrity questioned, and their credibility lost. But I feel sure that you must understand why that's the case -- the anger that we feel after years of deception and a good bit of physical and psychological suffering. What we would like is to see, through paper and dollar bills, is a commitment, a

long range commitment to doing what is right and not what is expedient. And in that spirit, I have several questions. One concerns the oversight...[garbled]...on DOE nuclear weapons facilities, that is, the oversight that some members of Congress are looking into calling for legislatively, by law, by OSHA, and a bit more oversight by another government agency, EPA, which has some strong criticisms of the way in which DOE has conducted its management of its facilities. And I want to know what support there may be from within DOE. Certainly our national security is not jeopardized, but only increased if we have safe production, environmentally safe production. Why has DOE not been supportive of these legislative moves and these other government agencies' recommendations that there be a little less of the "fox in the chicken coop."

Wilson: [garbled]... let me tell you there is oversight, that we try to present the best possible plans, and go back and try and fine-tune them all the way along this process, which makes it somewhat lengthy. But we believe it will get it to the end point where we need to be in terms of final cleanup actions. National policy-wise within the DOE, I can't really speak to.

McCord: I know that there are several bills that are in committee in the House of Representative on a national level that would strengthen regulatory agencies' authority over other administrative or executive agencies, like the DOE or the DOD. There are hearings about once every three weeks on various aspects of changes, like the hazardous waste laws; also, air and water. I would encourage you if you have specific concerns about those to contact your House of Representatives representative and support or express your concerns. I know that some of those bills are in Congressman Luken's committee that he heads up in the Transportation/Hazardous Materials Subcommittee.

AM-7: I am well aware of the bills. I'm also aware of the fact that the DOE is the only U.S. agency which regulates itself, and to the extent that they have been dragged kicking and screaming to any sort of oversight. I'm sorry if it appears I'm questioning your integrity, don't take it personally. The point is that the DOE has deceived us for many years and we're not likely to believe that they are willing to support something which is the right thing to support and to be open and above-board about this. That is why I doubt DOE is going to be supportive of independent Congressional oversight. And cooperation with EPA has not been, what should I say, again I think DOE has been dragged kicking and screaming to cooperate. This is very unbecoming of a federal agency that is supposed to be providing for our national defense.

Wilson: Two points I'd like to make to address that. Again, I believe there is technical oversight, very much so, particularly at the level I work and the level the other folks on this panel work at. Second point is I thing that the forums we are having this evening are ones that we will continue to have most certainly. We'll come to the table and hopefully the format from this evening's meeting is something

we can stick with now. I think we have consensus on how we want to have these meetings and we need to hear from you folks about this process. If you get your hands on the CERCLA regulation, and that acronym is defined for you on our reading table, there is very much a role that this local community plays and we want to have your input. We have a couple of data points from the gentleman behind you in fact who wants us to look at...[Wilson was interrupted at this point]

AM-7: It's just that I would like to press the panel a little bit more on the issue of production. After all, that is the activity about which the environmental crisis and the severe health hazards have developed over. And I know it appears to be a political question, but the DOE is certainly within its rights if it found sufficient cause, since this country is awash in plutonium and uranium. In fact, in 1964, we even stopped production of highly enriched uranium. We certainly have enough tritium to cannibalize the nuclear weapons that have been decommissioned, to take care of us well into the 21st Century, if we felt the need to have more than 30,000 nuclear weapons. It appears to me that the amount of money we are spending -- albeit the fact that production has decreased at this plant to a very low level -- that money could be well spent, without jeopardizing national security, on a committed, well-funded cleanup. I really want to know why DOE doesn't feel it has sufficient cause to recommend a moratorium on production in order to show us they have that commitment.

Michaelson: Again, that's a big one. Anybody here want to make a comment?

Frazier: I just want to make a comment as a physicist. Tritium has a half-life of 12 years. If we wait until the 21st century, the tritium will be long gone, at least that produced by man. There would still be that which is naturally produced, which is by far the most abundant tritium in the environment that we have.

AM-7: As a physicist you also know that it's not really needed to have a nuclear explosion. It is sort of the steroid of a nuclear weapon, and it does make the explosion a bit more efficient, but we still have enough within our nuclear arsenals to wipe out the world maybe 4-1/2 times. So, I think we do have enough time, if we show a commitment and commit the funds necessary to provide for some real security at home. What good does it do, as Senator Glenn says, to say we are working for national security when we're poisoning ourselves in the process?

[No answer given.]

AM-8: I have a couple of questions, addressed to DOE. Have you done any research beyond the five-mile limit established for the Cincinnati area, in the Cincinnati area, and up towards the Dayton area, because they are also contaminated areas. And if not, does DOE plan to fund an independent firm to research on the environmental and health impact in Cincinnati, Northern Kentucky, and up towards Dayton, Hamilton, and Oxford, etcetera, and maybe off towards the west to Indiana.

And I express these questions with a great deal of concern. As of in 1987, what was stated in the (Cincinnati) Enquirer is that DOE stated, well, DOE reneged on an agreement that DOE made with us previously to that by a meeting that we had here, months even before they made that statement -- that yes, DOE would do that Environmental Impact Study for Cincinnati, Dayton, etcetera. Then in 1987, they reneged on it. They said no, because they are a nuclear weapons-producing facility and agency, and they are exempt from all environmental rules and regulations. That was stated in the Enquirer and that was a quote. And that there are also other DOE and DOD type facilities, so therefore they are exempt from being accountable to the public. So there is why I have my deep concern. Again, to reemphasize, our radioactive contamination doesn't know about the five-mile limit, only DOE does.

Michaelson: That was a real long question and I want to see if someone here wants to rephrase or answer it, so we've got a sense of what it is. Anybody?

[The panel debated as to whether a question was indeed asked.]

Wilson: Can we try and just very briefly rephrase? You're asking first off if we have done any investigative study outside the five-mile ring and what media have we done that in? Is that correct? Is that your first question?

AM-8: That was in the Enquirer.

Wilson: That we have or haven't done the study?

AM-8: Oh, that DOE decided not to fund that study, that they would not do that, and if they would they would not release the information anyway because they did not have to.

AM-9: Is that the EIS?

McCord: Is this an old study?

AM-8: I'm just saying, I'm questioning will DOE now do it? Has it (DOE), and if not, will it do a study beyond the five-mile limit?

Michaelson: I think that's a question we can get an answer to.

McCord: In what environment, what media are you talking about? Public health, soil contamination, water contamination?

AM-8: I'm talking about all of it. I'm talking about both environmental and health impact.

McCord: Okay, from the environmental media standpoint, the approach of this study and cleanup is in somewhat of a phased approach in that you look at the most

logical places and you move out. That's why we're still sort of chasing, capturing that South Plume. I mean that's why we're still chasing the plume that runs eastward under the plant. But, if there are indications that there are soil, surface water, or groundwater contaminations at further distances, the study would be expanded. From the public health standpoint, there is not a health investigation under the Remedial Investigation. There is some work being done by DOE the last several years, putting together release information on what has historically been released from the facility. That is called the Dose Reconstruction, as I'm sure most people are familiar with that. That effort is now being reviewed by the Centers for Disease Control, CDC, out of Atlanta. There will be an in-depth audit, essentially an evaluation of whether or not that Dose Reconstruction was correctly performed. And then CDC would evaluate whether or not health surveys and studies need to be performed.

AM-8: Okay, but in here, I would think that common sense and logic would dictate that after roughly millions of pounds of uranium and who knows how many tens or hundreds of thousands of pounds of strontium 90, thorium, and etcetera going out into the atmosphere and the soil and the water system, that yes, it's definitely beyond a five-mile limit. Especially after 38 years, I mean common sense dictates that.

Frazier: The extensive investigation, that is, of the various media that exist today, includes the ground- water, surface water, soil, sediment, and in-the-air measurements that are part of the ongoing environmental monitoring have indicated, -- all of these have indicated that the background levels are achieved well within the five-mile distance. In the case of surface soil, background concentrations are achieved with one-and-a-half to two miles from the center of the site. Normally, as part of a Remedial Investigation and Feasibility Study, you go until you reach the background levels, the natural background levels, then you go beyond that to ensure that you have truly reached it and that you have met the requirement of that investigation. That was done in this case. Coincidentally, it falls within the five miles.

AM-8: Okay, but again, what are you doing on your impact study right now that's going on? What's being done? What's being produced right now? True, the production is down to almost nothing here at Fernald, but what about in previous years when it was at maximum peak and hundreds of thousands of pounds was going out in the atmosphere as well as into the water system. So it may be down now in the five-mile limit, but that doesn't say anything about how it is outside that limit because of the previous years. So we should go into some maybe additional forms of study beyond the five-mile limit, so I do recommend they look at that to go clear up to even Dayton, down south into Kentucky.

McCord: There are no mile cutoffs as far as the investigation or the oversight being provided by the Centers for Disease Control. They are not discounting what went beyond the five-mile mark of the facility.

AM-8: Okay, thanks.

AM-10: I have a series of questions about the overflow into the field. It was my understanding a few years back that Ohio EPA, through the state, sued so that they would build a bigger stormwater retention basin than Westinghouse or DOE wanted. Is that correct? Was that part of the suit? Wasn't it?

Mitchell: Yes, a part of that is right. We sued. One of the things we wanted in the suit is we wanted them to hold the 10-year, 24-hour storm event to reduce the amount of uranium that was running off site into Paddy's Run which has been identified as a major source of contamination for the groundwater plume in the south.

AM-10: Okay, somewhere along the line, I was under the impression that this had been completed, it had been built and was done.

Mitchell: That is correct.

AM-10: Okay, then they were showing on these overheads they were going to do all this trenching, I guess into the storm retention basins?

Mitchell: Into the biodenitrification surge lagoon, which is a wastewater treatment lagoon on site. That's going to be the collection unit for that.

AM-10: Okay, then we're taking about two different things going on.

Mitchell: Yes, actually closer to the waste pit area. And the stormwater retention basins are located closer to the southern entrance there when you come into the plant off Willey Road.

AM-10: Okay, they said that they had this problem on April 4, 1989, where it overflowed.

Mitchell: Yes.

AM-10: Now on the evening of Friday, April 28, 1989, everybody in this area knows we got one of the hardest rainfalls this area's had in the 10 years that I've been out here. It was just massive amounts of water. Were the retention basins able to contain the stormwater retention over that weekend? And if not, where did the water go and was any of it treated before it went out?

Michaelson: Anybody on the panel, anybody in the audience?

McCord: I think someone from the plant is going to have to say whether or not the stormwater retention basins were at their maximum. And if water by-passed the

stormwater retention basin, they would have flowed the same direction, down towards Paddy's Run where the water previously used to flow.

AM-10: Through the outfall ditch and all?

McCord: The idea of the retention basins is to keep water from flushing through that contaminated soil area and carrying the contaminants even further and additionally contribute to groundwater contamination and moving soil contamination off site.

Mitchell: When we went into our lawsuit, we debated on what level, on how large of a lagoon to build. The ideal thing would be to require that no water would enter Paddy's Run at any time. That's very difficult when you sit down to try and engineer that. What we came up with was the 10-year, 24-hour storm event. The idea being that, at that point, if there was an overflow, Paddy's Run would be flowing so fast that material would not have much time to infiltrate. The other thing that we put in there was that there was also to be a study -- and that study is still ongoing -- to determine the effect of any overflows when they occur -- to actually model that to determine whether any of that water would actually get into the stream. We're still looking at that.

AM-10: The plant never answered -- did it overflow? Was there more water than the basin could hold?

Conner: The answer is, I don't know. The basin was designed to hold a 10-year, 24-hour storm event. If it did overflow, measurements were taken and those were reported to the EPA.

Michaelson: Could we record that question as one of the ones we do want to get an answer to?

AM-10: Who would know? Is someone monitoring this on a daily basis?

Conner: Yes. If it does overflow, we monitor it and report it. We will get back to you on that answer.

McCord: Isn't there someone here from Westinghouse or the Department of Energy that knows? I think there is someone.

Wilson: We have Dave Brettschneider (of WMCO) up in the bleachers. He may know this off the top of his head

Brettschneider [A WMCO employee in the audience]: It has overflowed in the past month or so, but I don't know if it did on a specific date. We have had a

tremendous amount of rain...[the rest of his comment was not intelligible on the recording].

Wilson: Can I suggest we take that date -- we'll address it to Dave and put it on a (comment) card, and provide that to you?

AM-10: I believe it was Friday, April 28th.

Wilson: You want to know if the basin was able to hold...?

AM-10: It was the whole weekend. But that one night, there was water overflowing, out through the streets. The bridges were washing out. Everything was crazy around here.

Michaelson: Did you have another question?

AM-10: I have one other question. You keep saying you're studying the uranium levels in Paddy's Run and the aquifer. What about the thorium? I haven't heard anything about that tonight.

Frazier: We routinely analyze for thorium isotopes, and the only above-background thorium levels we have found have been on site, primarily near the Production Area or the boundary of the production area. We have not found any above-background thorium levels off site. And we have analyzed a tremendous number of samples for that.

AM-10: When the effluent is being discharged to the river, like with this storm -- well, I guess it's Paddy's Run if the basin overflows -- are we still having a lot of thorium flowing off the site that had been deposited in years past when you had thorium production going on, or has that amount been kind of washed away over the years?

Frazier: The thorium released through the production -- the liquid effluent to the east has been sampled, but I don't recall any elevated concentrations of that, I just don't recall.

AM-11: Does that mean you don't recall [rest of question was garbled]?

Frazier: I know that I don't recall any. I usually look for abnormal things and if -- I don't know.

AM-12: I will address this question to the EPA. What data do you use to arrive at safe levels for the citizenry in the United State? What do you base your opinion on that low levels are safe?

McCord: Are you talking about nationally for development of standards? Or generally for environmental regulations?

AM-12: Sure, what do you use?

McCord: I'd say that differs depending on what federal law you are dealing with because certain risks are assumed under certain federal laws. The most conservative ones are the hazardous waste laws such as RCRA, the Resource Conservation and Recovery Act, and CERCLA, which is the Superfund act that we're working under for the cleanup at FMPC. Generally, we assume the lowest risk to the public in setting cleanup standards. There are other laws which deal with more production-type activities, like discharges of wastewater which would be under the Clean Water Act or discharges to the air under the Clean Air Act. Again, risks are evaluated for each contaminant and standards are set nationally. You know, Graham (of Ohio EPA) and myself are not involved in development of regulations. We're more involved with enforcement and cleanups, that kind of thing. I guess my response is sort of generally a philosophical approach to development of regulations.

AM-12: Are you saying that there is not a single answer to this question?

McCord: That's right, because it depends on the contaminant and the media that you're talking about, and the federal or state environmental law that you're dealing with -- that the risk to the population is different.

AM-12: Okay, I'm really not too much concerned as to what might be permissible under a specific law. What I want to know is if something is more volatile, you know, one isotope is more volatile than another and is more of a problem than another?

McCord: Definitely, one contaminant...

AM-12: [Interrupting] So what you base your opinion on.

McCord: That's right, and, if we want to get more specific on what will happen at the FMPC, we'll be looking at specific contaminants and the risks presented by those contaminants, adding them up and selecting the cleanup methods that will be used, and what will be the final cleanup at the site. It's all pretty much risk-based and technology-based and many factors go into those decisions...

AM-12: [Interrupting McCord] I just heard the gentleman say that tritium had a half-life of 12 years. What is the half-life on, say U-235, U-234, thorium, and strontium 90?

Frazier: Which order do you want those?

AM-12: I really don't care. The main thrust of it is, when I was talking to Mr. Clark earlier, I was wondering, can you determine -- in fact I know there is technology available

to determine whether the isotopes you are dealing with in a particular sample are enriched or not. You do have that ability.

Frazier: Okay, let me answer that. Yes. You mentioned earlier in your discussion the enrichment. Normally, enrichment for uranium applies to the enhanced concentration of uranium isotope 235 in the total uranium. Natural uranium that you were to go sample in your food, or in your environment, or in your body, would have a uranium 235 content of .72%, and that's if you were to take the mass of uranium and take out the U235, .72% of it would be U235, naturally occurring. The enrichment process increases that U235 level. The enrichment at the FMPC has averaged approximately 1%, and I think that is not a classified number, approximately 1% which is very slightly enriched...[the audio portion of video recording dropped out]...that were performed for the environmental samples is referred to as alphaspectrometry, because the isotopes of U234, 238, and 235 all emit alpha particles and with the analysis method that is used, those are detected and hence the individual radionuclides are quantified in terms of picocuries per liter or picocuries per gram, depending on whether it is soil, sediment, or water. So, not only the quantity of uranium in terms of activity and the concentration in terms of activity, but also its enrichment is determined. I have seen and I have reviewed the data. I have seen no off-site samples -- for soil, water, anything -- that has shown any enriched uranium. I have reviewed all the data acquired as part of the Remedial Investigation. We have found concentrations in the Production Area and other areas on site, which have, again, this slight enrichment of U235. Did I answer your question?

AM-12: Well, I'll show you some if you haven't seen any. I've got one 2-1/2 miles from the plant in my garden that shows enriched U235.

Frazier: As part of the Remedial Investigation, investigating whether or not there are concentrations that go against what we have found, I would appreciate receiving a copy of that.

AM-12: Okay, well I did include a copy of that in the house subcommittee that I...

Frazier [interrupting speaker]: If you would also include the -- a laboratory which provides such data, and you should be aware of this, should have a quality assurance program in place which demonstrates the ability of that laboratory to generate data of a sufficient quality that you can make the conclusions that you have just made and that they can make. And included with that data, you would need to have the quality assurance package of the calibration information of that equipment, and the records of the operation of that equipment. From that package, then, an evaluation of whether or not that data is of sufficient quality to include is made. And that is an essential and required part of the data inclusion in the Remedial Investigation/Feasibility Study.

AM-12: Okay.

Michaelson: Do you have maybe one more question? We have three more people here.

AM-12: One question would be, do you do that? Do you have that type of Q/A?

Frazier: Absolutely, without question.

AM-12: Well, I know that the lab I associated with in Canada did also.

Michaelson: Okay, great.

AM-12: That wasn't my whole question. What I wanted to know was, using a, let's say, phosphate fertilizer for an explanation for why there would be higher uranium amounts in a soil sample, why can't you just merely go to surrounding fence roads that aren't going to be fertilized and to the woods surrounding the FMPC or the property surrounding the FMPC that has never been fertilized. Some of these farmers -- one in particular that I know is an organic farmer -- has never used fertilizers and has comparable amounts showing right next to another farm which was fertilized.

Frazier: As I mentioned earlier, the natural background concentrations of uranium in soils in areas fertilized or not fertilized for this area -- the natural background ranges from, as I mentioned, the Ohio Department of Health reported approximately 1 picocurie per gram, to about 4-1/2 picocuries per gram in soil for this area of Ohio.

AM-12: For Ohio? I have for the United States average the average was .06 picocuries per gram.

Frazier: That is U238. You will also remember that for every U238 naturally occurring, you will also have an equal concentration of U234. So that would be 1.2, if you take the total. This particular part of Ohio has been studied and other studies in the past, as other states have been, and the values reported by the Ohio Department of Health, from approximately 1 to 4.5 picocuries per gram, are within the range measured by others. I can give you other references for that. That is the concentration you find here. That is also the concentrations that were found as part of the Remedial Investigation from the property boundary on out to and exceeding the five miles.

AM-12: Okay, well I've taken soil samples from a farm that pre-dated the plant right next to may garden. And the amounts from the barn and from the house, the basement, agreed with the U.S. (standard) .06 and the other thing you said about U234. But they seem to be noticeably higher, although within your 4.0 range. Now, what I

want to know is, if you have, would you make the statement that enriched material inhaled or ingested by children, adults, or whoever would be a dangerous thing to do? Could that cause cancer?

Frazier: We as we sit in this room and as I sit in my home in Tennessee, I inhale natural airborne uranium all the time. It is a part of our natural background environment.

Michaelson: Okay, you've had about six questions here. If you want to get up again -- but let's try and give a couple of other people a chance.

AM-13: I would like to address my remark to Mr. Clark and Mr. Galbraith. How soon may we expect your report, or copy of your report, to be available in the reading rooms?

Galbraith: The South Plume is one of the operable units that is currently on the track for completing the Feasibility Study for this. Unfortunately, we are delayed right now because of a lack of access to get more wells drilled. And so until we get those wells in, we can't complete our report. We're giving you the data we have in these meetings and we report regularly to the EPA as we go along. We had intended to have a report out the latter part of this summer on the South Plume area, but until we get those wells in, we can't complete it.

Michaelson: Is that the report you were referring to? [directing his question to person who asked about report]

AM-13: I'm referring to the report that you referred to originally in the first segment, when it was stated that there was -- your analysis would be done including the Miami University Report and the sampling and the completed report. The impression was there would be a completed report or perhaps an executive summary report available and I'm asking when?

Michaelson: Is he speaking of the overall Remedial Investigation?

AM-14: No, I think he's talking about the Environmental Monitoring Report.

AM-13: The biological report is what I'm interested in.

McCord: That report will be the information from that part of the Remedial Investigation will be incorporated into one of the six operable units so there will be a Remedial Investigation report for each of the units. So I believe that will be covered under Operable Unit 5. Operable Unit 5 will be the report that covers the fauna, you know, plants and animals.

AM-14: So, how long?

McCord: What's the date on Operable Unit 5? [The panel discussed an approximate completion date for Operable Unit 5.] Let me supplement this a little bit. You know the overall Remedial Investigation was one general schedule. Since we have broken out the plant into six operable units (for the Feasibility Study) there is now a separate schedule for the RI and the completion of the Feasibility Study for each operable unit. K-65 Silos: the RI/FS will be staying on the original schedule...[mechanical problems deleted part of this answer]...as that we are also requiring these removal actions that we discussed tonight. All of this information that is being collected will be put in the reading rooms, but in addition, there is an Administrative Record which is specific to the RI/FS --which will be separate from the reading docket you've had so far -- that you folks will want to take a look at. We have not talked tonight where that's going to be. Did you folks...

Wilson: Yes, in some of the comment responses that we provided -- Lewis Michaelson showed you this earlier --we have responded to questions about where are these documents. There is a document, Administrative Record as we're calling it, in the Lane Public Library and there's one onsite at the Feed Materials Production Center Administrative Building. We are right now trying to identify additional locations, but there are two records set up today as we speak.

AM-13: I am not concerned about that. I have had the opportunity to read part of the executive summary from the Miami University report. It was said earlier that the Miami University Report would be included in the biological study, or at least it would be considered as a part of the report. I am concerned about certain conclusions that were made in that Miami Report as in reference to specimens that were found in that area, and I have questions as to why, after those conclusions were brought about by Dr. Guttman and company, why it wasn't pursued further as to an explanation of why these particular specimens were the way that they were? I know that the study was criticized heavily by Oak Ridge, but it seems to me that if we don't know whether or not FMPC had any impact on those specimens or why they were the way they were, then it would seem to me that more study is indicated. Now, I would like to know what the gentlemen who are doing the biological study, how they are going to incorporate this into what they're looking for in this respect and see if there is a comparison with the Tarswell citation in the Miami University study.

Mitchell: Excuse me, we -- Ohio EPA/U.S. EPA -- are still waiting to receive a final copy of that report. I foresee that there are going to be additional studies that need to be done before you're going to see this final report. So, in other words, it's not going to be in the near future that you are going to be able to find this report in the reading room. I would suggest that it would be a good idea to have this topic for future discussions at the next public meeting to update people as time goes on, as we do this, as we get into additional studies that are going to be needed to characterize the Miami University work. If you remember, the Miami University

work did not identify, it was not their task to identify what was the source of problems noted. And that's the additional work that needs to be done.

AM-13: You're telling me that additional work will be done to identify, if possible, the definitive causes for the specimens that were different and that this is going to be pursued?

Mitchell: I think without having reviewed all of DOE's biological work, as well as the complete Miami University package, I can't say right now completely what's going to be done, but that would be my guess.

Michaelson: We've reached the point where it's ten o'clock and we're going to keep taking questions. But I did promise people at 9:30, which was a half hour ago, that we would take a break so that people can leave.

[SHORT BREAK]

Michaelson: If I could ask the panel members to come back up here and people to take their seats. And we'll get back to the people who are up here to ask questions. Okay, if we could get people to sit down, we could get started again. Okay we've almost got quiet here. I do want to mention in case people haven't seen them, three different progress reports, a white one and a green one and a pink one that correspond to the three different presentations that were made today that give a synopsis of the information. In this case, the Remedial Investigation report is pink, green for Feasibility Study, and white for the interim cleanup actions. Please grab hold of those and, again, remember we have the comment cards for any comments you want to leave with us or questions. And without any further ado, go ahead and ask your questions.

AM-14: My first question is, I want to know why the residents weren't told about this manhole overflow that just happened on April 4, 1989? That's like, five weeks ago. Since WMCO took over in January of 1986, we had a working agreement that the community would be notified when anything unusual happened and I consider that to be very unusual. So someone, Mr. Boswell, needs to address this. We want to be called and told when something is wrong and up until just recently that was happening. And this year that has not happened.

Michaelson: Who on the panel -- who wants to respond?

Conner: I'll respond to that. We did have an overflow event on April 4. We took the soil samples on April 6, 1989, and on May 2, 1989, we got the analytical results. EPA was verbally notified on May 3, 1989. They (EPA) were formally notified by a transmittal letter on May 10, 1989, and discussions were held with their office in the interim. Then a determination was made to present it at tonight's meeting.

AM-14: I don't care about the results or anything. The fact is you should notify us that something unusual has happened. That, to me, is classified as an "unusual incident" and I mean as a spokesperson for F.R.E.S.H. and speaking on behalf of the community, we want to be notified when these kinds of incidents happen. It was my understanding we had a working relationship for that to occur.

Conner: It is my understanding that we've been keeping you informed...

AM-14: [Interrupting Conner]: But you didn't inform us about that. Next thing, you keep talking about HEPA filters, with an "s" on the end. How many HEPA filters do you have at the site right now?

Conner: I don't have a value for that right now Lisa, let me get that for you, Ms. Crawford.

AM-14: It is my understanding that there is only one.

Conner: No, there's many more than one filter.

AM-14: Are they all working?

[Someone from WMCO in audience made a comment regarding filters operating in Plant 9 and plant 5, but actual response was inaudible.]

AM-14: I'm not talking about filters. I mean HEPA filters. [WMCO employee in audience acknowledged that a number of HEPA filters are operating at the FMPC.] So they are operating, okay. It was our understanding there was only one filter. And I wanted to clear up why there was an "s" on the end.

Conner: There are a number of plans to put additional HEPA filters in.

AM-14: Also -- I'm not picking on you -- you keep talking about in 1987 when you had an all-time low in air emissions...

Conner: It was 1986.

AM-14: 1986, okay. We hear this is a lot. In 1986 we had an all-time low and I think when you talk about an all-time low, you need to add on to that production was very low that year.

Conner: Production was very low, but those levels would not have been achieved without substantial administrative controls which were put in place at the site, emission controls that were put into place, and actions taken to minimize air emissions.

AM-14: But you won't agree that because production was so low that's why emissions...?

Conner: No, I will agree, production was low too, but, production was not the only reason that the all-time low level was achieved, a lot of work went into...

AM-14: Because production did go back up in 1987 and the emissions did go up.

Conner: Yes, emissions did go up, but the emissions per unit of product produced continued on a decline.

AM-14: Okay. My last question is the one I addressed you with at the very beginning of this meeting tonight. I think it's absolutely ridiculous that our residents wrote their questions on cards and took the time to mail them in and here it is, three-and-a-half months later, and these people still don't have answers to their questions. I mean Friday topped it off, just topped it off, when they get letters personally delivered to their homes. I think there's a lot better ways to spend money than personally paying a courier to deliver a letter to a house that should have been delivered months ago. Wait a minute, I'm not done yet. And, when are these people going to get answers to their questions?

Conner: I'm not going to sit here and make excuses for you. What I'm going to say is that performance was unacceptable and we're going to work to improve it.

AM-14: And I'm going to hold you to that.

Conner: We did not get responses back to you until the week prior to this meeting. That will not happen prior to the next one.

AM-14: Okay, and I'll hold you to that.

Michaelson: Margaret (Wilson), did you have anything to add to that?

Wilson: I can just back up Bob (Conner) on that. We're going to do better next time.

AM-14: We hear this a lot, and it's beginning to wear a little bit thin, "we're going to do better next time, we're going to do this a little bit different next time." I'm going to congratulate you on bringing us all together because this is what we wanted, this works well. Everybody got to hear everybody's questions and the divide-and-conquer strategy was not used this evening, and we appreciate that. But I don't want to see these people not get answers to their questions three-and-a-half months from now.

Wilson: Let me tell you one other thing that we'll be doing certainly between this evening and the next time we're back together, probably in this auditorium. We will be meeting with certain individuals on an interview basis to determine whether the

format for meetings such as this is acceptable, should there be other alternative formats we should use, is the comment card approach reasonable? -- and just to get your feedback, but there will be certain individuals that will be interviewed and in concert with U.S. EPA and Ohio EPA we'll be coming forward with forms, probably going to your houses or determining a mutually agreeable place to sit down with you and go through what we're calling the Community Relations Program for this project. That's about all I have to say...[a lapse in the recording occurred]...in this notebook to the ones that we had most current data on to respond to and an apology isn't going to do it, I understand that, but we're going to do better next time.

AM-14: Thanks.

AM-15: I'd like to run through this rather quickly. First comment I have is that the study that ASI is doing is a very young study as of yet. All the result they've had, I only think they've been doing for two years, please clarify that later if you can. It's a very young study.

Michaelson: Could you please go over that again, some people couldn't nderstand you.

AM-15: I'm going very fast, I'm sorry. The study that ASI is doing is a very young study. It's been going for a maximum of two years. They are dealing with materials that have been dangerous for a very long time and health side effects that may not show up immediately --may take years in fact to show up. Second point, DOE oversight -- I know Ms. Wilson there from the DOE said they do have oversight. I find that rather unique, because the agreement to let the Ohio EPA oversee the cleanup was termed historic by the New York Times. Secondly, I have an article here from Scripps Howard of The Post that quotes that the DOE agreed to be bound by federal court order in its cleanup of Piketon. I don't know of very many agencies that can agree or disagree to be bound by federal court. Next, the DOE oversight, the type of oversight they've given us. They continue to award performance bonuses to NLO -- 1.3 million in 1984 -- while the incidence of worker exposures increase. I read in the New York Times and I'm a little bit sketchy about this one -- no, not the New York Times, the Wall Street Journal -- Westinghouse last year received an award for the management of nuclear sites. I also read in the local papers that EPA has proposed fines for Westinghouse's operation of this site and the last thing is, panel, the last part of this comment is that a panel put together by the DOE itself -- and these are preliminary results and let me stress that, preliminary -- but they found fault with the emphasis with compliance with government regulations at Fernald. They found fault with developing programs to reduce effluent and solid wastes, the storage of thorium, emergency training programs, and safety compliance. Permissible exposure, that was mentioned earlier. Permissible exposure, and again, please clarify me if I'm wrong, has been changed. It's been decreased five times since it was set up. What seems to be the true meaning of permissible exposure, is that it's the exposure the population can get -- the number of deaths and disease

caused -- and still permit the nuclear industry to operate. Funding -- the last estimate I heard from an interview with Senator Glenn was $1.3 billion for the cleanup of the nation's nuclear sites. I heard that worked out to about $2,000 per household. I also read an article that had IRS records obtained by Public Citizen, that's Ralph Nader's group, that from 1981 to 1985, Westinghouse made millions of dollars of profit and paid no federal tax. Lastly, the doctor up there, the health expert said that we have strontium 90 and cesium 137 in our bodies from nuclear tests and to me that just points out the real danger of Fernald. If you're really desperate and you have the resources, you can move away from Fernald. But we can't move away from nuclear production. This arms race threatens to blow up in our face. I agree with what all the women over here said about the production of plutonium. I think we can really make Fernald safe. Let's stop production. Let's take the 19 billion used to produce nuclear weapons, turn it around and clean up all the facilities and keep them shut.

Michaelson: Thank you for your comments. Most of them were in the nature of comments, so I'll invite anyone on the panel who amongst that found anything that they would like to respond to.

McCord: I guess as a response to one of your many comments, with respect to opportunities for citizens in the next few months to continue to participate and comment on some of the activities that U.S. EPA and Ohio EPA are overseeing. Currently, U.S. EPA and DOE are negotiating a new agreement for the running of the RI/FS and the ultimate cleanup of the facility. Currently, we have been operating under a July 1986 FFCA (Federal Facilities Compliance Agreement). Currently, we are negotiating an agreement under section 106 and 120 of the Superfund Amendments and Reauthorization Act (SARA). When this document is signed by both of our agencies, it will be made available for public comment. Another opportunity for public comment will be, we are expecting the Fernald facility to be listed on what's call the National Priorities List in the next few months. It's an EPA Superfund list of sites that need remedial cleanups in the nation. That proposal will also be open for public comment. Copies of both these documents will be made available in the reading rooms.

Michaelson: Anyone else, no? Go ahead sir.

AM-16: I would like to address the K-65 area. I understand originally that the shoring up of the K-65 silos was due to the deterioration of the K-65 silo. And I would like to know what happens to the dome water? Has there been a special drainage away or does it just pour off the dome and go down the side and soften the foundation? What happens to the dome water?

Michaelson: Go ahead, Bob.

Conner: The K-65 silos are bermed and they have a cap over the top of them. As the water runs off, it runs down the side of the berms and it can soak into the soil that makes up the berms, but this is normal stormwater runoff.

AM-16: Well, you have earth piled to the top of the dome.

Conner: Yes, that's an earthen bern.

AM-16: And then you have water on an 80-feet dome that has to go somewhere. Are you taking care of that water, to drain away from the sides to keep from softening the foundation, or are you letting the water run down the side of the silo and soften the foundation?

Conner: In the center portion between the domes, there is a drainage to the sides of the berm. And the sides of the berms are sloped so the water will run off. Now the domes are just that, they're domed so that the water runs off the side and off the slanted berm on the side of that. And I'm not certain of your concern with what's happening to the stormwater runoff.

AM-16: I'm concerned that you are going to add four-feet of sand to a softened foundation due to the rainwater from the drainage off the top of the dome going down the sides of the silo which will soften the foundation. You're adding a tremendous load. I don't know how many hundreds of tons in each silo with four-feet of sand, but you're talking about a terrible load.

Conner: We've had an A/E (architectural/engineering) contractor do a structural integrity analysis of the K-65 silos. When we began to consider the sand fill, we had them do the loading analysis to add that additional sand. They have assured us there is a margin of safety for putting that sand in there. We would not do it unless we had such a structural integrity evaluation.

Michaelson: Catherine (McCord), did you have something to add?

McCord: Correct me if I'm wrong -- the concerns about the structural integrity of the silos were not around the foundation, but rather the sidewalls, themselves, and also the dome. So, and you would expect there would be some infiltration of stormwater running off the roofs of the silos, but there is a fairly steep grade to the earth that's banked around the sides. So, only a portion of that material would infiltrate into the ground and it would infiltrate along the entire slope, not only at the edge of the tank itself. But again, the foundation itself has not been of primary concern. Am I correct?

Conner: Yes, that's correct.

McCord: But in answer to your first question, the answer is no, there is no active collection of water from the K-65 silo domes. It runs off into the ground as in any rain and, as in any rain, there is evaporation and infiltration.

AM-16: When you add the load of the sand, is there any specification requiring settling? I mean measurements to require settlement of the existing (materials) so you know if you have a failure? Is there any monitoring equipment that is going to be installed, to assure that there is no settling and punching out of the foundation?

McCord: From the additional weight?

AM-16: Right.

McCord: There is no monitoring equipment proposed in the proposal that we have reviewed from DOE and Westinghouse. The concerns there were -- would it add an additional load to the sidewalls? The engineering study that was submitted to our agency said there would be no additional concerns from that load.

AM-16: You mean you're just taking it for granted that nothing will happen with the extra load on the old 40-year-old piece of rotten concrete and rebars and everything? And you're just going to load it up and it never was intended to do that, and you're just going to assume that everything is going to be all right without any monitoring equipment in case of a failure? Is that correct?

McCord: That's a consideration we can evaluate. It was in that the sidewalls, the earthen sidewalls are actually providing some structural support.

Michaelson: Bob, did you have anything to add?

Conner: No.

Michaelson: Thank you, sir.

McCord: Your concern is something we'll take into consideration, and we'll talk to Westinghouse and DOE about.

Michaelson: Are there any further questions?

AM-16: Just one. What Dave just said -- why didn't the company pay tax for the apparently multi-million dollar profit between 1981 and 1985?

Michaelson: Someone here might want to try this. That's not really the focus of this meeting tonight. It's a good question -- I don't know if there is anyone here who can answer. [No one on panel indicated they desired to respond.] No one can really respond to that.

AM-17: I want to talk about the K-65 silos. You want to put four feet of sand on top of the material that is in the silos. What is that going to do, how is that going to stop gamma radiation? I don't even think that will stop beta.

Michaelson: Who wants to answer that?

McCord: And quickly, I would like to clarify that project has not been approved by either U.S. EPA or Ohio EPA. We are still evaluating whether or not to let the sand project go ahead.

AM-17: It's probably too late, but I have a suggestion. Part of it was made earlier. You take and move that material out and put it into an approved nuclear waste dump facility which was designed but they haven't built, and you clean that place up, shut it down, stop production, and spend the next 100 years trying to make it safe. That's my suggestion.

Michaelson: That's his suggestion but he also had a question which I don't think anyone actually addressed: which is exactly what will four-feet of sand do?

Frazier: If you look at the pathways from the existing materials in the K-65 silos, the two pathways that have been identified are the direct radiation exposure pathway, which is the gamma rays; secondarily, would be the radon emission. Sand is -- especially damp sand --a very effective cover material to attenuate the dispersion of radon, because if you can allow the radon to be held up while it's trying to diffuse through the sand, it decays to something that is not a gas, and therefore, the diffusion ceases. So it is an effective attenuation of the radon, but it won't stop it all, some will still diffuse. The second thing is, in terms of the gamma ray shielding, sand is to me -- and I'm not a geologist -- like a crushed rock. Sand is a very effective gamma ray shield; it is a very good shield for gamma rays. The calculations of the reductions of the gamma radiation field, not only at the fenceline but also right on the dome for those workers who are doing future remediation of that would be a great reduction of the gamma rays. So, the calculations of that, both would serve to demonstrate that the material would reduce the radon diffusion, as well as the gamma ray exposure rate.

AM-17: All right. As that radon decays in that silo, how much pressure is there? There is pressure because when they tried to coat it, bubbles came up through the cracks through the domes.

Frazier: That was not a consequence -- physically that is not a consequence of the radon decay. There are...

AM-17: [Interrupting Frazier] Are you saying there is no pressure inside the silos, sir?

Frazier: The pressure inside the silo depends upon the temperature outside the silo and the temperature inside the silo. The silos are not sealed.

Michaelson: I might mention that there is a handout amongst the many-- a very good one on radon and its effects and whether there's pressure or not. I was just reading that myself last night, and I encourage anyone to take a look at that.

AM-17: Well, I'm just using common sense, but what you're doing is putting a bandaid, or trying to put out a fire with a water pistol.

McCord: That's a good term. In fact, I was going to use that term, "bandaid."

AM-17: A bandaid isn't going to get it.

McCord: You have to remember that there's two kinds of actions that we're going to be dealing with at this site. There's going to be the long-term remedial actions and there's going to be the removal actions. The removal actions are more the short-term addressed to the more immediate potential threat to human health and the environment. One of the removals is the sand project for the K-65 Silos. Again, we have not approved that project yet. One of the operable units under the long-term remedial cleanup is again the K-65 silos. The final decision on what to do with those K-65 Silos will be later next year, approximately September 1990, where we'll be selecting the final remedy/cleanup option for the materials inside the silos, so the description of the sand as being a bandaid is very accurate. It's to provide a short-term, extra cushion of safety for those K-65 silos in case there is an incident, like dome failure, and also to reduce some offsite radiation exposures, even today.

Michaelson: But it's not the final solution?

McCord: That's right. It's the bandaid, temporary solution.

AM-14: Margaret (Wilson), you mentioned earlier that you had some technical oversight or overview, I forget the exact words that you use.

Wilson: What I meant there was that both Ohio EPA and U.S. EPA have technical oversight of this project, as well as our air permit...

AM-14: [Interrupting] That's by agreement, right?

Wilson: How do I answer that? Right now, it's by the Federal Facilities Compliance Agreement, that's correct.

AM-14: But other than that agreed oversight, there's really nobody else?

Wilson: For this project, are you saying? Or for other activities at the site?

AM14: Sitewide.

McCord: You have to remember there's two aspects to that. There's the environmental compliance or regulatory compliance aspects where EPA (state and federal) are involved with oversight with day-to-day compliance. And then there's the cleanup, you know, the investigation. So, right now, the original compliance agreement dealt with both, it dealt with air compliance, hazardous waste compliance, and also the cleanup. This new agreement under Section 120 of SARA will deal with the cleanup and US EPA feels it puts us in a better, a more advantageous position as far as settling disputes and that type of thing.

AM14: I agree, but I think the point the guy who asked the question earlier was trying to get across, was that DOE has -- they report to no one. They are an entity to themselves and they don't have any oversight.

Wilson: Well, let me remind you that as far as air permitting goes, we've got probably over 200 air permits. That means we submit applications for any source discharge from the site, whether it's a stack -- that application goes to the Ohio EPA because they have jurisdiction in that area and they have to grant permits for us to operate that equipment. There's also the National Pollutant Discharge Elimination System, or NPDES permit, for our outfall line that again by application -- we have to submit an approvable application for them to issue a permit.

AM14: But OSHA and NIOSH and other regulatory...

Wilson: [Interrupting] I'm talking environmental.

AM14: I'm talking oversight, oversight!

Wilson: Okay, well I'm just talking environmental, because that's part of this panel. But there is you know...

AM14: [Interrupting Wilson]: But I think that was the point the guy was trying to make.

Wilson: Okay, maybe I missed it.

Michaelson: I think it was also suggested that DOE is unique, is that the case? What about the Air Force or other federal people who do things that involve production, construction, whatever? Are they in a similar situation, Catherine (McCord)?

McCord: From an environmental standpoint, they're really identical. The federal laws and state laws are the laws, but I think you're talking more like production activities, OSHA. [After a brief inaudible period, McCord added] Margaret Wilson is involved with remedial investigation.

AM-16: I would like to know the rem load of K-65.

Michaelson: I'm sorry, the what load?

AM-16: The rem load. If I jumped up on the top of the K-65 and stood there for a year, how many rems would I receive?

Frazier: Excuse me, you're talking about the exposure rate or dose?

AM-16: Right, right.

Frazier: I recall that if you stood at the center of the top of either one of them, it's about a 150 millirem per hour. That's right on top...[mechanical problem resulted in a few seconds of undocumented interchange]...No, I would prefer to put about four feet of sand in there to reduce the dose to less than half of that.

AM-16: That's not what I'm talking about. I'm talking about how hot your storage is and how hot it's been for, since 1951, and how much you polluted the environment and the people and the radon gas, I want to know...and that's good for 20,000 years...what's the half-life of K-65? 20,000 years?

Frazier: The materials in K-65 have a half-life -- the main material in the K-65 is the radium 226, which has a 1,600, plus or minus 20 years, half-life; so it's a very long-living radionuclide.

AM-16: So, it's forever as far as we're concerned.

Frazier: As far as my life is concerned, I hope.

AM-18: Catherine (McCord), I would like to address you. You mentioned something about the Superfund. I though that FMPC could not receive any Superfund money.

McCord: We're not actually using any of the funds for any of the investigation or the cleanup. That money is strictly coming out of the DOE budget. It's not the fund -- the trust fund -- or the EPA. You know EPA is obviously spending money on both the state and federal level on our oversight, but we are not using the fund for that. I guess when I used the term Superfund, I was describing the process, or as a synonym for the CERCLA statute. But even though they are not using fund dollars, they will still have to abide by the regulations that are outlined in the National Contingency Plan and follow the process as though it was a fund cleanup

or private party cleanup where EPA was providing oversight. So this is really similar to -- the process is similar to a private company doing their own investigation, using their own dollars to implement the selected remedy and the EPA is providing oversight. We also make the final selection on the remedies that will be used to clean up the site.

AM-18: On the news they were talking about water that was under a building, highly contaminated and leaking into the aquifer. Can anyone address that here?

Mitchell: Are you talking about Plant 6 or something more recent?

AM-18: Now, this was just announced today, on the five o'clock news, now that's why I was wondering if that was the same puddle of water that was under Plant 6 that never was contaminated or never reached the aquifer and now it did?

Conner: I'm sorry, I didn't see the 5:00 news tonight, I was on my way here. But in regard to the perched groundwater underneath the facilities, when we found that, we also sank wells around the building and did eight additional borings, and we are now doing borings inside the buildings. Now with the borings in the perched soils, we are finding elevated concentrations of uranium. With regard to wells which go down to the aquifer, we are not finding elevated concentrations of uranium in that aquifer, which is telling us that it (the uranium) has not migrated down to the aquifer. So, I'm not sure which building they are referring to.

AM-18: Okay, did anyone from DOE that released the statement? Can they answer that?

McCord: What news station?

AM-18: Channel 5 news, 5:00 tonight.

McCord: The DOE released a statement?

Michaelson: Just because there's a report doesn't necessarily mean that DOE specifically released a statement. Is anyone from DOE aware of anything they released today?

Wilson: I'm not, but I'd ask if Renae Cook is still with us, or Paul Mohr (both of WMCO)...[Wilson was interrupted by inaudible comments before an unnamed person in background stated that no news release was made].

[No more audience members came forward to ask questions.]

Michaelson: I believe we've reached the end of this evening. I want to thank everyone very much for coming, particularly those of you who stuck it out past the 9:30 scheduled ending. And I hope you got the information you were looking for.

Please do pick up any of these (three progress reports summarizing the presentations made that night) that will give you further information. If you have any comments or questions, please put them on the cards, and thanks again for coming.

END

APPENDIX C

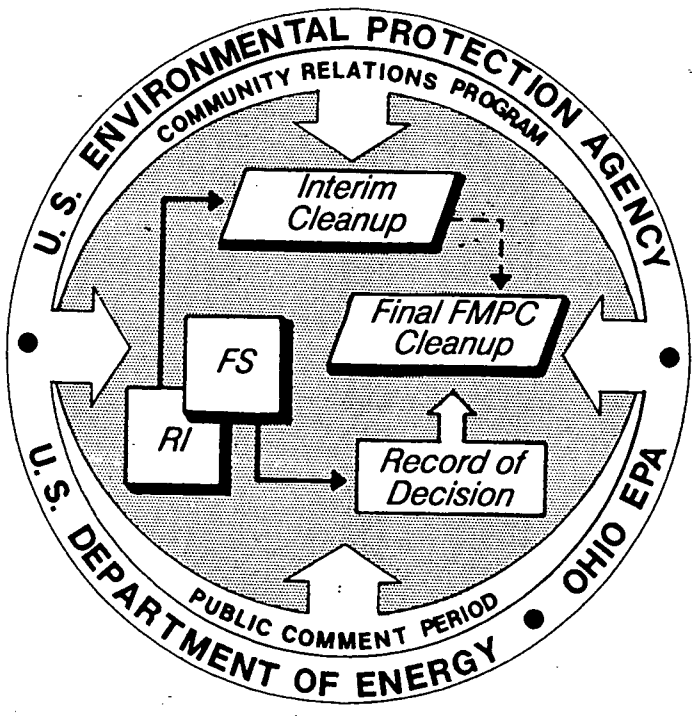
AGENDA AND FACT SHEETS PROVIDED FOR MAY 15, 1989 FMPC RI/FS COMMUNITY MEETING

MEETING AGENDA

MAY 15, 1989

ROSS MIDDLE SCHOOL

6:30 pm	Welcome	Jim Reafsnyder
6:35	Meeting Overview	Lewis Michaelson
6:50	Technical Sessions - 25 minutes each	
	a. Interim Clean-up Actions	Bob Conner/ Pat Hopper
	b. Remedial Investigation	Bob Galbraith/ Rich Clark/ Dennis Carr
	c. Feasibility Study	Joe Yeasted/ Bob Lenyk
8:15	Break	
8:30	Wrap-up Session Question and Answers with Panel	Lewis Michaelson, Moderator
9:30	Adjourn	



Feed Materials Production Center
Fernald, Ohio

Remedial Investigation Feasibility Study

PROGRESS REPORT SPRING 1989

Interim Clean-Up Actions Begin

This RI/FS Progress Report is one in a series of Progress Reports that discuss the Remedial Investigation and Feasibility Study (RI/FS) underway at the U.S. Department of Energy's Feed Materials Production Center (FMPC) in Fernald, Ohio. This Progress Report talks about FMPC environmental clean-up activities that are underway or planned for the near future. This includes:

- *What Is the Clean-Up Process?*
- *Four Clean-Up Actions Slated*
- *Opportunities for Community Input*
- *How to Learn More*

This Progress Report also explains how these interim cleanup actions relate to the FMPC RI/FS. Information provided in this Progress Report is based on a technical presentation prepared for the May 15 Community Meeting about the RI/FS.

WHAT IS THE CLEAN-UP PROCESS?

The entire RI/FS process is prescribed and monitored by the U.S. Environmental Protection Agency (U.S. EPA). The Remedial Investigation now underway is designed to identify environmental problems associated with the last 37 years of FMPC operation. The Feasibility Study will develop and evaluate the clean-up actions to correct those problems.

Interim clean-up actions go hand-in-hand with the RI/FS. Once an environmental problem is identified in the Remedial Investigation, U.S. EPA allows two approaches to clean-up. These are "remedial actions" for final clean-up and "removal actions" that call for more immediate action. This Progress Report focuses on removal actions.

A removal action is an interim clean-up action that is necessary but may not provide the complete solution to an environmental problem. While the RI/FS may identify a particular clean-up action to prevent further spread of contamination, there is not yet enough data to identify a final clean-up action. However, any removal action performed at the FMPC will support the final remedial actions available. In other words, interim clean-up actions will not detract from final clean-up actions.

FOUR FMPC CLEAN-UP ACTIONS SLATED

Four interim clean-up actions have been identified. They are:

- Containment of ground water in an area south of the FMPC, known as the south plume.
- Pumping and treating pockets of ground water from beneath FMPC facilities.
- Controlling stormwater runoff from the FMPC Waste Pit Area.
- Controlling radon gas in the K-65 silos.

These four needs were identified as a result of environmental monitoring and data analysis during the Remedial Investigation. *(Current Remedial Investigations are discussed in a separate Progress Report based on data presented during the May 15 meeting.)* A brief description of each action and interim clean-up goals follow.

Clean-Up Action #1:
CONTAIN WATER IN THE SOUTH PLUME

The Remedial Investigation has revealed a region of ground water just south of the FMPC with concentrations of uranium that are above background levels. It is called the south plume. The exact boundaries of the plume are not well established yet. Additional wells are being installed to learn more about this area.

It will take time to evaluate the plume fully and to develop a final clean-up strategy. Scientists do know that the plume is slowly moving southward. The south plume interim action is designed to halt this migration.

The process to identify an interim solution is prescribed by U.S. EPA. The first step -- identifying the problem -- is done. Now, solutions are being analyzed by environmental engineers. The FMPC team is working with the U.S. EPA and the Ohio EPA to identify alternatives for correcting the problem. Once an alternative is selected, the public will be informed, and engineers will design a solution. Then the "removal action" can begin.

Clean-Up Action #2:
PUMP AND TREAT POCKETS OF WATER

During non-RI/FS construction on FMPC property in July 1988, pockets of ground water with concentrations of uranium above background levels were found. Known as "perched water", these pockets of ground water are isolated by clay from other ground water. Because water does not flow easily through clay, these pockets of water have not moved from this area and, therefore, have not affected local supplies of drinking water.

Since this perched water was found, the FMPC has been pumping this water, removing the uranium, and discharging the cleaned water from the site. In addition, more wells will be installed to define the problem further; any additional water that may be present will be removed.

UNDERSTANDING PERCHED GROUND WATER
(An Experiment)

To understand how water flows through different materials, perform the following experiment.

MATERIALS NEEDED:

- *2 wide-mouth jars or glass beakers*
- *sand*
- *clay*
- *water*

WHAT TO DO:

1. *Fill the first jar with 4" of sand. Tamp the sand. Set aside.*
2. *Fill the second jar with 2" of sand. Tamp the sand. Top with 2" of clay. Pack the clay tightly, leaving no air pockets between the clay and the inside of the jar.*
3. *Pour a few ounces of water into the jar with the clay and sand. Notice how the water remains ("perches") on top of the clay?*
4. *Pour a few ounces of water into the jar with the sand. Notice how the water travels through the sand, leaving a darkened path?*

Clean-Up Action #3:
TREAT STORMWATER

The next interim clean-up action involves controlling and treating stormwater from the Waste Pit Area on plant property. This action is designed to contain the stormwater, channel

K-65 REMOVAL ACTION

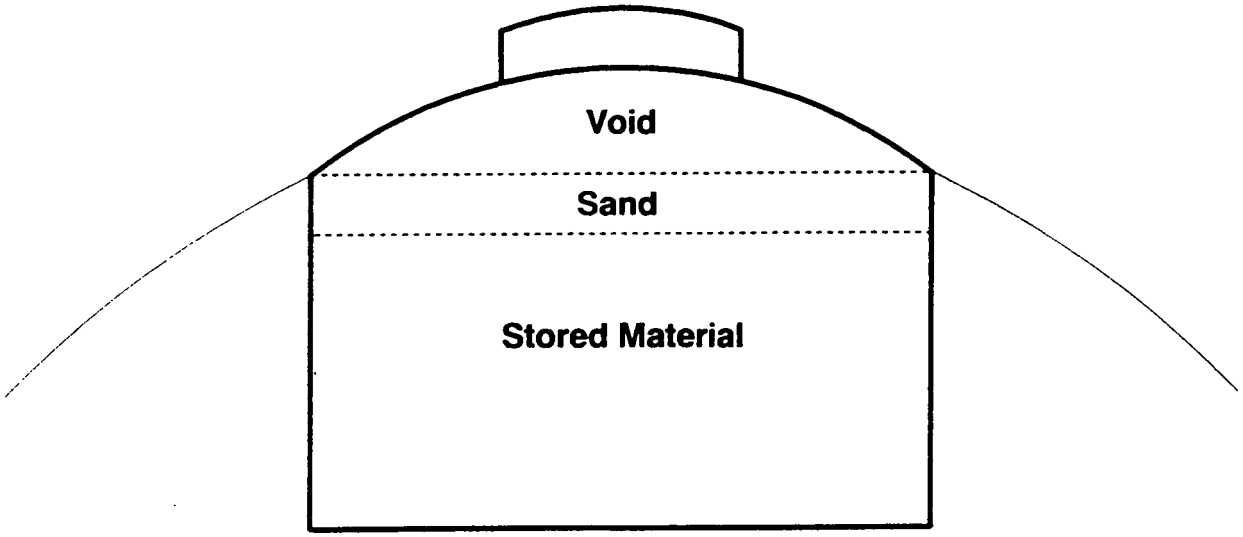


Figure 1.

it, then pump it through the FMPC wastewater treatment system before it leaves plant property. The FMPC will install trenches and culverts to collect the stormwater.

Engineering design of this stormwater runoff control system has already begun. Construction is planned for summer in 1990.

Clean-Up Action #4:
FILL K-65 SILOS WITH SAND

Two of the K-65 silos are filled with processing residues from World War II bomb production. They contain about 3-1/2 pounds of radium. During the process of radioactive decay, radium changes into radon, which is a gas. Radon gas, which occurs naturally in the environment, can cause human health problems. The FMPC's goal for this interim action is to continue to isolate the K-65 wastes from the environment.

To minimize potential radon gas emissions, a four-foot layer of sand will be placed inside these two silos. *(See Figure 1.)* This action will support anticipated final clean-up options. The project is expected to be completed by the end of 1989.

OPPORTUNITIES FOR COMMUNITY INPUT

Interested members of the local community have several opportunities to learn about and provide input into the clean-up process -- both interim actions and final actions. U.S. EPA specifies the process for public participation.

Interim clean-up actions are announced in major newspapers of general circulation. They are discussed at community meetings, where public comments and questions are welcomed; pertinent reports are available for public review in local reading rooms, according to the FMPC RI/FS Community Relations Plan.

The public input process for longer range final remedial actions is more precisely defined by the U.S. EPA. The process just described intensifies after the draft Remedial Investigation and Feasibility Study reports have been submitted to the U.S. EPA.
A formal public comment period follows. *All comments received during this period will be reviewed and considered by the DOE, U.S. EPA, and Ohio EPA as they decide on the final remedial actions for the FMPC.*

The selected final clean-up plan will be published in the Record of Decision, or ROD. The ROD must be announced in local newspapers of general circulation. Persons on the RI/FS mailing list are also notified. Once the plan is finalized, remedial design and remedial action can begin.

HOW TO LEARN MORE

To find out more about the FMPC Remedial Investigation and the Feasibility Study, the following opportunities are available:

ATTEND PUBLIC MEETINGS
Scheduled throughout the year

WRITE

U.S. Department of Energy
P. O. Box 398705
Cincinnati, Ohio 45239

VISIT READING ROOMS

Filled with reports, fact sheets, plans, and other pertinent information. They are located in:

FMPC Administration Building
7400 Willey Road
Cincinnati, Ohio 45239
(513) 738-6376
Mon - Fri: 7 a.m. - 5 p.m.

Lane Public Library
North Third & Buckeye Streets
Hamilton, Ohio 45013
(513) 894-7156
Mon - Sat: 9 a.m. - 9 p.m.
Sun: 1 p.m. - 5 p.m.

Feed Materials
Production Center
Fernald, Ohio

Remedial Investigation
Feasibility Study

PROGRESS REPORT SPRING 1989

Feasibility Studies Begin

This RI/FS Progress Report is one in a series of Progress Reports that discuss the Remedial Investigation and Feasibility Study (RI/FS) underway at the U.S. Department of Energy's (DOE) Feed Materials Production Center (FMPC) in Fernald, Ohio. This Progress Report discusses the Feasibility Study, or FS, that recently started. Highlights include:

- *The FS Process: Identifying Solutions*
- *Operable Units: Problem Areas Identified*
- *Step 1: Develop Alternatives*
- *Step 2: Screen Alternatives*
- *Step 3: Evaluate Alternatives*
- *How to Learn More.*

Information in this Progress Report is based on a technical presentation prepared for the May 15 Community Meeting about the FMPC RI/FS.

The FS Process: IDENTIFYING SOLUTIONS

The Feasibility Study portion of the FMPC RI/FS develops solutions to specific environmental problems identified in the Remedial Investigation.

The Feasibility Study and the Remedial Investigation go hand-in-hand. Adhering to federal regulations and guidance from the U.S. Environmental Protection Agency (US EPA), RI and FS activities at the FMPC overlap. These activities dovetail sequentially, providing the following advantages:

- The Feasibility Study proceeds while the Remedial Investigation is still underway.
- Additional information is collected that could enhance the Feasibility Study.
- Interim clean-up actions -- such as containing, pumping, and treating ground water -- are identified and initiated.
- Time is saved in the RI/FS process.

In the FS, data collected in the RI are used to develop and evaluate a range of potential remedial action alternatives. These alternatives will lead to the selection of what is known as the *preferred alternative.*

Each draft Feasibility Study report will be available for public comment for at least 30 days. This is the community's formal opportunity to review and comment on the Feasibility Study's conclusions before a final action is chosen. Public comments and other factors are considered in the final selection of alternatives, which are eventually published in the RI/FS Record of Decision.

The success of the Feasibility Study hinges on three principal steps:

1. Developing a set of clean-up alternatives.
2. Initially screening these alternatives to identify those that are most appropriate for further consideration.
3. Detailed evaluation of the remaining alternatives to allow decision makers to select a preferred alternative.

The overall Feasibility Study process can take more than two years to complete before

alternatives are developed, screened, and evaluated; all agency and public comments are received and incorporated; and a Record of Decision (ROD) is published. The need for extensive involvement by regulatory agencies -- particularly the US EPA and the Ohio EPA -- is part of the reason for this lengthy process. However, applicable federal guidance is being continually revised as methods to streamline this process become available.

Interim clean-up activities may also occur concurrently with the RI/FS. As the RI/FS identifies environmental problems that require more immediate action, the FMPC will initiate interim clean-up actions prior to the final ROD. In fact, the FMPC has initiated planning, engineering, and actual removal activity for specific environmental problems identified in the Remedial Investigation. *(These interim actions are presented in a a separate Progress Report.)*

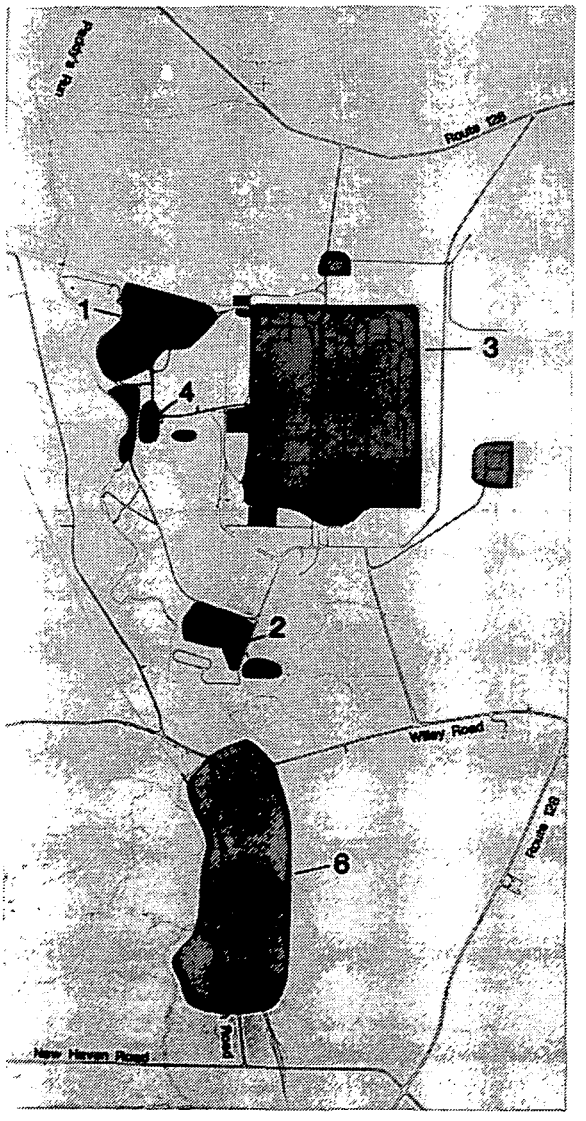
Operable Units:
PROBLEM AREAS IDENTIFIED

The FMPC is a large, complex site. Thus, the FMPC RI/FS is a large, complex study. Because of this complexity, the Feasibility Study has been subdivided into six distinct study areas, called "operable units". A specific Feasibility Study is being prepared for each unit. This makes it possible for the Feasibility Study for one unit to proceed while the Remedial Investigation continues for other units.

The six operable units, five of which are located on plant property, include: *(See Figure 1.)*

- **Waste Storage Area** -- waste pits, burn pit, and clear well.
- **Solid Waste Units** -- fly ash piles, sanitary landfill, and lime sludge ponds.
- **Production Facilities** and localized areas suspected of having above-background levels of uranium or chemicals in the soils or perched ground water, based on an analysis of previous site activities (for example, the land near the abandoned incinerator).
- **K-65 Silos.**
- **Environmental Media** -- specific parts of the environment (most of which are on site) that may be contaminated or could become contaminated. These media includes all ground water, soils, sediments, biota (animals, insects, etc.), and surface water, including Paddy's Run and the Great Miami River.
- **The South Plume**, an area south of the FMPC with above-background concentrations of uranium in ground water.

Figure 1. Five of the six FMPC operable units are shown: (1) Waste Storage Units; (2) Solid Waste Units; (3) Facilities and Suspect Areas; (4) K-65 Silos; (5) Environmental Media (not shown); and (6) South Plume.



Six individual draft feasibility study reports will be issued. There will be a public comment period on each draft Feasibility Study report published.

Other opportunities for public input into the entire FMPC RI/FS process exist. For example, a dialogue between the community and the FMPC occurs during periodic community meetings. Interim reports are also available in public reading rooms. *(See page 4 for locations and hours.)*

Early and effective public participation is critical to the success of any Feasibility Study for the following reasons:

- The earlier in the process that community input is received, the more efficiently and cohesively it can be addressed in the Feasibility Study.
- The public may provide information that can help those preparing the study to better evaluate the relative ease of implementing various alternatives.
- Learning the concerns and opinions of community members makes it possible to incorporate them into the overall study.

Having just described the overall Feasibility Study process, the following provides a closer look at each of the three principal steps in a Feasibility Study as they apply to FMPC.

STEP 1:
Develop Alternatives

The first step in the Feasibility Study process is to identify clean-up action alternatives for each of the six operable units at FMPC. Each alternative may include, for example:

- One or more types of **technologies** to contain, remove, or treat waste materials.
- **Methods** to control the flow of ground water or surface water.

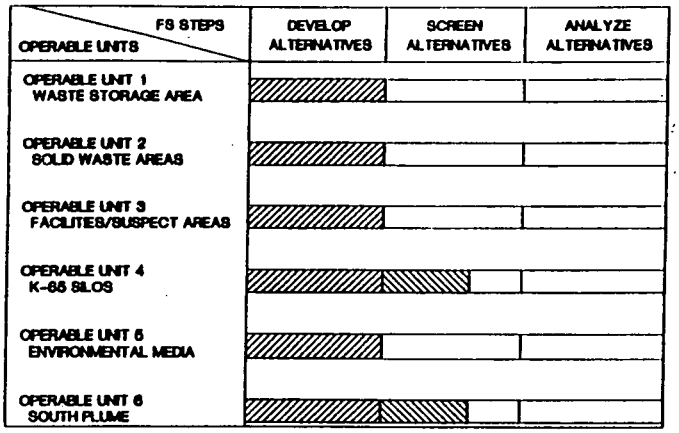


Figure 2. Alternatives have been developed for all FMPC operable units. This is the first step in the FS process, which can take more than 2 years to complete.

- **Disposal options** for any wastes that need to be removed.

Each technology identified is screened before the initial set of alternatives is decided upon. This ensures that only those technologies that are practical at the FMPC and effective in protecting public health and the environment will be considered further in the study.

Alternatives have been developed for all six operable units at the FMPC. *(Figure 2 shows the status of each operable unit.)* The US EPA and the Ohio Environmental Protection Agency (Ohio EPA) are currently reviewing them. Their comments may result in changes or additions to this alternatives report, which will be available in the public reading rooms.

A wide range of alternatives was developed for each unit. For example, alternatives developed for the K-65 silos range from using existing silos (with modifications) for final disposal, to removing materials from the silos, processing them to separate out radioactive substances, and disposing of these products in specially designed facilities on FMPC property or off the site.

TABLE 1.
CRITERIA FOR DETAILED ANALYSIS OF ALTERNATIVES

- *Protection of Human Health & the Environment*
- *Compliance with Applicable or Relevant and Appropriate Requirements*
- *Long-Term Effectiveness and Performance*
- *Reduction of Toxicity, Mobility, and Volume*
- *Short-Term Effectiveness*
- *Implementability*
- *Cost*
- *State Acceptance*
- *Community Acceptance*

STEP 2:
Screen Alternatives

The second step in the Feasibility Study process is to screen the identified alternatives. This reduces the number of alternatives that will be evaluated more extensively in the next step. US EPA guidelines require that the following factors be considered:

- Effectiveness in protecting human health and the environment.
- Degree to which the alternative reduces the toxicity, mobility, or volume of waste materials or contaminants.
- Technical feasibility of building, operating, and maintaining the alternative.
- Likelihood of obtaining required agency approvals.

The cost of each alternative is also considered, but only when the cost of one alternative greatly exceeds the cost of other alternatives without resulting in greater public health or environmental benefits.

Alternatives for final remedies for the K-65 silos and the south plume are being screened and discussed with US EPA and Ohio EPA.

Similar efforts for other units will begin through 1989 and early 1990.

STEP 3:
Evaluate Alternatives

The detailed analysis of alternatives consists of analyzing and presenting relevant information so decision makers can select a final remedy. The U.S. EPA requires that nine specific criteria be considered in this step. These criteria are identified in Table 1.

None of the feasibility studies underway for the six FMPC operable units have reached this step. Current plans call for Step 3 activities for the K-65 silos and the south plume to begin during the summer of 1989.

HOW TO LEARN MORE

To find out more about the Remedial Investigation and the Feasibility Study, the following opportunities are available:

ATTEND PUBLIC MEETINGS
Scheduled throughout the year

WRITE
U.S. Department of Energy
P. O. Box 398705
Cincinnati, Ohio 45239

VISIT READING ROOMS
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FMPC Administration Building
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Mon - Fri: 7 a.m. - 5 p.m.

Lane Public Library
North Third & Buckeye Streets
Hamilton, Ohio 45013
(513) 894-7156
Mon - Sat: 9 a.m. - 9 p.m.
Sun: 1 p.m. - 5 p.m.

Feed Materials
Production Center
Fernald, Ohio

Remedial Investigation
Feasibility Study

PROGRESS REPORT SPRING 1989

Results Announced in 3 Sampling Programs

This RI/FS Progress Report is one in a series of Progress Reports that discuss the Remedial Investigation and Feasibility Study underway at the U.S. Department of Energy's (DOE) Feed Materials Production Center (FMPC) in Fernald, Ohio. This Progress Report provides recent data about the effects of the FMPC on local ground water, sediment in river and stream beds, and local ecosystems. In addition, recent community events relating to the RI are summarized and future milestones are announced. Information in this Progress Report is based on a technical presentation prepared for the May 15 Community Meeting about the RI/FS.

Ground Water:
128 WELLS INSTALLED FOR SAMPLING

Ground water is simply water that flows beneath the surface. For this study, crews drill monitor wells to various depths, from just below the surface to near the base of the sand-and-gravel aquifer *(Figure 1)*. Water samples collected from the wells on and near the FMPC property are analyzed for total uranium concentrations.

A total of 128 wells have been installed for the ground water portion of the FMPC Remedial Investigation; up to 192 wells have been used in the overall sampling program.

The ground water sampling program is part of a controlled process prescribed and monitored by the U.S. Environmental Protection Agency (US EPA) with oversight by the Ohio EPA. The study initially focused on areas with the greatest potential for contamination, as identified by previous studies. The results reported in this Progress Report are based on Round 3 sampling of the ground water monitoring program, which occurred in late 1988.

To better understand the Remedial Investigation ground water results, it is important to understand how water flows in southwestern Ohio. As expected, water flows from higher to lower elevations. Locally, this means that water under the FMPC flows west to east; ground water immediately south of the plant flows toward the south.

The latest sampling results confirm ground water data obtained in earlier rounds of sampling at the FMPC. The areas with higher concentrations of uranium correspond to the areas where uranium is processed or where uranium-bearing wastes are stored. The highest levels (35 picocuries per gram) of uranium contamination of ground water near the surface were found on plant property, in the Waste Storage Area. *(Figure 2, on the attached page, identifies monitor wells that penetrate the till, relatively near the surface.)*

WHAT IS THE FMPC REMEDIAL INVESTIGATION?

The FMPC Remedial Investigation, underway since 1987, involves a series of sequenced activities that are prescribed by the U.S. Environmental Protection Agency (US EPA) and the Ohio EPA. These activities focus on:

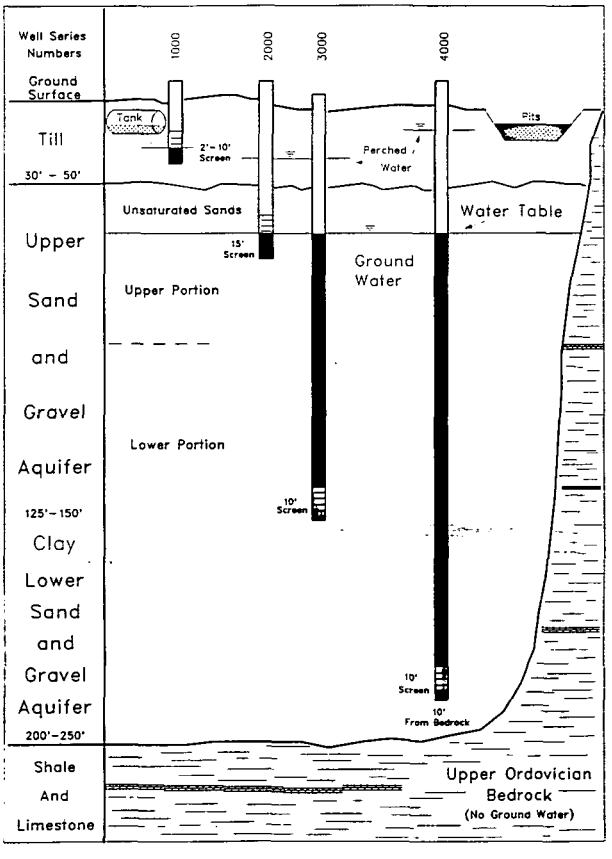
- Baseline studies
- Site investigation
- Data analysis
- Providing data for the FS

Uranium is also found in the aquifer, but in much lower concentrations. Figure 3 identifies the locations where above-background levels of uranium were found in the upper part of the sand-and-gravel aquifer. The main area of contamination in the aquifer lies south of the

FMPC along Paddy's Run, in an area with above-background concentrations of uranium, identified as the south plume. Latest ground water sampling results indicate:

- Contaminated ground water in the till has been found in a few locations on plant property. Because the contamination is restricted to the till, the contamination is not likely to move from the FMPC property or into the aquifer. The ground water in the till beneath the FMPC Waste Pit Area has the highest levels of uranium.

Figure 1. Wells used in the RI allow ground water sampling at three of four levels beneath the surface, providing a three-dimensional picture of underground conditions at the site.



- Uranium is found in ground water in the aquifer under the Waste Storage Area at the FMPC.

- The south plume area along Paddy's Run resulted from uranium-bearing water run-off that sank into the sand of the streambed during the 1960s. The highest concentrations of uranium in the aquifer are found in the South Plume. Interim actions are underway to contain and control this problem. A long-term remedy for the south plume will be proposed in the Feasibility Study for the south plume after all the data has been analyzed.

Sediment Sampling:
LOCATIONS IDENTIFIED

Scientists performing the FMPC Remedial Investigation also regularly take soil samples from the Great Miami River and Paddy's Run. They are trying to identify uranium concentration levels in the sediments that line these waterways. They will determine if these levels are at or above background levels for southwestern Ohio.
Since the January 31 community meeting, information gathered about the uranium content of sediment in Paddy's Run in recent years has been compiled. Figure 4 shows sediment sampling locations along Paddy's Run. To date, no locations showed uranium concentrations approaching background levels for southwestern Ohio. Sampling activities are expected to continue through 1990.

Biology Study:
LOCAL ECOSYSTEMS STUDIED

This is the first formal discussion of the biological sampling program since RI/FS Community Meetings have begun. Biologists and ecologists have been studying the effects of the FMPC on local ecosystems since 1987. Preliminary results are being interpreted for the mammals, fish, streambed bottom dwellers,

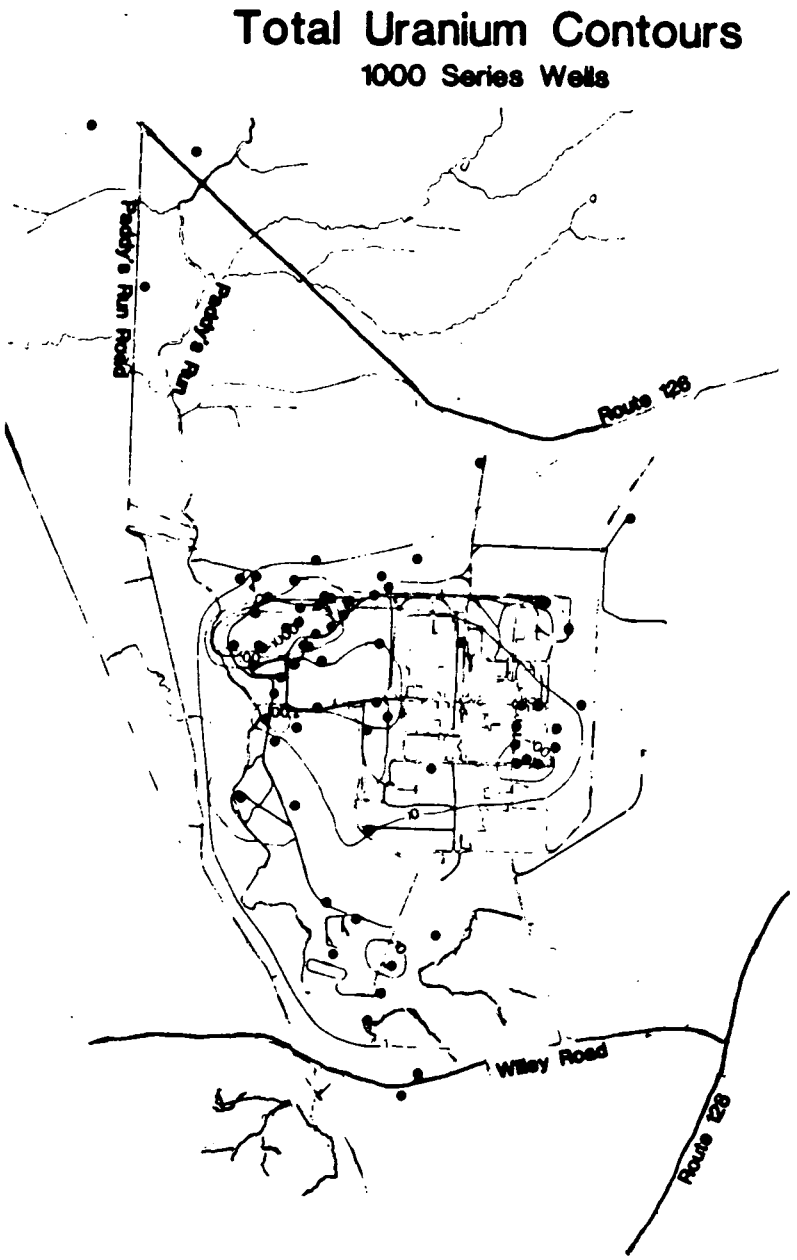


Figure 2. Locations with above-background levels of uranium in the till

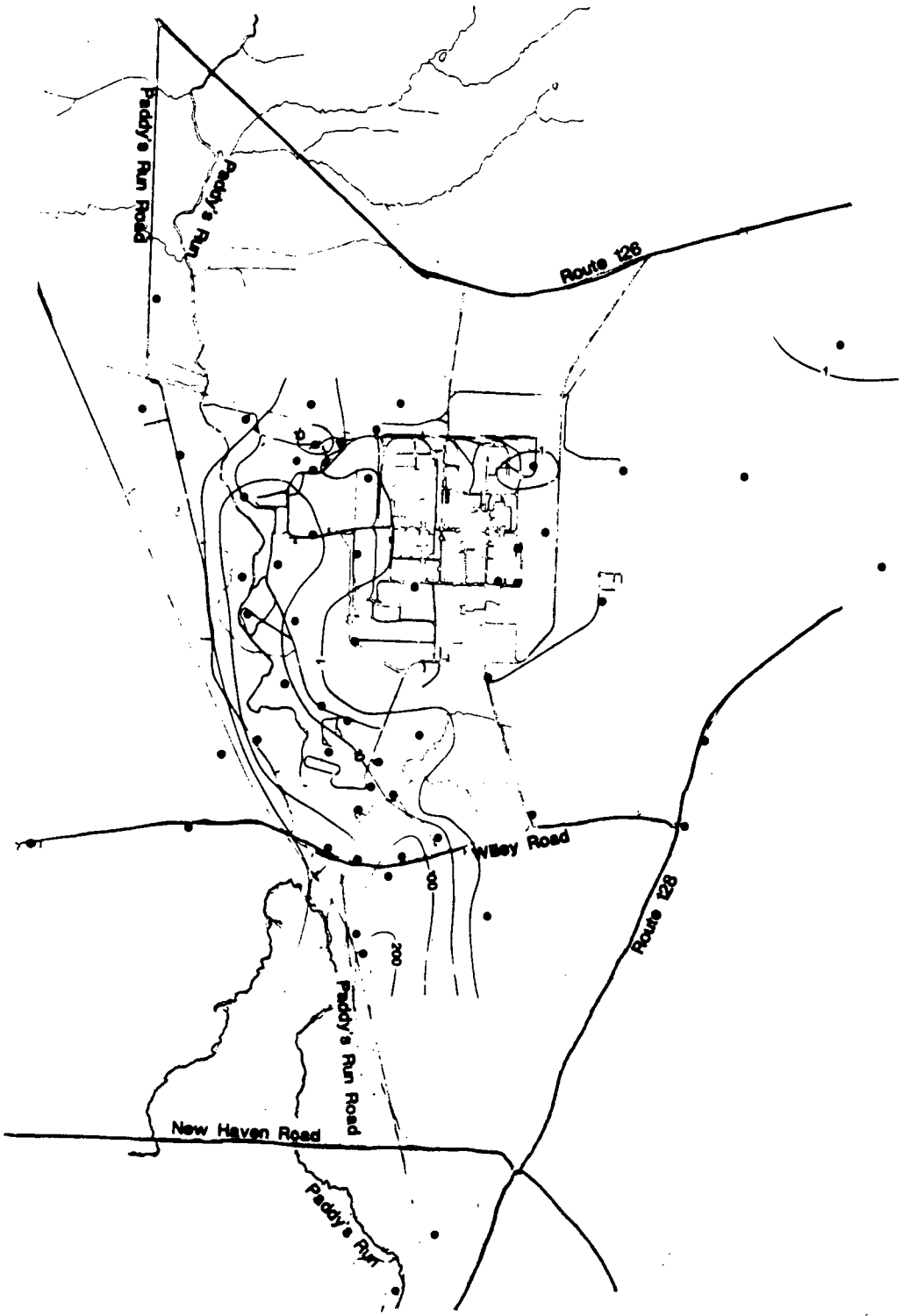


Figure 3. Locations with above-background levels of uranium in the sand-and-gravel aquifer

vegetation, endangered species, and ecosystems studied. These results of radionuclide concentrations reinforce findings discussed at the January 31 community meeting. These findings include:

- Local garden produce sampling results were comparable to the background near Brookville, Indiana.
- In vegetation, the highest levels were found near the old incinerator side, below the fly ash pile, and in the northeastern portion of plant property; concentrations decrease with distance from the FMPC; results are consistent with those of soil sampling.
- No detectable levels were found in fish in the Great Miami River; low, detectable levels were found in 20 percent of samples from Paddy's Run.

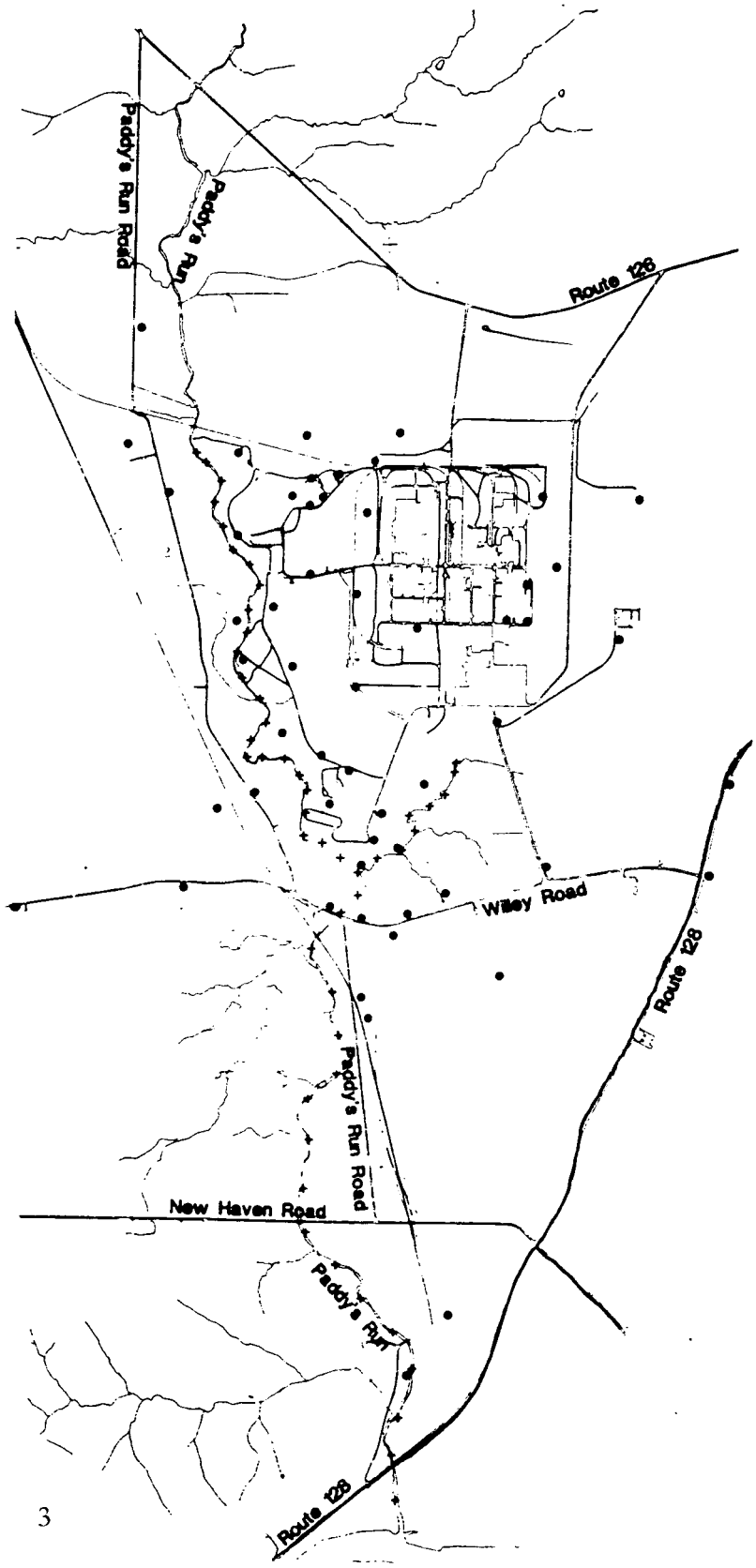
Following standard scientific practices, scientists compared data of garden produce and agricultural products obtained near the FMPC *(Figure 5)* with data collected from a "background site" in Brookville, Indiana. Each sample was handled according to procedures approved by the U.S. Environmental Protection Agency (US EPA). Samples were sent to USEPA-approved laboratories, where they were analyzed for the presence of chemicals and radionuclides.

Lab results are in for most of the 235 samples collected and analyzed in the biological sampling program. Interpretation of these data will be included in the final report on the FMPC Remedial Investigation. It will also be incorporated into the feasibility study for Operable Unit 5, Environmental Media, which will evaluate sitewide environmental cleanup alternatives.

COMMUNITY MEETINGS FOCUS ON RI/FS

The DOE and contractors conducting the FMPC Remedial Investigation and Feasibility Study presented preliminary findings at a community meeting held January 31 in Ross Middle School. The meeting was one of a

Figure 4. Sediment samples were taken from Paddy's Run and the Great Miami River.



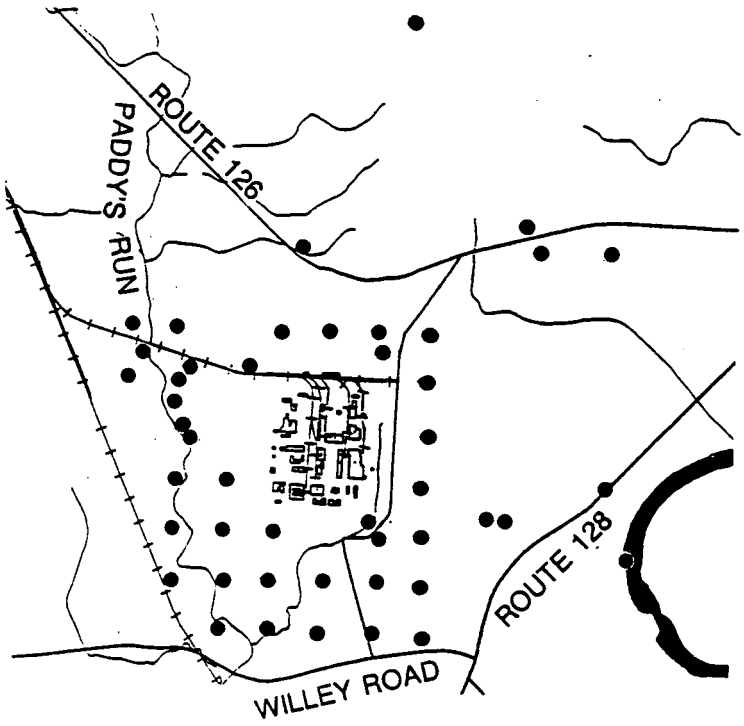


Figure 5. Most biological samples were taken on or near the FMPC; along with those shown here, a few were taken several miles away, along with samples taken near Brookville, Indiana.

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series to inform neighbors and other interested parties about the progress of this comprehensive environmental investigation, which will ultimately determine which actions must be taken to clean up the FMPC site.

About 250 Fernald area residents attended the meeting. It described current Remedial Investigation activities for the entire audience. Technical sessions focused on specific ground water, surface water, soil and biology, and air monitoring, as well as general environmental concerns at the plant.

WHAT'S NEXT?

Ground water on plant property will continue to be investigated this summer. This will determine if other pockets of contamination exist relatively near the ground surface in this area.

Additional sampling wells will be drilled to define the extent of the south plume. These wells will be installed in the area of the south plume after DOE obtains access to this property. The lab results of the samples collected from these wells will be evaluated to see what corrective actions are required for the area.

Interpretation of biological sampling results will continue in the months ahead. An update will be presented at the next community meeting.

Another community meeting is anticipated for later this year. Advance notice will be given to Fernald area residents and to those included in the RI/FS mailing list.

HOW TO LEARN MORE

To find out more about the FMPC Remedial Investigation and the Feasibility Study, the following opportunities are available:

ATTEND PUBLIC MEETINGS
Scheduled throughout the year

WRITE

U.S. Department of Energy
P. O. Box 398705
Cincinnati, Ohio 45239

VISIT READING ROOMS

Filled with reports, fact sheets, plans, and other pertinent information. They are located in:

FMPC Administration Building
7400 Willey Road
Cincinnati, Ohio 45239
(513) 738-6376
Mon - Fri: 7 a.m. - 5 p.m.

Lane Public Library
North Third & Buckeye Streets
Hamilton, Ohio 45013
(513) 894-7156
Mon - Sat: 9 a.m. - 9 p.m.
Sun: 1 p.m. - 5 p.m.

APPENDIX D

POST-MEETING NEWSPAPER ARTICLES ON THE MAY 15, 1989 FMPC RI/FS COMMUNITY MEETING

Videotapes of local newscasts that featured reports about the Community Meeting are maintained by WMCO's video production department. This file is based on their routine monitoring of local newscasts for stories about the FMPC. In addition, WMCO videotaped the proceedings of the May 15 Community Meeting.

6821

3

Residents protest delays

Anger over FMPC response

By Rob Daumeyer
Of the Journal-News

ROSS — Neighbors of the Feed Materials Production Center, already incensed over misinformation given them by the U.S. Department of Energy, took their indignation to another level Monday night.

The DOE, which owns the uranium processing plant, conducted a public meeting Monday night at Ross Middle School to discuss its environmental investigation and cleanup plans.

But initially, the meeting was controlled by angry members of FRESH (Fernald Residents for Environmental Safety and Health), who stood up at the beginning of the session to air some grievances against the DOE.

During the introduction to the meeting, FRESH spokeswoman Lisa Crawford asked plant officials why she had to wait three months for answers to questions she raised at the last DOE meeting, held in January.

While DOE moderators attempted to keep with the program and introduce the speakers, Crawford and other FRESH members refused to sit down.

"We want answers to our questions now," Crawford said. "And this time we're not going to wait."

At their last meeting, the DOE asked neighbors to write their questions on note cards, and promised to answer them later in writing. The answers were hand delivered to Crawford and other neighbors last Friday.

"If we seem a little aggitated, it's because we are," Crawford said. "These meetings are a big waste of time, they're not answering our questions."

Plant officials told the group that they were prepared to stay until midnight to answer any questions that might arise.

"We're prepared to stay until midnight, too," Crawford said.

The DOE changed the format of its meeting in hopes of curbing some of the complaints about the lack of answers by including a group question period at the end of the meeting.

The heart of the meeting, however, consisted of technical sessions which described the progress of the plant's Remedial Investigation and Feasibility Study, which includes:

- ☐ Current cleanup projects.
- ☐ Biological and ground water sampling results.
- ☐ Alternatives being considered for some of the plant's most difficult cleanup tasks, including removing radioactive waste that has pooled beneath buildings and temporary filling the K65 silos, which leak radon, with a buffer of sand.

Rick Clark, a biologist with the DOE, said recent sampling of vegetation and animals living on and near the plant show no radiation above background levels.

Louis Michaelson, top left, moderator at Monday night's FMPC meeting at Ross School conducted by the U.S. Department of Energy, talks to the attendants. DOE Biologist Rick Clark, bottom left, discusses plant and animal studies, while members of FRESH, right, stand up to ask questions they say were left unanswered.

Photos by John Jones

JournalNews May 16, 1989

6821 2

FMPC pipe leaked radioactive water

By Rob Daumeyer
Of the Journal-News

ROSS — Radioactive water from the Feed Materials Production Center has overflowed into a field east of the uranium processing facility.

A drainage pipe carrying water from the FMPC water treatment plant to the Great Miami River backed up and popped off a manhole near Ohio 128 on April 4, according to Pete Kelley, plant spokesman. The backup was caused by recent heavy rains, he said.

The accident was announced Monday evening at a U.S. Department of Energy town meeting with area residents.

The soil in the area was tested and shown to contain higher-than-acceptable levels of uranium, Kelley said. Normal background levels contain less than six parts per million of uranium, while the levels in the soil around the spill reached as high as 127 parts per million.

"It is not a health hazard," Kelley said. "But it has contaminated property off-site and is therefore a concern."

The area has been staked off and warnings have been issued to people living on the property not to come in contact with the water.

Plant officials also are checking other manholes around the plant for similar damage, Kelley said.

Graham Mitchell, unit supervisor for the Ohio Environmental Protection Agency, called the spill site "another area people should avoid for now."

Mitchell termed the accident a "serious problem" merely because it happened off-site. "When something happens on-site, it is much easier to control," he said. "But any problem you have is compounded when it happens off-site."

(Please see LEAK, Page A6)

Leak

(Continued from Page One)

Mitchell said the leaks may be a threat to the Great Miami Aquifer.

The 4,200-foot sewer line in question extends from the wastewater treatment plant on Fernald's eastern boundary and empties into the Great Miami River. Of the 10 or 12 manholes on the line, four have burst their seals, Mitchell said.

Plant officials will continue to test the soil near the spill, Kelley said, until it is deemed safe.

Lisa Crawford, spokeswoman for FRESH (Fernald Residents for Environmental Safety and Health), said neighbors should have been notified immediately after the accident.

"This is old hat," she said. "I hadn't heard about it until tonight, and it's been five weeks. That just isn't right."

THE CINCINNATI ENQUIRER

MAY 16, 1989

Uranium found in soil

Fernald sewer leak pollutes new site

BY M.A.J. MCKENNA
The Cincinnati Enquirer

Leaky manholes in a sewer line that leads east from the Fernald uranium processing plant have contaminated the area with uranium up to 40 times normal levels, an official said Monday.

Recent heavy rains caused waste water from the underground line to fountain up through four manholes and flow into a cornfield between the plant and Ohio Rt. 128, said Graham Mitchell, Fernald team leader for the Ohio Environmental Protection Agency.

Measurements of uranium in the soil, performed by Westinghouse Feed Materials Co., of Ohio, Fernald's current operator, showed uranium levels so high officials think the leaks have occurred repeatedly, he said.

Measurements ranged from 11 to 127 parts per million, Mitchell said. Normal background levels in soil near the plant are 3 to 4 parts per million.

Mitchell disclosed the findings at a public meeting on Fernald Monday night. "We're concerned because it's a new area of contamination offsite."

"We don't know yet if it's a minor or major threat. How far down does it go? Does it reach the ground water?"

Mitchell said the leaks may be a threat to the Great Miami aquifer. A layer of impermeable clay that covers the aquifer and protects it from runoff runs along the slope under the sewer line. Without the clay, contaminated water could percolate into the aquifer.

The Cincinnati Post, Tuesday, May 16, 1989 5A

Uranium-water leak spurs emergency order

By Nick Miller
Post staff reporter

The U.S. Environmental Protection Agency has ordered the Department of Energy to take emergency action at the Fernald plant after heavy April rains caused a sewer line there to leak uranium-contaminated water into a nearby cornfield.

The leak, which occurred on a line that takes plant effluent to the Great Miami River, was from manholes in a field between the plant and Ohio 128.

Uranium left in the soil by the leaks measured as high as 127 parts per million, compared to normal background radiation levels of 4 parts per million, according to data released Monday night during a public meeting on Fernald.

"People have reported that this is not a singular occurrence. It apparently has happened in the past," said Graham Mitchell of the Ohio Environmental Protection Agency.

Environmental officials are concerned the contamination may seep into groundwater, although the area where the leaks occurred does have an impermeable layer of clay between the surface and the aquifer.

The Post
4A Tuesday, May 16, 1989

5

6821

EPA orders fast sewer cleanup at Fernald

By Nick Miller
Post staff reporter

The U.S. Environmental Protection Agency has ordered the Department of Energy to take emergency action at the Fernald plant after heavy April rains caused a sewer line there to leak uranium-contaminated water into a nearby cornfield.

The leak, which occurred on a line that takes plant effluent to the Great Miami River, was from manholes in a field between the uranium-processing plant and Ohio 128.

Uranium left in the soil by the leaks measured as high as 127 parts per million, compared to normal background radiation levels of 4 parts per million, according to data released Monday night during a public meeting on Fernald.

"People have reported that this is not a singular occurrence. It apparently has happened in the past," said Graham Mitchell of the Ohio Environmental Protection Agency.

Environmental officials are concerned the contamination may seep into groundwater, although the area where the leaks occurred does have an impermeable layer of clay between the surface and the aquifer. Catherine McCord, EPA's remedial manager at Fernald, said she has asked the energy department, which owns the plant, to determine the extent of contamination and begin immediate cleanup if needed.

Monday's meeting at Ross Middle School was the second conducted this year by the Department of Energy and Westinghouse Materials Co. to let residents know what is happening at Fernald.

One man who came for answers was Charles Zinser of Springfield Township, who once rented land near the plant for his family's vegetable garden.

"Right now I am enormously skeptical," said Zinser, who fears the source of the cancer that struck his son was those vegetables.

Government spokesmen told the crowd of 100 Monday night that vegetables from gardens near the plant were tested in 1987 and found to contain uranium levels no higher than vegetables from a garden in Brookville, Ind., 25 miles west of Fernald.

Zinser's son, Louis, had a leg amputated after doctors diagnosed bone cancer in April 1986. The boy was 2. Tissue from the leg was sent to the University of Waterloo in Ontario, Canada, to be tested. Bone marrow from the leg contained 10 times more uranium than an adult's bone marrow would after a lifetime, Zinser said during the meeting. Zinser is suing the government.

Environmental officials and other experts tried to reassure the crowd Monday, saying that cleanup projects are underway to contain stormwater runoff near waste pits, stop a uranium-contaminated plume of groundwater moving

Please see FERNALD, 5A

Fernald

From Page 4A

south from the government-owned plant, treat pockets of contaminated water under the plant, and control radon gas in the K-65 silos.

But before health studies of residents and others connected to the plant can begin, the U.S. Centers for Disease Control must obtain accurate records from the Department of Energy on uranium emissions.

Also awaited is a Miami University study on Fernald looking into possible harm to biological systems at the facility, including mutagenic effects on plant and animal life. After the final draft of that report is analyzed, it will be incorporated into a remedial investigation and feasibility study on cleanup at Fernald.

That investigation may not be finished for at least two years, Energy Department officials said. The U.S. EPA was supposed to receive a final draft of the Miami study by March 30.

THE CINCINNATI ENQUIRER

MAY 17, 1989

Fernald report delayed

Cause of plant, animal mutations sought

BY M.A.J. McKENNA
The Cincinnati Enquirer

Confidential reports about whether the Fernald uranium processing plant has caused mutations in local animals and plants probably will not be made public until the end of the year, an environmental official predicted Tuesday.

But Fernald officials now agree with critics that some environmental factors, not yet identified, are affecting vegetation, fish, birds and small mammals there.

"The big question now is not whether there are stresses in the environment or not," said Graham Mitchell, Fernald team leader for the Ohio Environmental Protection Agency. "The point is to get the stresses identified."

Mitchell was interviewed after Fernald's technical information exchange Tuesday, a monthly meeting of the major parties charged with cleaning up the plant 18 miles

(Please see FERNALD, back page, this section)

Fernald

CONTINUED FROM PAGE A-1

northwest of Cincinnati. They are: the U.S. Department of Energy (DOE); Westinghouse Materials Co. of Ohio, DOE's contractor at Fernald; Westinghouse's major subcontractors, and the U.S. and Ohio EPAs.

Mitchell said a chief topic of discussion was a controversial study by three Miami University researchers that found abnormal growth patterns and genetic abnormalities in animals and plants on the 1,050-acre site.

The study, done under contract to Westinghouse, has not been made public. Its contents — plus a review by Oak Ridge National Laboratories, a DOE contractor in Tennessee that called the report "inadequate" and "fraught with statistical errors" — were reported by *The Enquirer* March 10.

Pete Kelley, Westinghouse spokesman, confirmed that the study will not be made public for several more months. The contract, which also prevents the researchers from discussing the study until it is complete, has been extended to give them a chance to reply to DOE's objections. Extra biological sampling to augment the report is planned for this summer.

"The study is still in peer review, and that's expensive and time-consuming," he said. "The original contract didn't provide for the researchers to draw conclusions about what caused the stress on the animals."

A separate study by ASI Inc., a Westinghouse contractor, has found detectable levels of uranium in one-fifth of the fish taken from Paddy's Run stream west of the plant but no significant radioactive content in most plants.

Out of 235 samples analyzed so far:

- Low levels of uranium were found in 20% of fish in Paddy's Run. There was no uranium above normal levels in fish from the Great Miami River.
- Detectable levels of radiation were found in plants taken from points on the Fernald site that have already shown soil contamination: near the plant's former incinerator, fly-ash pile, and northeast corner.
- No difference was found in the uranium content of garden produce from outside Fernald and from Brookville; both showed background levels only.

The ASI study does not confirm or deny the Miami findings, Kelley said.

DOE plans to combine the revised Miami report, the objections to it, and the new ASI report into a single report on biological sampling at Fernald.

Wednesday, May 17, 1989 THE CINCINNATI ENQUIRER Comment/A-11

Residents' class action seeks truth on Fernald

Readers' views

TO THE EDITOR: I am writing in response to the guest column by Michael G. Lloyd entitled "A Judicial Invasion of Privacy" (May 5). He states that the employees at Westinghouse [Fernald] are being used as "guinea pigs" and treated as "nonentities" by U.S. Magistrate Jack Sherman Jr.'s judicial order that the Department of Energy (DOE) release medical records to Stanley Chesley, lawyer for the class-action suit against DOE and National Lead of Ohio (NLO). He further states that they are "being used by a group of people whose noble aspirations are predicated upon the achievement of a $300 million Super Lotto prize. And it matters not whose rights they trample to win it."

My heart grieves for you, Mr. Lloyd, and your fellow workers, because you have been duped as we the residents have been duped by our own government. However, you were at least given the opportunity to wear protective clothing while working with these hazardous materials; the residents were not. We were left to the elements, unprotected, and uninformed of what was leaching into our aquifer, dumped in our creeks and rivers, and literally falling onto the tops of our heads while we worked in our gardens and farms and our children played in these same creeks, rivers and in the soil.

When we were made aware that there was a problem (wells had been found contaminated), a lawsuit was filed and some of the residents formed a group (FRESH), in an effort to determine just what had been going on out there and to see how it could be restored to the beautiful area it appeared to be. DOE has been less than cooperative, to put it mildly, even to the point of lying; and thus a court order was needed to obtain the necessary information.

I would also like to point out that you, Mr. Lloyd, and your co-workers have had the choice of working at this facility or seeking employment elsewhere. The residents did not have any choices and, in most cases, did not know anything about the place (sovereign immunity) until they began asking questions and disputing lies. When the truth did begin to surface because of their efforts, they were labeled radicals and told to be quiet because "you're lowering our property values," or "my relative works out there and you'll make him lose his job," or "there's nothing to be concerned about; there's nothing above ground level."

By delving into the conditions on-site, forcing the truth to be told, and yes, courts ordering that documents and health information be released, we will all be better informed and safer as a result.

The lawsuit, assuming that the residents do win it and the entire amount of $300 million is awarded, may result in a grand total of perhaps $2,000 per person. This figure would have to be determined after deducting lawyers' and doctors' and researchers' fees, and then dividing it by 14,000 people.

This lawsuit, by anyone's estimate, is not going to make anyone wealthy. It may, however, uncover some pertinent health information and facts that will let us know what we can expect in the future and what our children's children may inherit. If it accomplishes nothing else, many of us would be satisfied if it prevented future facilities from being operated in neglect and with total disregard of the surrounding community.

NORMA J. NUNGESTER
8574 Mount Hope Road
Harrison.

Exxon/Fernald

As a U.S. citizen I feel outraged at the lack of cleanup effort from Exxon. The Alaska accident is far from over. Effects of this incident will be felt for decades.

As a Cincinnati resident I am appalled at the lack of cleanup effort at Fernald. I was a growing child when Fernald was spewing tons of radioactive dust. I cannot help but wonder what the effects of this will be decades from now.

The government and big business have little regard for their effect on life.

ANNETTE C. ELLIS
1734 Laurelwood Circle

APPENDIX E

RESPONSES TO QUERIES ON COMMENT CARDS FROM THE MAY 15, 1989 FMPC RI/FS COMMUNITY MEETING

6821

Department of Energy
FMPC Site Office
P.O. Box 398705
Cincinnati, Ohio 45239-8705
(513) 738-6319

June 14, 1989
DOE-1178-89

FMPC COMMUNITY MEETING

This letter transmits information in response to the comment card which you completed at the recent Community Meeting conducted by the Feed Materials Production Center.

Enclosed are documents describing the operations performed at the FMPC and the types of materials handled at the site. Also included are copies of the most recent issues of the FMPC Update which is a community report on FMPC activities. I also want to insure that you are aware of the public reading rooms maintained by the Feed Material Production Center: one here at the FMPC site and the other at the Lane Public Library. These reading rooms contain a wide range of information regarding materials processing and environmental cleanup activities underway at the site.

We welcome your interest in the activities at the Feed Materials Production Center. We do arrange for public tours and would welcome your participation. Your name has been placed on our mailing list and you will be receiving additional copies of the FMPC Update on a quarterly basis.

If we can be of further assistance or provide additional information, please contact Renae Cook at 738 6934.

Sincerely,

James A. Reafsnyder
Site Manager

Enclosures as stated

000101

6821

Department of Energy
FMPC Site Office
P.O. Box 398705
Cincinnati, Ohio 45239-8705
(513) 738-6319

June 14, 1989
DOE-1178-89

COMMUNITY MEETING

This letter is in response to the comment card you completed during a recent Community Meeting conducted by the Feed Materials Production Center.

We welcome your interest in the activities at the Feed Materials Production Center and thank you for attending the Community Meeting. Because you have expressed an interest, we have enclosed the most recent issue of the FMPC Update, a community report on FMPC activities. I also want to insure that you are aware of the public reading rooms maintained by the Feed Materials Production Center; one here at the FMPC site and the other at the Lane Public Library. These reading rooms contain a wide range of information regarding materials processing and environmental activities at the site.

Your name has also been added to our mailing list. As a result, you will be receiving a copy of the FMPC Update on a quarterly basis as well as copies of any special information notices.

If we can be of assistance or provide further information, please contact Renae Cook at 738-6934.

Sincerely,

James A. Reafsnyder
Site Manager

Enclosures as stated

000102

6821

Department of Energy
FMPC Site Office
P.O. Box 398705
Cincinnati, Ohio 45239-8705
(513) 738-6319

June 14, 1989
DOE-1178-89

COMMUNITY MEETING

This letter responds to the three comment cards received from you following the May 15, 1989 Community Meeting.

With regard to your comment on the Community Meeting format, I agree that conducting the meeting in a large group setting, as we did on May 15, worked well. The single group setting allowed participants to hear all of the questions and answers and appeared to be well received by the community. As part of our commitment to generate an improved Community Relations Plan for the RI/FS activities, we will be interviewing a number of community members for ways in which we can better communicate. Part of the interviews will focus on the format and content of Community Meetings. However, judging from the receptiveness of the attendees at the May 15th meeting, I suspect that we will continue to use a single group format for the meetings.

Regarding your second request, on May 23, I forwarded to you copies of the overheads that were presented during the May 15th meeting. I hope you will find these useful during your monthly F.R.E.S.H. meetings. Also, I can arrange to have a speaker present at one of your F.R.E.S.H. meetings if you would like additional information regarding the status and progressive findings of our RI/FS and environmental cleanup activities.

With regard to promptly notifying the public following "unusual incidences", I consider that we were doing well in this area. However, for the specific item identified, the overflow of manhole 180, I agree we could have done better. When the overflow occurred on April 4, the landowner was immediately notified of our concerns. Samples were immediately collected to determine if contamination had been spread to surface soils outside of the

FMPC. When the sample results were obtained on May 2, 1989, the landowner was once again immediately notified and a detailed characterization of the area was initiated. Since a Community Meeting was scheduled for May 15, 1989, I decided that this was a good opportunity to discuss the full details of the occurrence with the community. I remain committed to prompt public notification and will continue to emphasize such notification in the future.

Finally, regarding the details of the overflow of manhole 180, I am enclosing a status report which shows the chronology of the overflow and identifies the activities currently underway.

In closing, we welcome your interest in the environmental cleanup activities being undertaken at the FMPC. I am committed to keeping you and the public as a whole well informed of both environmental concerns as well as activities underway to correct identified problem areas. I trust that your questions, comments, and suggestions can help us to focus on public concerns and perform better in this area.

Sincerely,

James A. Reafsnyder
Site Manager

Enclosures as stated

COMMENTS AND QUESTIONS:

F.R.E.S.H. wants copies of all overheads that were presented at the 5-15-89 meeting. We would like to have these as soon as possible. We also want to be notified immediately of any and all unusual incidences -- i.e. the overflow of manholes.

I would like to be added to the RI/FS Fact Sheet mailing list. ☒ Yes ☐ No

COMMENTS AND QUESTIONS:

We want all future meetings to be conducted in the large group setting like the way it worked out on 5-15-89. That way everyone gets to hear all questions and answers. No more dividing up into small groups!!!!!!! If you don't know the answer to a question --- just say "WE DON'T KNOW" -- don't delay it!!!!!

I would like to be added to the RI/FS Fact Sheet mailing list. ☒ Yes ☐ No

COMMENTS AND QUESTIONS:

I want all info re: the overflow of manhole 180! repairs, how & why it happened - all info!

I would like to be added to the RI/FS Fact Sheet mailing list. ☒ Yes ☐ No

ENCLOSURE

OVERVIEW OF MANHOLE 180

1. Chronology

   - o Overflow occurred on 4/4/89.
   - o Property owner notified on 4/4/89.
   - o Liquid samples collected on 4/4/89.
   - o Eight soil samples collected on 4/6/89.
   - o Sample results available on 5/2/89.

2. Notification

   - o The property owner was notified of sample results on 5/3/89. The owner agreed to access for characterization.
   - o USEPA-Region 5 and Ohio EPA were notified verbally of the occurrence on 5/3/89.
   - o A written description of the occurrence was provided to USEPA-Region 5 and Ohio EPA on 5/10/89.

3. Environmental Characterization

   - o Contractors were given notice to proceed with characterization on 5/3/89.
   - o Confirmation analytical results for the original eight soil samples were obtained from the laboratory on 5/3/89. The results obtained were in good agreement with the original analytical results.
   - o Isotopic analyses on the collected samples were completed by the laboratory on 5/8/89. This data indicates that all samples were within the depleted or normal range.
   - o Contractor mobilized on 5/4/89. Field measurements using SPA-3 and FIDLER probes were completed on 5/7/89.
   - o Preliminary survey data and maps showing collected field radiological measurements were obtained on 5/9/89.
   - o A 100 foot x 200 foot area around manhole 180 was roped off on 5/14/89. Erosion control fabric was also placed at the perimeter of this area.

- Soil sampling was completed at 53 locations with the collection of 159 discrete samples. Samples are being taken at 0-6, 6-12, and 12-18 inch intervals at each location. The samples were transmitted to the laboratory for analysis. Sampling activities were complete at manhole 180 as of May 17, 1989.

- Sampling around manholes 176 through 179 and at manhole 181 were initiated following completion at manhole 180. It is anticipated that six days will be required to complete this effort.

- Analysis of the 159 samples taken at manhole 180 are scheduled to be completed by June 16.

4. Cleanup Activities

   - A meeting to arrange for engineering of potential cleanup activities was conducted on 5/9/89.

   - Procedures for soil characterization, removal, transportation, and certification are being prepared.

   - An Environmental Evaluation/Cost Assessment as required by Title 40, Code of Federal Regulations, Part 300 is being prepared.

5. Determination of Root Cause

   - An evaluation of the root cause is being conducted. The results of this evaluation will be available by 6/15/89.

6. Corrective Actions

   - Repair of the manhole covers were completed on 5/16/89.

   - Corrective actions have been identified to insure that overflow of the manholes will not recur. Actions included periodic inspection and maintenance of manhole covers.

Department of Energy
FMPC Site Office
P.O. Box 398705
Cincinnati, Ohio 45239-8705
(513) 738-6319

6821

June 14, 1989
DOE-1178-89

COMMUNITY MEETING

I am writing in response to the comment card you completed during the recent Community Meeting conducted by the Feed Materials Production Center. Specifically, you asked if other DOE facilities are experiencing contamination problems.

The answer is yes. Many facilities throughout the country, both DOE and non-DOE have environmental concerns. In fact, the USEPA publishes a list of the top environmental concerns throughout the United States. This listing, called the National Priorities List, is part of the Title 40 Code of Federal Regulations, Part 300. This list identifies 770 commercial facilities in the United States which, following an environmental evaluation, have been identified as having environmental concerns significant enough to rank their cleanup as a national priority. A copy of this list is enclosed for information.

Also included is a Federal Section of the National Priorities List. So far, 32 federal facilities have been included on the National Priorities List. Of these, only two are DOE facilities. They are the Weldon Springs Quarry located in St. Charles County, Missouri and the Lawrence Livermore Lab located in Livermore, California.

Just because a facility is not on the list does not mean that there are not environmental concerns at that facility. Note that the Feed Materials Production Center is not yet on the National Priorities List. Nonetheless, we are working with the USEPA and proceeding with environmental cleanup activities. This is also taking place at other DOE facilities which are not included on the National Priorities List.

COMMENTS AND QUESTIONS:
ARE OTHER DOE PLANTS EXPERIENCING CONTAMINATION PROBLEMS? IF SO, WHICH. IF NOT, WHY ONLY FERNALD?

I would like to be added to the RI/FS Fact Sheet mailing list. ☐ Yes ☐ No

000108

In summary, the United States is facing environmental concerns at a large number of government and non-government facilities throughout the country. So many, in fact, that the USEPA maintains a priority list so that the facilities which represent the greatest hazard can be addressed first. Although many DOE facilities are not included in that list, the DOE is proceeding with environmental investigations and working with the USEPA and state agencies to correct environmental problems.

I thank you for your question and welcome further comments. If you would like additional information, please visit one of our public reading rooms or call Ms. Renae Cook at 738-6934.

Sincerely,

James A. Reafsnyder
Site Manager

Enclosures as stated

6821

Department of Energy
FMPC Site Office
P.O. Box 398705
Cincinnati, Ohio 45239-8705

COMMENTS AND QUESTIONS:
In the Biological study done on the Indiana bats, veg., milk & other animals why did you not examine, bone tissue, and muscle tissue.
The meeting was out to the last/by not quite, a to

I would like to be added to the RI/FS Fact Sheet/mailing list. ☐ Yes ☐ No

FMPC COMMUNITY MEETING

This letter responds to the comment card you mailed to DOE following the May 15 FMPC Community meeting. I would like to take this opportunity to thank you for attending this meeting and for your interest in the FMPC and the associated environmental programs currently underway.

You inquired about the extent of bone and muscle tissue testing in the Remedial Investigation. This major environmental study has included some bone and muscle tissue sampling. For example, we have sampled muscles and organs in small mammals. As part of the large mammal sampling activity, body organs of deer were tested. Fish sampling has included bones, entrails, and muscle, as well. If results indicate elevated levels of radionuclides in small tissues that were tested, bone tissue sampling may be recommended.

Thank you also for your comment favoring the large group meeting format. Many people attending the meeting agree with you. This input is helpful as we plan future community meetings.

We will make sure that you are included in our RI/FS mailing list so you can keep informed of current information. We take seriously our responsibility to answer your questions, address your concerns, and provide you with the information you request. We look forward to seeing you at future community meetings.

Sincerely,

James A. Reafsnyder
Site Manager

DP-84:Reafsnyder

Enclosures: FMPC Fact Sheets
FMPC Update

cc w/att:

RI/FS Project File, Task 8.1

000120

APPENDIX F

QUESTIONS RECORDED ON FLIP CHART DURING THE MAY 15, 1989 FMPC RI/FS COMMUNITY MEETING AND THEIR PREPARED ANSWERS

In accordance with Jim Reafsnyder's promise of a prompt response to all questions, answers were prepared by technical staff and placed in the Reading Rooms by mid-June. A press release announced their availability.

RESPONSES TO QUESTIONS DURING RI/FS COMMUNITY MEETING

Conducted by U. S. Department of Energy
May 15, 1989
Ross Middle School

The May 15 community meeting at Ross Middle School included three technical presentations on various aspects of the Remedial Investigation/Feasibility Study being conducted at the Feed Materials Production Center.

A question-and-answer session followed each of the briefings, followed by a general discussion to close the meeting. While most of the questions asked during the meeting were answered, there were some questions for which the panel of presenters did not have specific data. In addition, several persons who attended the meeting filled out comment cards with additional questions.

The following is a brief summary of the questions. Those who filled out comment cards received more detailed responses via letter. Any other questions about the RI/FS or about FMPC operations should be directed to the U.S. Department of Energy, P. O. Box 398705, Cincinnati, Ohio 45239.

Q. When were biological samples taken for the Remedial Investigation?

A. Remedial Investigation sampling began in 1987. At various times in the past two years RI/FS biologists have collected more than 235 samples from mammals, fish, streambed bottom dwellers, vegetation, endangered species, and local ecosystems.

Q. Are birds -- because they drink cistern water and leave droppings in yards where children play -- included in the RI biological sampling program? If not, why not?

A. Birds were not originally included in the biological sampling program because they are not considered to have a significant link to the human population. In addition, the mobility and migratory nature of birds make sampling results difficult to assess because it would not be clear how long birds had actually been in the area surrounding the FMPC. However, the inclusion of birds in future biological sampling is being reviewed.

Q. Explain the meat testing program.

A. Meat testing has been conducted by both the Department of Energy and the U. S. Department of Agriculture. The sampling conducted by DOE tested for the following elements: Cesium 137, Strontium 90, and Uranium 234, 235 and 236, and 238. None of these elements was detected. The USDA testing of animals from farms in the vicinity of the FMPC has confirmed that the meat is safe for human consumption.

Q. Is milk from the cows raised on the nearby dairy farm tested for uranium content?

A. Random sampling of milk produced by dairy cattle near the FMPC is conducted monthly as part of the environmental monitoring program. The milk is tested for the presence of various radionuclides and the results are compared with samples taken from a dairy farm located 22 miles west of the FMPC. These comparisons have consistently shown no difference between milk samples taken near the FMPC and those taken at the farm located several miles away. The milk sampling results are reported annually in the FMPC's Environmental Monitoring Reports. In addition, milk is tested by various government agencies before being sold to the public.

Q. How does the laboratory analyze samples for isotopes?

A. The techniques for isotope analysis vary according to the isotope and the medium (soil, water, etc.) being tested. The Remedial Investigation tests samples for radionuclides historically used, stored, or produced at the FMPC. These include: total uranium, Uranium 234, 235, 236, and 238; Technetium 99; Thorium 230 and 232. Samples are also analyzed for the following isotopes potentially present in trace quantities in FMPC feed materials: Cesium 137; Strontium 90; Ruthenium 106; Neptunium 237; and Plutonium 238, 239, and 240.

Laboratory techniques used include: internal yield monitors to identify alpha emitters of uranium, thorium, and plutonium; spike determination for Neptunium 237, Radium 226 and 228, and Technetium 99; and gravimetric analysis to recover Strontium 90. Direct determinations are made to recover Cesium 137 and Ruthenium 146. The analytical techniques used are discussed in the work plan for the RI/FS. The Work Plan is available for review in the public reading rooms at the plant and at Lane Public Library in Hamilton.

Q. When were groundwater samples collected for the Remedial Investigation?

A. Dates for five rounds of groundwater sampling conducted as part of the Remedial Investigation are: March-June, 1988; July-September, 1988; October, 1988,-January, 1989; January-April, 1989; April-June, 1989. These sampling periods were selected to determine if the seasons affect the quality of local groundwater and sediment. In addition to the RI sampling, groundwater monitoring and sediment sampling have been conducted at the FMPC for several years. Results are reported annually in the FMPC Environmental Monitoring Report.

Q. What is the content of uranium in groundwater, and how does that compare to "background" values?

A. The background level for uranium in groundwater in southwestern Ohio is about 1 microgram per liter. As has been reported in FMPC Environmental Monitoring Reports since 1983, three wells in the South Plume area contain above background concentrations of uranium. The highest concentrations, found in one of those wells, range from 200 to 300 micrograms per liter.

Q. Does the content of uranium in groundwater in the South Plume exceed proposed standards?

A. The groundwater in the South Plume has values of as high as 200 to 300 micrograms per liter of water. The derived concentration guideline, based on the U.S. EPA's proposed drinking water standards, is 32.5 micrograms per liter.

Q. Do you have any records of past instances of water consumption (from wells) in the South Plume area?

A. Yes. Of the three off-site wells in the South Plume having elevated concentrations of uranium, one was replaced in 1985 and is no longer used for drinking water. The other two wells are used for industrial purposes, and the DOE does not have records on past use of these wells.

Q. Why aren't signs posted to warn people about the uranium in Paddy's Run?

A. Concentrations of uranium that are above background for Southwestern Ohio have been detected in water at isolated locations along Paddy's Run, but concentrations found in sediment off site do not exceed background levels. The uranium concentrations found along Paddy's Run do not justify warnings.

Q. Have health studies been done on people drinking water near the plant in the past?

A. To the best of the DOE's knowledge, no health studies of persons drinking from water supplies near the FMPC have been made. The U. S. Centers for Disease Control is currently investigating the need for an epidemiological study of residents who live near the FMPC.

Q. What are the health benefits of discharging the water from the South Plume to the river?

A. Health benefits are a key factor in determining what actions will be taken to address the groundwater contamination present in the South Plume area. Several options are being considered, including removing the groundwater, treating it at the FMPC, and then discharging it to the Great Miami River.

The benefit of pumping water from the South Plume to the river is that groundwater is considered a direct water source for industrial and residential use, while water discharged to surface water provides for significant mixing and additional treatment prior to possible consumption.

Q. Why are trenches being considered to help control stormwater runoff?

A. The trenches are designed to prevent stormwater runoff in the area of the FMPC waste pits from draining into Paddy's Run. This system will prevent potentially-contaminated water from seeping into the regional aquifer south of the FMPC. The trenches, engineered ditches that will be dug along the boundary of the waste pit area, will direct water to a central pumping station. This runoff will be treated before it is released to the Great Miami River through the existing, permitted discharge line.

Q. Has U. S. EPA approved the interim cleanup plans discussed at the meeting?

A. U. S. EPA has concurred with the approaches being considered for interim cleanup actions. The FMPC is preparing documentation for U. S. EPA to provide additional details of the proposed actions.

Q. Are manholes along the FMPC effluent line used to clean the line? Was the overflow at Manhole 180 on the effluent line the first time this ever occurred. On whose property is Manhole 180 located? Is this area used as grazing land for cattle? What is the path of the effluent line? Does it discharge into the river? Why wasn't the community notified about the overflow immediately?

A. On April 4, the FMPC was notified that Manhole 180 on the plant's effluent discharge line overflowed, spilling contaminated water onto farmland adjacent to the plant. The land is not used for grazing. This was the first time that such an overflow had been reported, but it has been learned that such overflows had occurred in the past.

Manhole 180 is located east of the FMPC in an area of bottom land immediately west of U. S. Rte. 128. This manhole is one in a series of manholes that serve as maintenance access to the permitted effluent line which eventually discharges into the Great Miami River. The effluent line was last cleaned and inspected in the fall of 1987.

The public was not notified immediately because the nature and extent of contamination was not initially known. The owner of the property, William Knollman, was immediately contacted and gave approval for the investigation. State and federal regulatory agencies were notified May 2 when initial sampling results were available. It was determined that the May 15 Community Meeting would be the proper forum in which to discuss the occurrence.

Q. Was there a stormwater retention basin overflow on April 28 and/or April 30? There were torrential rains, perhaps the worst this area has seen in quite a while.

A. The stormwater retention basin did not overflow at the end of April. Heavy rains did cause overflows on March 31 and April 4.

Q. How many HEPA filters are in use at the FMPC?

A. HEPA filters -- high-efficiency particulate air filters -- at the FMPC include about 100 portable vacuum units used in various locations in the production area, as well as systems serving operating equipment in various plants. Currently systems in Plant 9 and Plant 1 are operational, three new systems serving operations in Plant 5 are about to go on line, and installation of another HEPA filter system is under way in Plant 6. HEPA filters are part of an overall air pollution control system which is designed to capture 99 percent of particulates generated on site.

Q. Explain the difference between perched water and water contained in the local aquifer. Where and at what depth has contaminated perched water been found at the FMPC?

A. Several layers of different types of materials underlay the FMPC and surrounding area. Immediately beneath the earth's surface is a 50-foot layer of clay-rich till. It includes pockets of sand which can trap water that infiltrates from the surface for long periods of time. This trapped water is called perched water. Below this layer of till is the aquifer, a 150-foot layer of sand and gravel deposits from which water supplies are drawn for both individuals and communities for several miles along the Great Miami River.

Perched water containing above background levels of uranium has been found beneath Plant 6 at the FMPC. This water is being pumped out of the ground and treated to prevent it from reaching the aquifer. The depth and extent of this perched water zone is being investigated.

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