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**PROGRESS REPORT RESULTS ANNOUNCED IN  
3 SAMPLING PROGRAMS SPRING 1989**

**04/15/89**

**DOE-FMPC/PUBLIC**

**6**

**REPORT**



## 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.

- 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**

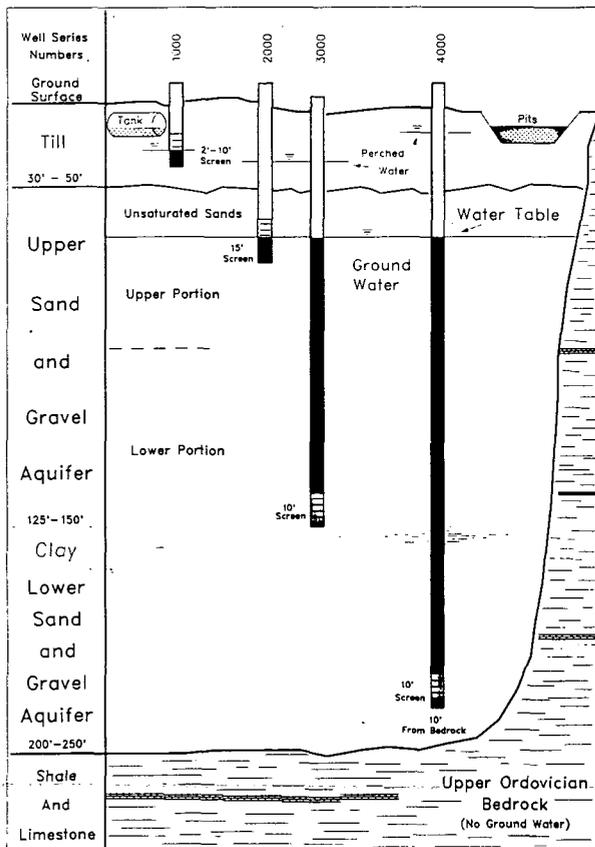
Scientists performing the FMPC Remedial Investigation also regularly take soil samples from the Great Miami River and Paddy's Run. They are trying to identify uranium concentration levels in the sediments that line these waterways. They will determine if these levels are at or above background levels 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 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.**



### Total Uranium Contours 1000 Series Wells

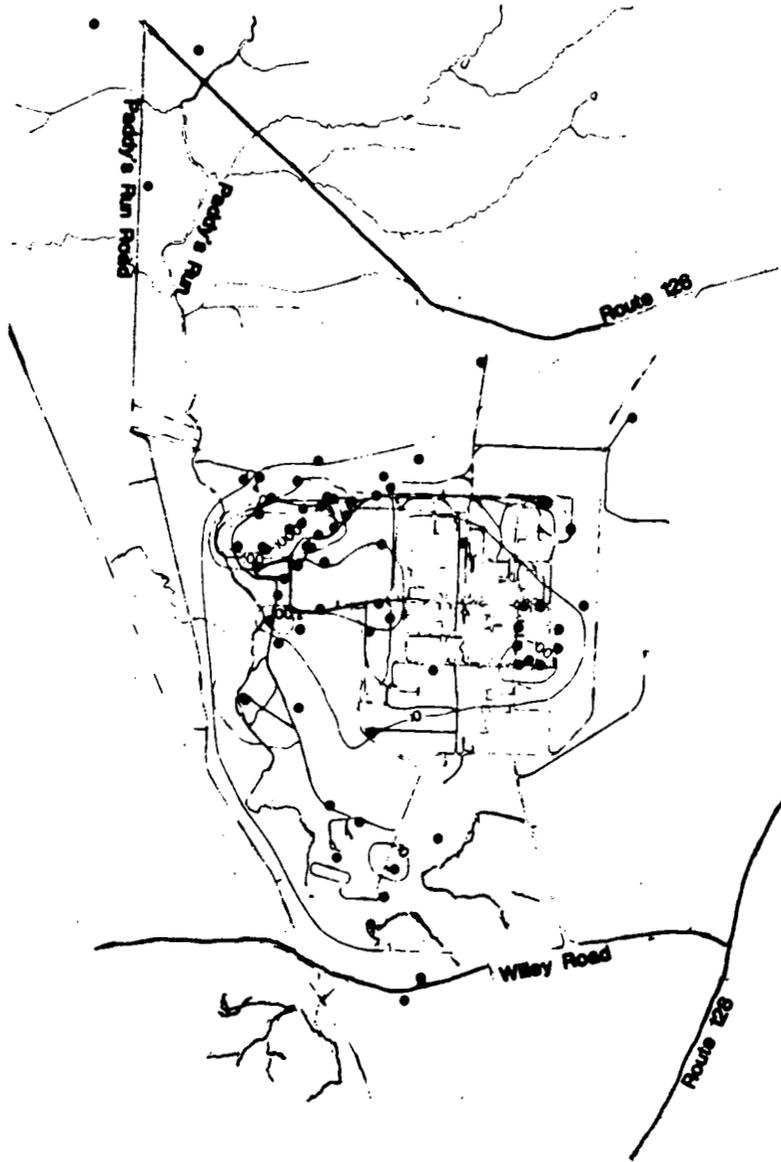


Figure 2. Locations with above-background levels of uranium in the till

# Total Uranium Contours 2000 Series Wells

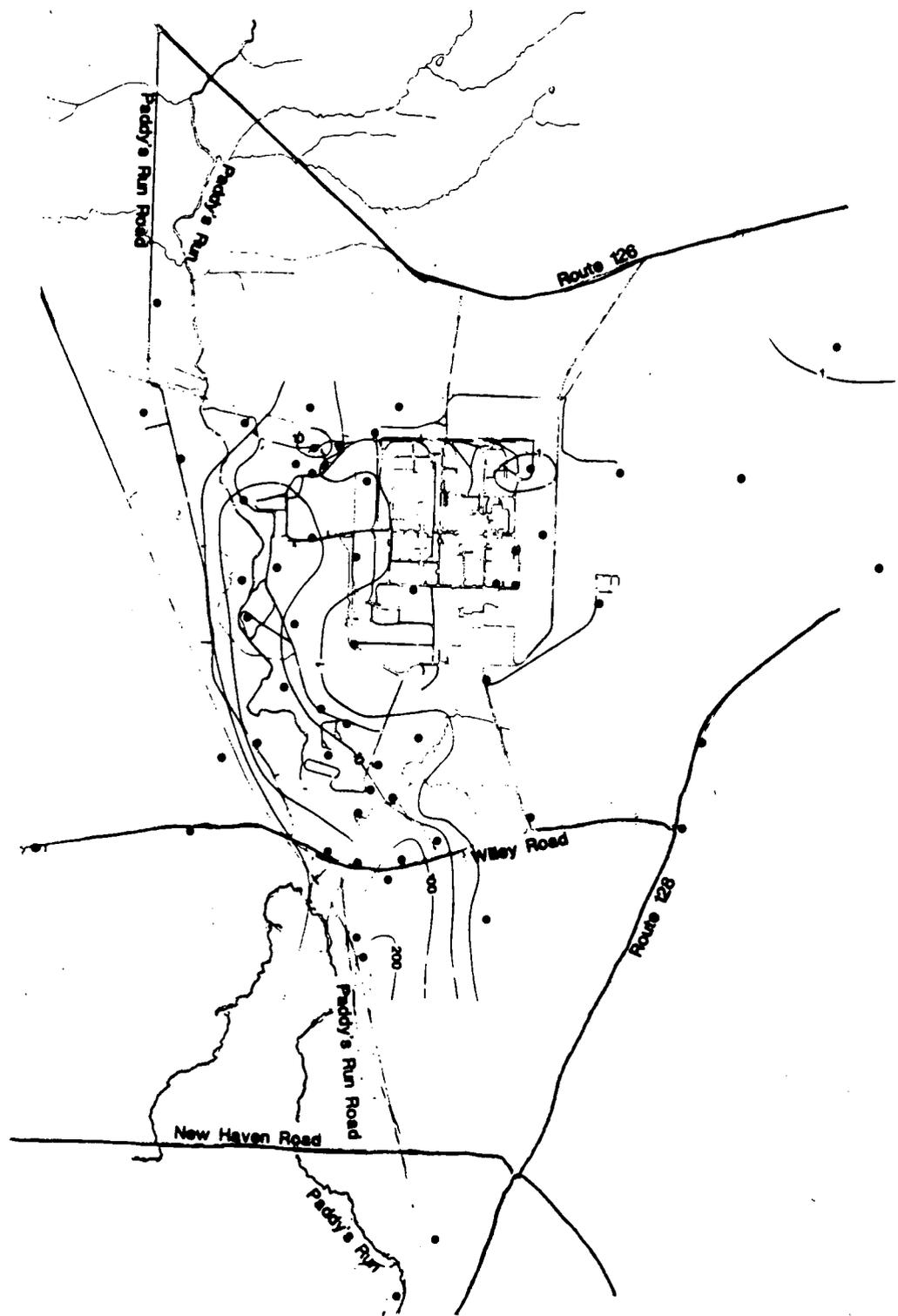


Figure 3. Locations with above-background levels of uranium in the sand-and-gravel aquifer

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.

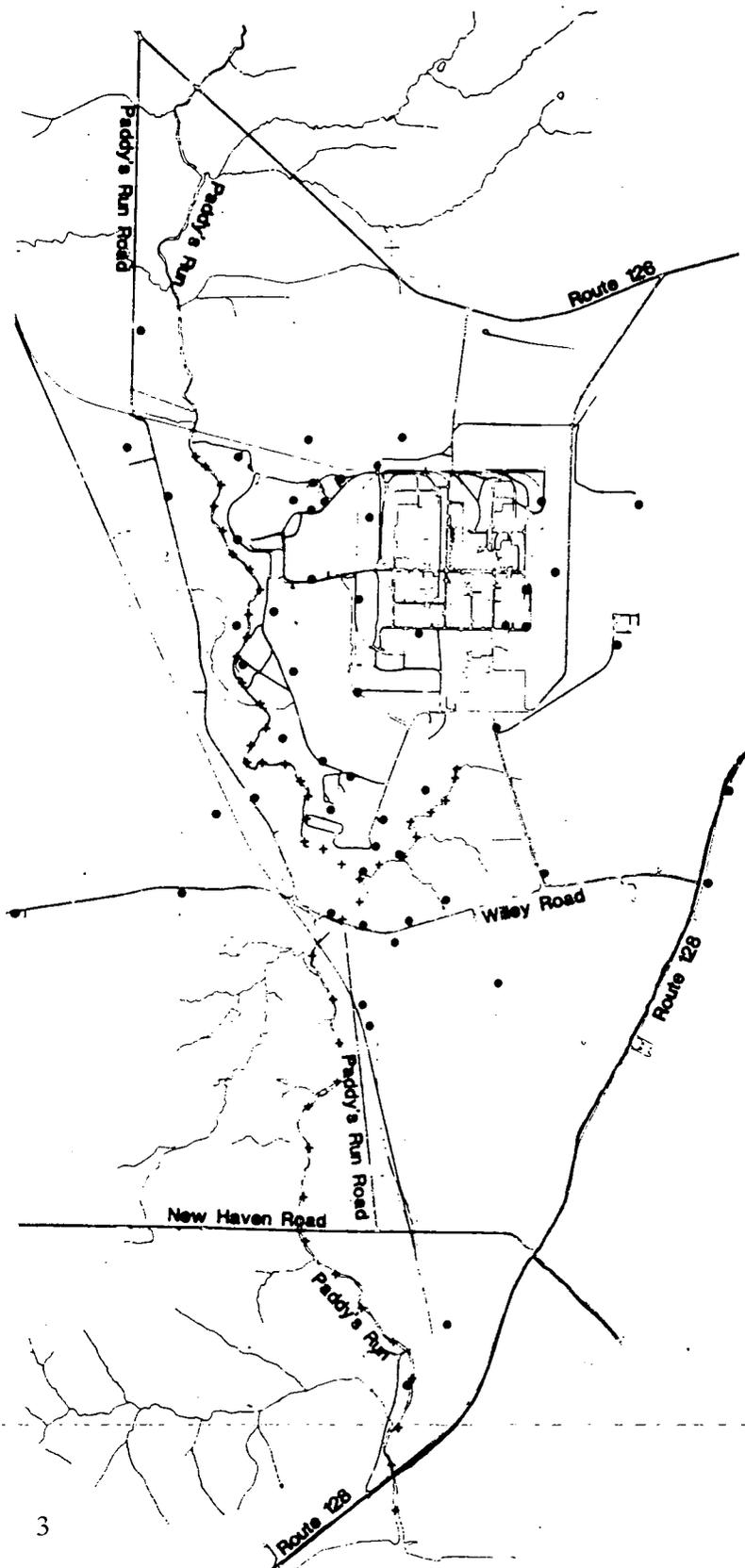
Following standard scientific practices, scientists compared data of garden produce and agricultural products obtained near the FMPC (*Figure 5*) with data collected from a "background site" in Brookville, Indiana. Each sample was handled according to procedures approved by the U.S. Environmental Protection 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.**



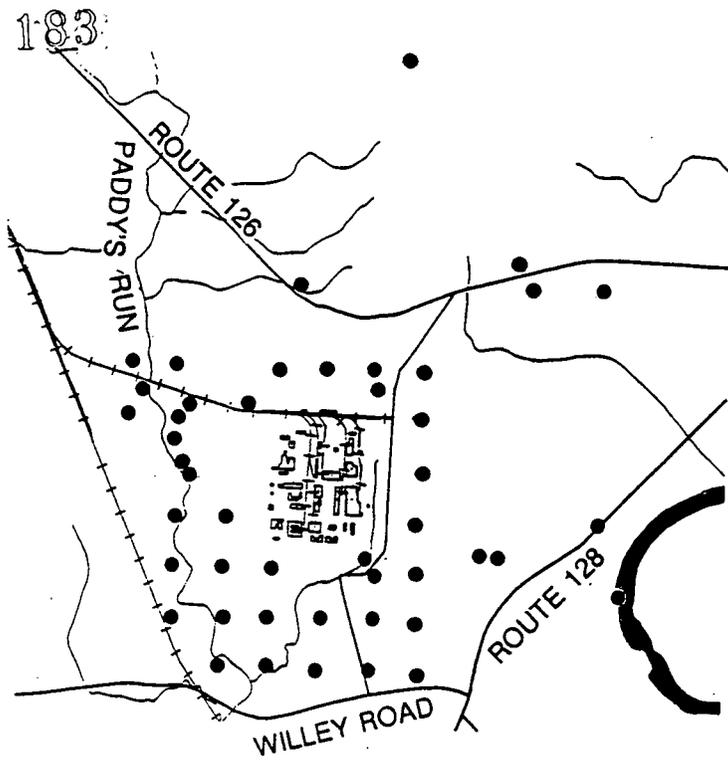


Figure 5. Most biological samples were taken on or near the FMPC; along with those shown here, a few were taken several miles away, along with samples taken near Brookville, Indiana.

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) 738-6378  
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.