

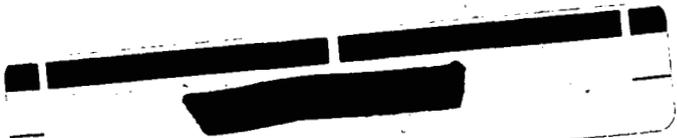
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G-000-102.72

**CHANGES TO THE RCRA GROUNDWATER  
MONITORING PROGRAM AT THE FEMP**

**10/23/91**

**DOE-167-92  
DOE-FO/OEPA  
8  
ENCLOSURE**



**Department of E**  
**Fernald Environmental Management Project**  
 P.O. Box 398705  
 Cincinnati, Ohio 45239-8705  
 (513) 738-6357

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**OCT 23 1991**  
 DOE-167-92

Mr. Thomas A. Winston  
 Southwest District Office  
 Ohio Environmental Protection Agency  
 40 South Main Street  
 Dayton, Ohio 45402-2086

Dear Mr. Winston:

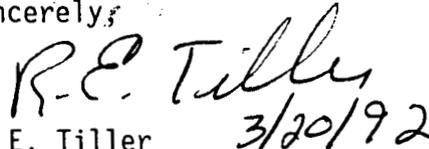
**CHANGES TO THE RCRA GROUNDWATER MONITORING PROGRAM AT THE FEMP**

Monitoring Wells 2013, 3013, and 3051 are listed as RCRA Groundwater Assessment Monitoring Wells in the RCRA GQAPP revision 2, issued in 1991. Due to concerns for the aquifer, these monitoring wells (2013, 3013, and 3051) will be plugged and abandoned. New monitoring wells will be installed to continue monitoring the aquifer in these areas.

In September 1991, a monitoring well cluster (including Monitoring Wells 2013 and 3013) was inspected to determine the integrity of the well construction. The results of the inspection indicate that the integrity of these wells could be compromised. The enclosure is a summary of what was found during the monitoring well cluster inspection.

Additionally, Monitoring Well 3051 has a purge pump lodged in it. The pump is lodged above the water table approximately 25 feet below the ground surface. To date, all attempts at dislodging the pump have been unsuccessful.

If you have any questions, please contact Dave Rast at (513) 738-6322.

Sincerely,  
  
 R. E. Tiller  
 Manager

FO:Rast

Enclosure: As Stated

cc w/encl.:

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J. A. Saric, U.S. EPA - Region V  
G. E. Mitchell, OEPA - Dayton  
M. J. Cherry, WEMCO  
K. Nickel, WEMCO  
B. Smith, WEMCO  
AR Coordinator, WEMCO

## ENCLOSURE 1

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Groundwater samples collected from Monitoring Well 3013 (located in the northeast corner of the Production Area, southeast of the Scrap Metal Pile, at the 013 well cluster (Figure 1) indicate that the concentration of total uranium in the regional sand and gravel aquifer has increased from 11.7 ug/l to 1150 ug/l at this location (Figure 2) over the period from the first quarter of 1990 to the third quarter of 1991.

Monitoring Well 3013 is located in a saturated zone of the regional sand and gravel aquifer. It is clustered with four other wells 1013, 1913, 2013, and 4013. Monitoring wells 1013 and 1913 are completely within in the glacial till. Monitoring Well 2013 is completely within the water table zone of the regional sand and gravel aquifer and Monitoring Well 4013 is situated at the base of the regional sand and gravel aquifer. Monitoring Wells 1013, 2013 and 3013 were installed from 1984 to 1985 as part of a Dames and Moore survey and were later used as RCRA wells and RI/FS wells. No installation information for Monitoring Well 1913 can be located. These wells are constructed of PVC casing. Monitoring Well 4013 is constructed of stainless steel and was installed as part of the RI/FS in February of 1989.

Routine groundwater sampling of Monitoring Well 3013, conducted by the WEMCO Groundwater Programs Group, indicates that uranium concentrations have increased from 11.7 ug/l in 1990 to 1150 ug/l in 1991. In late 1990 a test result of 183 ug/l total uranium was obtained. Discussions with ASI/IT personnel in late 1990 indicated that wells at the 013 well cluster have a history of erratic uranium readings (Table 1). Testing conducted in the first and third quarter of 1991 have confirmed that an increasing trend has developed (Figure 2).

The concentration of uranium in water sampled from Monitoring wells 2013 and 4013 also appears to be increasing, but not as fast as in Monitoring Well 3013. The concentration of uranium in Monitoring Well 2013 is up from an average of 2 ug/l (DOE, 1990) to 7.8 ug/l measured in the third quarter of 1991. The concentration of uranium in Monitoring Well 4013 also appears to be increasing, but its behavior is still erratic. The average concentration of uranium in water collected from 4013 had been 3 ug/l (DOE, 1990). In the fourth quarter of 1990 the concentration measured 80 ug/l and in the third quarter of 1991 the concentration measured 31 ug/l.

The flow direction in this area is generally east. The gradient is very slight indicating that the velocity of flow is very slow. Up-gradient to the 013 cluster, the nearest monitoring location is Monitoring Well 2055 (Figure 1). Total uranium at this location measured 3.9 ug/l in the third quarter of 1991. This indicates that uranium contamination is entering the regional aquifer somewhere between Plant 6 and the Scrap Metal Pile. Down-gradient to the 013 cluster, the nearest monitoring locations are Monitoring Wells 2051 and 3051. Monitoring Well 3051 has a pump stuck in the well and is impossible to sample at this time. The concentration of uranium in water samples collected from Monitoring Well 2051 is approximately 2 ug/l.

On March 06, 1991 ASI/IT issued a proposal to perform additional investigatory work at the 013 cluster to determine the cause of the erratic elevated uranium concentrations (1). Citing that surficial uranium contamination had been

documented along the eastern edge of the former drum bailing area, the proposal stated: the possibility exists that the casing in wells 1013, 1913, 2013 and 3013 is damaged and that contaminated water could be leaking into the deeper wells from this documented surface contamination. On September 05, 1991 WEMCO took responsibility for investigating the integrity of these wells (2).

On Saturday September 14, 1991, WEMCO Groundwater Programs Personnel ran a down hole camera into monitoring wells 1013, 1913, 2013, and 3013. A video tape was made to document the investigation and is on file. The inspection showed that in all four wells, the couplings between some of the casing sections had deteriorated. Continuous streams of reddish-yellow mud were viewed flowing down the inside of the wells from these couplings. This evidence supports the idea presented by ASI/IT in the March 1991 proposal that the casing in the wells was damaged.

Because of the greater durability of stainless steel and the younger age of the well, no inspection of Monitoring Well 4013 was conducted. As it is the deepest of the wells, the erratic behavior in the uranium concentration could be the result of surficial uranium contamination entering the aquifer through the other 013 cluster wells and intermittently reaching the level of Monitoring Well 4013.

INSPECTION REPORT  
DOWNHOLE CAMERA SURVEY AT 013 WELL CLUSTER

References Cited

- (1) Letter, From J.D. Wood to B.J. Davis, "Additional Monitoring Wells", dtd. March 06, 1991.
- (2) Letter (WMCO:CTM:91-007) From D.J. Carr to J. Wood, "Proposal for Additional Wells (17 Wells, 4 Borings, and 12 Contingency Wells", dtd. September 05, 1991.

DOE, 1990, Draft Groundwater Report, Prepared by ASI/IT for the Department of Energy, Cincinnati, Ohio.

Table 1

## Uranium Results From the 013 Well Cluster

<u>Well #</u>	<u>Date Sampled</u>	<u>Total Uranium in ppb</u>
2013	5-3-88	< 1
	8-7-88	< 1
	11-15-88	8
	2-22-89	36
	2-28-89	< 1
	6-15-89	< 1
	8-11-89	< 1
	11-16-89	< 1
3013	5-3-88	4
	8-7-88	4
	11-14-88	11
	11-15-88	8
	2-22-89	490
	2-28-89	4
	6-15-89	12
	8-11-89	10
11-16-89	5	
4013	2-28-89	< 1
	6-06-89	86
	6-15-89	3
	8-11-89	5
	11-16-89	5

Taken From Reference (1)

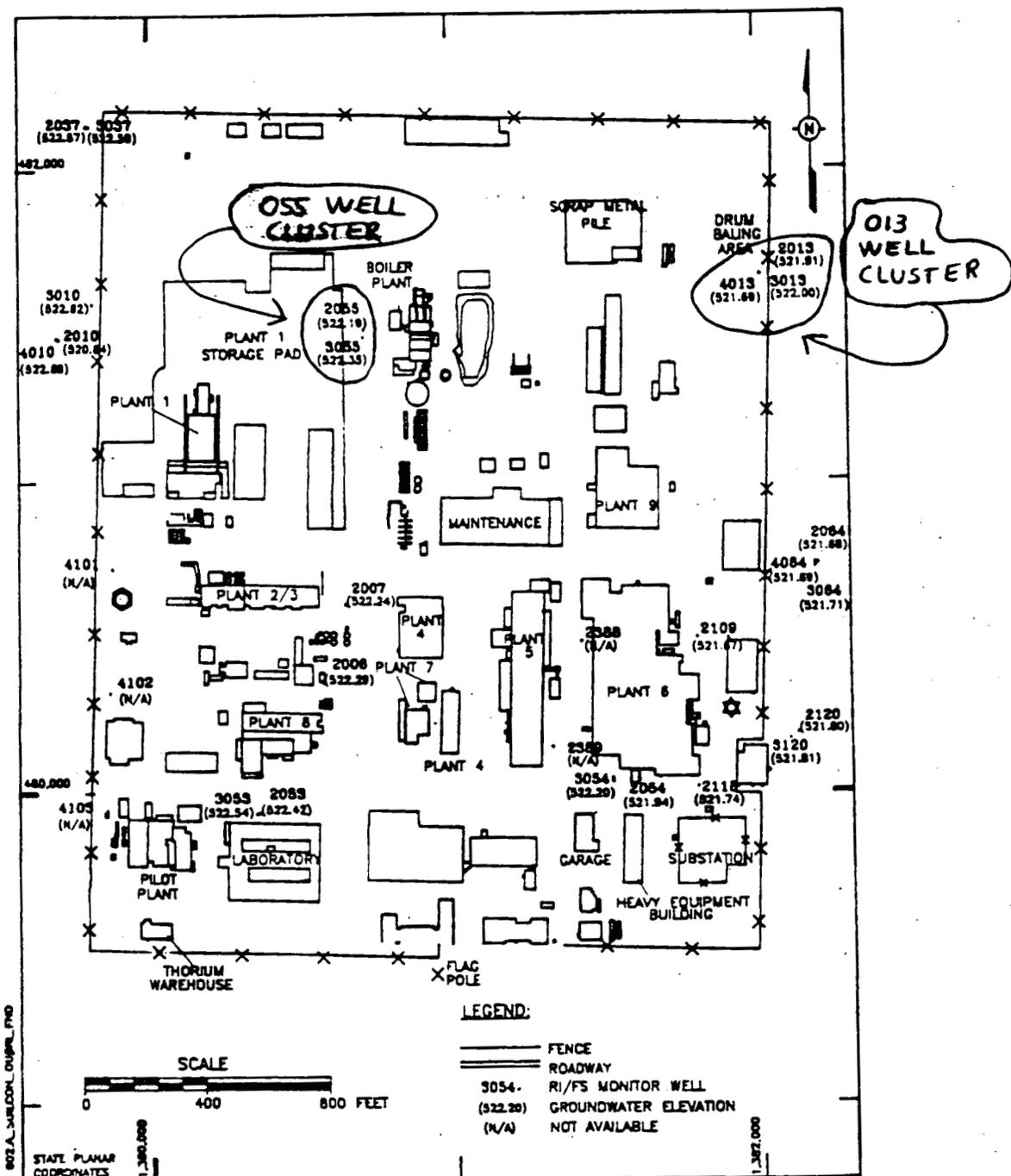


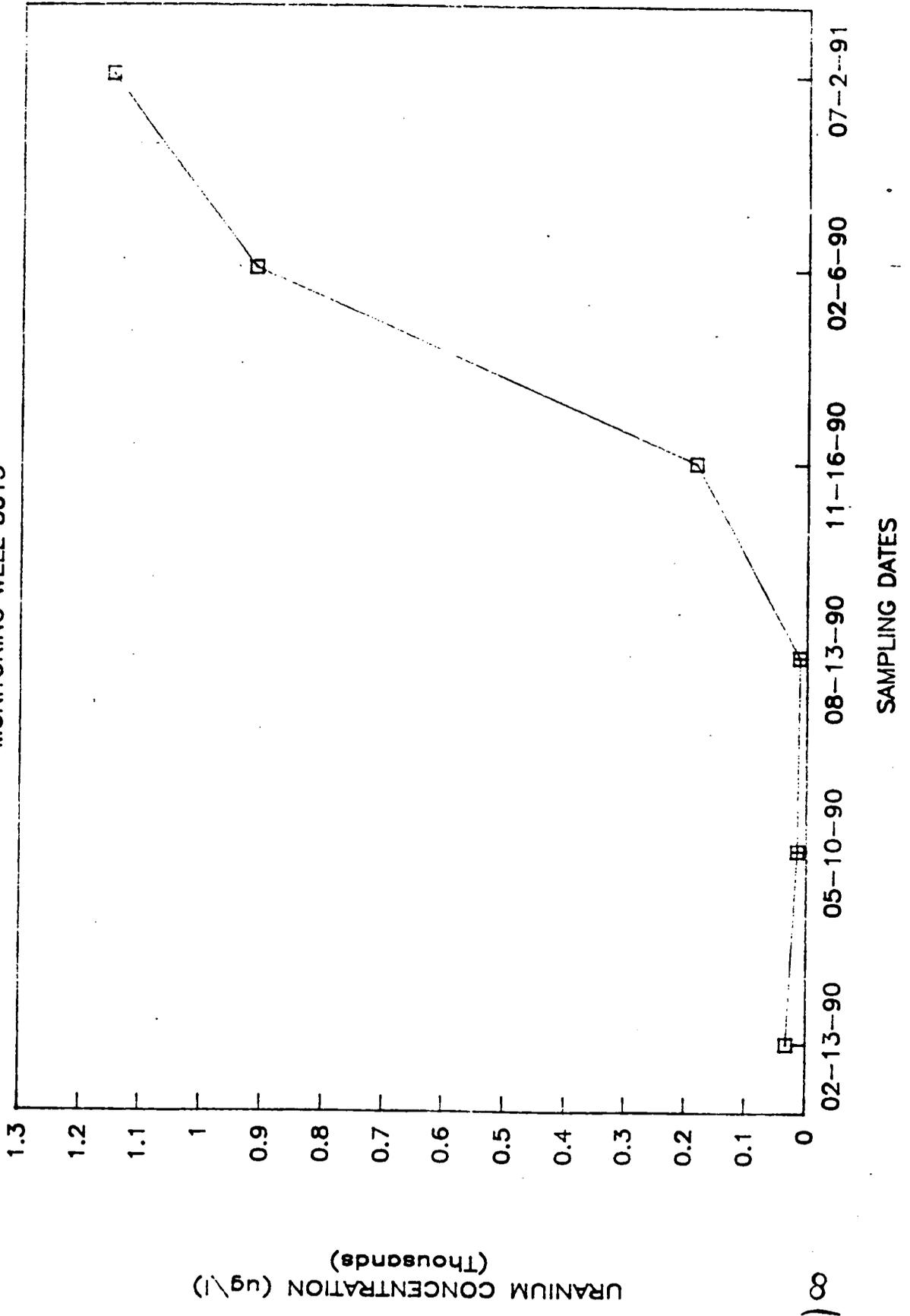
FIGURE 3-12. GROUNDWATER ELEVATIONS - GREAT MIAMI AQUIFER - MARCH 1990

Taken from DOE, 1990, Draft Groundwater Report, Prepared by ASI/IT for the Department of Energy, Cincinnati, Ohio.

Figure 1

# TOTAL URANIUM (ug/l)

MONITORING WELL 3013



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Figure 2