



Department of Energy

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AUG 08 2002

David A. & Joann M. Fritz

DOE-0629-02

Dear Mr. & Mrs. Fritz:

GROUNDWATER MONITORING WELL RESULTS FOR 2001

As you are aware, the U.S. Department of Energy (DOE) has installed groundwater Monitoring Wells 2125, 3125, and 4125 on your property to collect water samples for analysis. DOE samples these three wells to track the progress of the site's groundwater restoration.

This letter presents the results of the samples collected in 2001 for Monitoring Wells 2125, 3125, and 4125. Analytical results from 1998 through 2000 for these wells were provided to you last year.

We appreciate your participation in this important program and the water quality results will continue to be reported to you. Also, the water quality monitoring results can be found in annual site environmental reports (issued in June of each year), which are available at the Fernald Environmental Management Project (FEMP) Public Environmental Information Center.

Methodology

FEMP personnel have sampled these monitoring wells per the U.S. Environmental Protection Agency (EPA) and Ohio Environmental Protection Agency requirements. Data from samples collected from the monitoring wells are used to determine the quality of the groundwater in the area surrounding the FEMP.

Results and Discussion

Total uranium is considered the primary constituent of concern at the FEMP. Table 1 summarizes the monitoring results from the three wells for total uranium and compares them to the uranium groundwater Final Remediation Level (FRL). An Explanation of Significant Differences (ESD) pertaining to the site groundwater remedy was approved by EPA on November 30, 2001. The ESD amended the Operable Unit 5 Record of Decision by adopting the Safe Drinking Water Act Maximum Contaminant Level for uranium (30 micrograms per liter [$\mu\text{g/L}$]) as both the FRL for groundwater restoration and the uranium effluent discharge limit to the Great Miami River. Since the new FRL was in effect at the end of 2001, it was used as the basis of comparison for the entire year. As in the past (1990 through 2000), the 2001 total uranium results from Monitoring Well 3125 have exceeded the FRL. The well is located in the South Plume in the vicinity of the South Plume groundwater extraction wells and near the southern limit of the 10-year FEMP groundwater capture zone established by the extraction well system presently operating. It is expected that FRL exceedances may continue to occur until final remediation of the groundwater is attained. The only other FRL exceedance was for bis(2-Ethylhexyl)phthalate at Monitoring Well 2125. Bis(2-Ethylhexyl)phthalate is a common laboratory contaminant and it should be

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noted that associated quality control samples, both laboratory and field blanks, had detected concentrations of bis(2-Ethylhexyl)phthalate. Therefore, the result from the well should be considered suspect and more than likely a result of laboratory contamination rather than being present in the actual sample.

Attachment A is a Fact Sheet that provides explanations of the terms used in this transmittal. When reviewing the monitoring results for each sampling period, please keep in mind that FEMP personnel sample monitoring wells for specific projects. As the FEMP continues its groundwater remediation efforts, the requirements for each project change; therefore, constituents analyzed by the laboratory may also change. Consequently, the constituents analyzed may vary from one sampling event to the next depending on what data are needed in order to fulfill reporting requirements.

The wells on your property were sampled for a range of constituents. The FEMP has conducted independent analyses for these constituents to investigate the possible presence of these constituents at elevated concentrations in groundwater attributable to historical FEMP processing operations. The FEMP has committed to remediate the groundwater in the affected portion of the Great Miami Aquifer and is currently engaged in active groundwater restoration. The aquifer is being cleaned up to concentrations known as FRLs, which are defined in the Record of Decision for Remedial Actions at Operable Unit 5. Attachment A contains more information on FRLs.

Attachment B presents the monitoring results from these three wells and the associated FEMP groundwater FRLs. Those instances where the FRL was exceeded are shown in Attachment B using **bold** typeface. Also, if there was more than one sample result per day (e.g., a duplicate sample), then only the maximum sample concentration is reported and compared to its FRL so as to provide you with the most conservative result.

TABLE 1

2001 MONITORING WELL SUMMARY RESULTS FOR TOTAL URANIUM

Monitoring Well	FRL	Ranges for this Well
2125	30 µg/L	2.87 to 11.921 µg/L
3125	30 µg/L	22.187 to 41.149 µg/L
4125	30 µg/L	1.025 to 2.048 µg/L

Additional information concerning the FEMP restoration plan and documents referred to above are available at the FEMP Public Environmental Information Center located in the Delta Building at 10995 Hamilton-Cleves Highway, Harrison, OH; phone: (513) 648-7480.

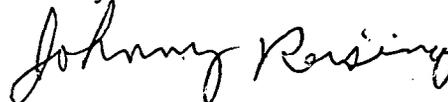
DOE is committed to making the environmental restoration of the FEMP effective and successful. Your

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cooperation in this effort is greatly appreciated. If you have any questions regarding your monitoring results, then please contact Kathleen Nickel at (513) 648-3166.

Sincerely,



Johnny W. Reising
Associate Director
Environmental Management

FEMP: Nickel

Attachments: As stated

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FACT SHEET

This attachment provides explanations for the terms used in this information packet. Please refer to the cover letter for additional information.

Monitoring Results

The monitoring well results report the name of the constituent analyzed, the concentration measured, and the unit of concentration. Some FEMP projects require a determination of the dissolved (filtered) constituent concentration, as well as the total (unfiltered) concentration. Filtering a groundwater sample results in the removal of suspended soil particles that are greater than 0.45 micrometers in diameter. This diameter is approximately equivalent to 1/200 of the thickness of this page.

Units

The monitoring well results are reported in standard concentration or radioactivity units. These are:

- $\mu\text{g/L}$ (micrograms per liter) A unit of measure of the concentration of a substance. This unit is approximately equivalent to parts per billion (ppb). As an illustration, 1 $\mu\text{g/L}$ (ppb) is roughly one drop of gasoline in a railroad box car full of water.
- mg/L (milligrams per liter) A unit of measure of the concentration of a substance. This unit is approximately equivalent to parts per million (ppm). As an illustration, 1 mg/L (ppm) is roughly one drop of gasoline in the gas tank of a full-size automobile.
- pCi/L (picocuries per liter) A unit of measure of the radioactivity of a substance. Radioactivity is the process in which the nucleus of an unstable atom spontaneously decays or disintegrates. Radiation is the energy that is released when the disintegration or decay occurs.

Final Remediation Levels

The Operable Unit 5 Record of Decision established FRLs for FEMP-related contaminants in environmental media (i.e., soil, surface water, sediment, and groundwater). These FRLs are legally binding cleanup levels that will be used to track and certify the completion of the FEMP's remediation process. FRLs were specifically developed for the Great Miami Aquifer for those constituents that are presently in the Great Miami Aquifer and those that have the potential (based on modeling) to reach the aquifer within 1,000 years at levels that pose an unacceptable risk to human health and/or the environment.

ATTACHMENT B

TABLE B-1
MONITORING WELL DATA

Monitoring Well	Constituent	Sample Date	Result ^{a,b}	FRL
2125	1,1-Dichloroethene (unfiltered)	5/2/01	ND	7.0 µg/L
	1,1-Dichloroethane (unfiltered)	5/2/01	ND	7.0 µg/L
	1,2-Dichloroethane (unfiltered)	2/7/01	ND	5.0 µg/L
	1,2-Dichloroethane (unfiltered)	5/2/01	ND	5.0 µg/L
	1,2-Dichloroethane (unfiltered)	8/6/01	ND	5.0 µg/L
	1,2-Dichloroethane (unfiltered)	11/26/01	ND	5.0 µg/L
	4-Nitrophenol (unfiltered)	5/2/01	ND	320 µg/L
	alpha-Chlordane (unfiltered)	5/2/01	ND	2.0 µg/L
	Antimony (unfiltered)	5/2/01	ND	0.0060 mg/L
	Aroclor-1254 (unfiltered)	5/2/01	ND	0.20 µg/L
	Arsenic (unfiltered)	5/2/01	ND	0.050 mg/L
	Barium (unfiltered)	5/2/01	0.0374 mg/L	2.0 mg/L
	Benzene (unfiltered)	5/2/01	ND	5.0 µg/L
	Beryllium (unfiltered)	5/2/01	ND	0.0040 mg/L
	bis(2-Chloroisopropyl)ether (unfiltered)	5/2/01	ND	5.0 µg/L
	bis(2-Ethylhexyl)phthalate (unfiltered)	5/2/01	8 µg/L	6.0 µg/L
	Boron (unfiltered)	5/2/01	0.0404 mg/L	0.33 mg/L
	Bromodichloromethane (unfiltered)	5/2/01	ND	100 µg/L
	Bromomethane (unfiltered)	5/2/01	ND	2.1 µg/L
	Cadmium (unfiltered)	5/2/01	ND	0.014 mg/L
	Carbazole (unfiltered)	5/2/01	ND	11 µg/L
	Carbon disulfide (unfiltered)	5/2/01	ND	5.5 µg/L
	Chloroethane (unfiltered)	5/2/01	ND	1.0 µg/L
	Chloroform (unfiltered)	5/2/01	ND	100 µg/L
	Cobalt (unfiltered)	5/2/01	ND	0.17 mg/L
	Copper (unfiltered)	5/2/01	0.0016 mg/L	1.3 mg/L
	Fluoride (unfiltered) ^c	5/2/01	ND	4 mg/L
	Lead (unfiltered) ^c	5/2/01	0.0021 mg/L	0.015 mg/L
	Manganese (unfiltered)	5/2/01	0.0015 mg/L	0.900 mg/L

TABLE B-1
(Continued)

Monitoring Well	Constituent	Sample Date	Result ^{a,b}	FRL
2125 (Cont'd.)	Mercury (filtered)	2/7/01	ND	0.0020 mg/L
	Mercury (unfiltered)	5/2/01	ND	0.0020 mg/L
	Mercury (unfiltered)	8/6/01	ND	0.0020 mg/L
	Mercury (filtered)	11/26/01	ND	0.0020 mg/L
	Methylene chloride (unfiltered)	5/2/01	ND	5.0 µg/L
	Molybdenum (unfiltered)	5/2/01	ND	0.10 mg/L
	Neptunium-237 (filtered)	2/7/01	ND	1.0 pCi/L
	Neptunium-237 (unfiltered)	5/2/01	ND	1.0 pCi/L
	Neptunium-237 (unfiltered)	8/6/01	ND	1.0 pCi/L
	Neptunium-237 (filtered)	11/26/01	ND	1.0 pCi/L
	Nickel (unfiltered)	5/2/01	0.0032 mg/L	0.10 mg/L
	Nitrate/Nitrite (unfiltered) ^d	2/7/01	3.49 mg/L	11 mg/L
	Nitrate/Nitrite (unfiltered) ^d	5/2/01	ND	11 mg/L
	Nitrate/Nitrite (unfiltered) ^d	8/6/01	1.81 mg/L	11 mg/L
	Nitrate/Nitrite (unfiltered) ^d	11/26/01	3.14 mg/L	11 mg/L
	p-Methylphenol (unfiltered)	5/2/01	ND	29 µg/L
	Radium-226 (unfiltered)	5/2/01	ND	20 pCi/L
	Radium-228 (unfiltered)	5/2/01	1.044 pCi/L	20 pCi/L
	Selenium (unfiltered)	5/2/01	ND	0.050 mg/L
	Silver (unfiltered)	5/2/01	ND	0.050 mg/L
	Strontium-90 (filtered)	2/7/01	ND	8.0 pCi/L
	Strontium-90 (unfiltered)	5/2/01	0.288 pCi/L	8.0 pCi/L
	Strontium-90 (unfiltered)	8/6/01	ND	8.0 pCi/L
	Strontium-90 (filtered)	11/26/01	0.279 pCi/L	8.0 pCi/L
	Technetium-99 (unfiltered)	5/2/01	ND	94 pCi/L
	Thorium-228 (unfiltered)	5/2/01	ND	4.0 pCi/L
	Thorium-230 (unfiltered)	5/2/01	ND	15 pCi/L
	Thorium-232 (unfiltered)	5/2/01	ND	1.2 pCi/L
	Trichloroethene (unfiltered)	5/2/01	ND	5.0 µg/L
	Uranium, Total (filtered)	2/7/01	6.421 µg/L	30 µg/L
	Uranium, Total (unfiltered)	2/7/01	5.642 µg/L	30 µg/L

TABLE B-1
(Continued)

Monitoring Well	Constituent	Sample Date	Result ^{a,b}	FRL
2125 (Cont'd.)	Uranium, Total (unfiltered)	5/2/01	6.288 µg/L	30 µg/L
	Uranium, Total (unfiltered)	8/6/01	11.921 µg/L	30 µg/L
	Uranium, Total (filtered)	11/26/01	9.43 µg/L	30 µg/L
	Uranium, Total (unfiltered)	11/26/01	2.87 µg/L	30 µg/L
	Vanadium (unfiltered)	5/2/01	ND	0.038 mg/L
	Vinyl chloride (unfiltered)	5/2/01	ND	2.0 µg/L
	Zinc (unfiltered)	5/2/01	ND	0.021 mg/L
3125	1,1-Dichloroethene (unfiltered)	5/2/01	ND	7.0 µg/L
	1,1-Dichloroethane (unfiltered)	5/2/01	ND	7.0 µg/L
	1,2-Dichloroethane (unfiltered)	2/7/01	ND	5.0 µg/L
	1,2-Dichloroethane (unfiltered)	5/2/01	ND	5.0 µg/L
	1,2-Dichloroethane (unfiltered)	8/6/01	ND	5.0 µg/L
	1,2-Dichloroethane (unfiltered)	11/26/01	ND	5.0 µg/L
	4-Nitrophenol (unfiltered)	5/2/01	ND	320 µg/L
	alpha-Chlordane (unfiltered)	5/2/01	ND	2.0 µg/L
	Antimony (filtered)	5/2/01	ND	0.0060 mg/L
	Aroclor-1254 (unfiltered)	5/2/01	ND	0.20 µg/L
	Arsenic (filtered)	5/2/01	ND	0.050 mg/L
	Barium (filtered)	5/2/01	0.0605 mg/L	2.0 mg/L
	Benzene (unfiltered)	5/2/01	ND	5.0 µg/L
	Beryllium (filtered)	5/2/01	ND	0.0040 mg/L
	bis(2-Chloroisopropyl)ether (unfiltered)	5/2/01	ND	5.0 µg/L
	bis(2-Ethylhexyl)phthalate (unfiltered)	5/2/01	ND	6.0 µg/L
	Boron (filtered)	5/2/01	0.0146 mg/L	0.33 mg/L
	Bromodichloromethane (unfiltered)	5/2/01	ND	100 µg/L
	Bromomethane (unfiltered)	5/2/01	ND	2.1 µg/L
	Cadmium (filtered)	5/2/01	ND	0.014 mg/L
	Carbazole (unfiltered)	5/2/01	ND	11 µg/L
	Carbon disulfide (unfiltered)	5/2/01	ND	5.5 µg/L
	Chloroethane (unfiltered)	5/2/01	ND	1.0 µg/L
	Chloroform (unfiltered)	5/2/01	ND	100 µg/L

TABLE B-1
(Continued)

Monitoring Well	Constituent	Sample Date	Result ^{a,b}	FRL
3125 (Cont'd.)	Cobalt (filtered)	5/2/01	ND	0.17 mg/L
	Copper (filtered)	5/2/01	ND	1.3 mg/L
	Fluoride (unfiltered) ^c	5/2/01	ND	4 mg/L
	Lead (filtered) ^c	5/2/01	ND	0.015 mg/L
	Manganese (filtered)	5/2/01	0.461 mg/L	0.900 mg/L
	Mercury (filtered)	2/7/01	ND	0.0020 mg/L
	Mercury (filtered)	5/2/01	ND	0.0020 mg/L
	Mercury (filtered)	8/6/01	ND	0.0020 mg/L
	Mercury (unfiltered)	11/26/01	ND	0.0020 mg/L
	Methylene chloride (unfiltered)	5/2/01	ND	5.0 µg/L
	Molybdenum (filtered)	5/2/01	ND	0.10 mg/L
	Neptunium-237 (filtered)	2/7/01	0.019 pCi/L	1.0 pCi/L
	Neptunium-237 (filtered)	5/2/01	ND	1.0 pCi/L
	Neptunium-237 (filtered)	8/6/01	ND	1.0 pCi/L
	Neptunium-237 (unfiltered)	11/26/01	ND	1.0 pCi/L
	Nickel (filtered)	5/2/01	ND	0.10 mg/L
	Nitrate/Nitrite (unfiltered) ^d	2/7/01	ND	11 mg/L
	Nitrate/Nitrite (unfiltered) ^d	5/2/01	ND	11 mg/L
	Nitrate/Nitrite (unfiltered) ^d	8/6/01	ND	11 mg/L
	Nitrate/Nitrite (unfiltered) ^d	11/26/01	ND	11 mg/L
	p-Methylphenol (unfiltered)	5/2/01	ND	29 µg/L
	Radium-226 (filtered)	5/2/01	ND	20 pCi/L
	Radium-228 (filtered)	5/2/01	ND	20 pCi/L
	Selenium (filtered)	5/2/01	ND	0.050 mg/L
	Silver (filtered)	5/2/01	ND	0.050 mg/L
	Strontium-90 (filtered)	2/7/01	ND	8.0 pCi/L
	Strontium-90 (filtered)	5/2/01	ND	8.0 pCi/L
	Strontium-90 (filtered)	8/6/01	ND	8.0 pCi/L
	Strontium-90 (unfiltered)	11/26/01	ND	8.0 pCi/L
	Technetium-99 (filtered)	5/2/01	ND	94 pCi/L
	Thorium-228 (filtered)	5/2/01	ND	4.0 pCi/L

TABLE B-1
(Continued)

Monitoring Well	Constituent	Sample Date	Result ^{a,b}	FRL
3125 (Cont'd.)	Thorium-230 (filtered)	5/2/01	ND	15 pCi/L
	Thorium-232 (filtered)	5/2/01	0.018 pCi/L	1.2 pCi/L
	Trichloroethene (unfiltered)	5/2/01	ND	5.0 µg/L
	Uranium, Total (filtered)	2/7/01	38.731 µg/L	30 µg/L
	Uranium, Total (unfiltered)	2/7/01	41.149 µg/L	30 µg/L
	Uranium, Total (filtered)	5/2/01	33.541 µg/L	30 µg/L
	Uranium, Total (unfiltered)	5/2/01	33.442 µg/L	30 µg/L
	Uranium, Total (filtered)	8/6/01	23.047 µg/L	30 µg/L
	Uranium, Total (unfiltered)	8/6/01	22.187 µg/L	30 µg/L
	Uranium, Total (unfiltered)	11/26/01	27.6 µg/L	30 µg/L
	Vanadium (filtered)	5/2/01	ND	0.038 mg/L
	Vinyl chloride (unfiltered)	5/2/01	ND	2.0 µg/L
	Zinc (filtered)	5/2/01	ND	0.021 mg/L
4125	Uranium, Total (unfiltered)	2/7/01	2.048 µg/L	30 µg/L
	Uranium, Total (filtered)	5/8/01	1.122 µg/L	30 µg/L
	Uranium, Total (unfiltered)	5/8/01	1.113 µg/L	30 µg/L
	Uranium, Total (unfiltered)	8/7/01	1.025 µg/L	30 µg/L
	Uranium, Total (unfiltered)	11/26/01	1.25 µg/L	30 µg/L

^aND = non-detectable concentrations; the lowest concentration that can be reliably detected is known as the detection limit. Non-detectable concentrations are between zero and the detection limit.

^b**Bold** typeface indicates the FRL was exceeded.

^cThe FRLs for fluoride and lead were changed and documented in the Operable Unit 5 Record of Decision by change pages.

^dThe FRL of 11 mg/L is for nitrate, but because of holding time considerations, nitrate/nitrite is analyzed. This is acceptable because nitrate/nitrite provides a more conservative result.