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Department of Energy

**Ohio Field Office
Fernald Area Office**

P. O. Box 538705
Cincinnati, Ohio 45253-8705
(513) 648-3155



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DEC 09 1998

Mr. James M. Raab
Hydrologist/Supervisor
Technical Services Unit
Water Resources Section
Division of Water
Fountain Square
Columbus, Ohio 43224-1387

DOE-0205-99

Dear Mr. Raab:

TRANSMITTAL OF PLUGGING AND ABANDONMENT INFORMATION FOR JANUARY 1997 THROUGH SEPTEMBER 1998 AND WELL LOGS FOR TYPE-4 MONITORING WELLS

- References:
- 1) Letter, J. M. Raab (ODNR) to K. Nickel (DOE-FEMP), dated March 4, 1996
 - 2) Letter, James A. Saric (U.S. EPA) to Johnny Reising (DOE-FEMP), "Well Abandonment," dated June 28, 1996
 - 3) Letter, Thomas A. Schneider (OEPA) to Johnny Reising (DOE-FEMP), "Hamilton County Approval: Well Abandonment Letter," dated May 30, 1996 (DOE-FEMP MSL 531-0297)

This letter transmits information regarding monitoring well plugging and abandonment activities for January 1997 through September 1998 for the Fernald Environmental Management Project (FEMP). This letter fulfills Ohio Revised Code 1521.05(B) requirements for submittal of well abandonment documentation (Reference 1).

During the period, 181 monitoring wells were plugged and abandoned using approved methods (References 2 and 3). The methods used were chosen based on screen depth, casing material, and well location. A list of wells and their corresponding abandonment method is provided as Enclosure 1 and described in detail in Enclosure 2. A representative Ohio Department of Natural Resources (ODNR) Water Well Sealing Report has been completed for the deepest well and lysimeter for which each abandonment method was employed and is included in Enclosure 3.

Also included as Enclosure 4 are Well Log and Drilling Reports from the deepest monitoring wells (Type-4) of each well cluster installed at the FEMP. These Well Log and Drilling

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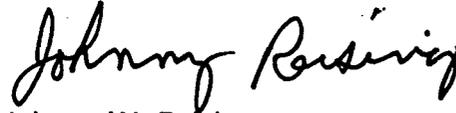
Mr. James M. Raab

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Reports fulfill the requirements of ORC 1521.05(B). In addition, a site map indicating the location of active and abandoned monitoring wells is included for your records.

If you have any questions or comments concerning this documentation, please contact Kathleen Nickel at (513) 648-3166.

Sincerely,



Johnny W. Reising
Associate Director

Environmental Management

FEMP:Nickel

Enclosures

cc w/enclosure:

G. Jablonowski, USEPA-V, SRF-5J
J. A. Saric, USEPA-V, SRF-5J
R. Beaumier, TPSS/DERR, OEPA-Columbus
T. Schneider, OEPA-Dayton (total of 3 copies of enc.)
F. Bell, ATSDR
M. Schupe, HSI GeoTrans
R. Vandegrift, ODH
F. Barker, Tetra Tech
AR Coordinator, FDF/78

cc w/o enclosure:

N. Hallein, EM-42/CLOV
A. Tanner, OH/FEMP
D. J. Brettschneider, FDF/52-5
D. Carr, FDF/52-2
M. J. Cherry, FDF/90
T. Hagen, FDF/65-2
J. Harmon, FDF/90
R. Heck, FDF/2
W. A. Hertel, FDF/52-5
S. Hinnefeld, FDF/90
F. L. Johnston, FDF/52-2
K. Voisard, FDF/12
T. Walsh, FDF/65-2
EDC, FDF/52-7

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ENCLOSURE I

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Well/Lysimeter Plugging and Abandonment Summary Information
January 1997 through September 1998

Well/ Lysimeter	Coordinates NAD83 N	Coordinates NAD83 E	Diameter (In)	Depth (Ft)	Riser Material	Sealing Date
Method 1						
2004	481214.46	1346476.07	8	43.00	Steel	9-3-98
2028	481840.79	1346683.25	4	79.00	Stainless	7-14-98
2047	478293.20	1347585.19	4	62.00	Stainless	2-27-97
2401	478157.18	1347636.22	4	61.00	Stainless	1-7-97
2420	480486.57	1351150.73	4	87.00	Stainless	4-28-97
2643	481933.42	1347269.62	4	82.00	Stainless	9-17-98
2754	484178.51	1351996.65	4	102.00	Stainless	6-26-97
2943	477503.97	1348166.90	4	66.00	Stainless	1-16-97
2944	477543.41	1348024.06	4	67.00	Stainless	1-15-97
2945	478001.54	1347650.96	4	55.50	Stainless	1-23-97
2954	477833.64	1347937.50	4	64.00	Stainless	1-20-97
2955	478133.17	1347484.09	4	67.00	Stainless	1-8-97
3004	481457.18	1346427.24	4	105.00	Stainless	7-29-98
3435	481769.03	1347612.82	4	131.00	Stainless	6-17-98
Method 2						
1010	481482.03	1348221.65	4	26.50	Stainless	5-19-97
1025	482051.2	1346840.49	4	23.00	Stainless	6-22-98
1028	481850.98	1346689.11	4	31.00	Stainless	7-13-98
1033	480442.26	1347206.2	4	21.00	Stainless	9-1-98
1034	480270.22	1346941.34	4	20.00	Stainless	9-1-98
1039	480758.51	1348190.10	4	26.50	Stainless	5-21-97
1046	478084.12	1347959.53	4	21.90	Stainless	1-6-97
1047	478287.80	1347593.51	4	17.40	Stainless	2-27-97
1054	480079.66	1350055.13	2	18.70	Stainless	5-14-97
1055	481505.56	1349234.29	2	17.00	Stainless	5-12-97
1073	481447.03	1346733.77	4	29.00	Stainless	7-1-98
1075	481666.8	1347066.88	4	28.00	Stainless	7-2-98
1078	481918.27	1347235.33	4	34.60	Stainless	6-24-98
1079	482203.08	1346696.44	4	39.00	Stainless	9-22-98

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Well/ Lysimeter	Coordinates NAD83 N	Coordinates NAD83 E	Diameter (In)	Depth (Ft)	Riser Material	Sealing Date
1080	482259.25	1347161.49	4	51.50	Stainless	9-22-98
Method 2 (Continued)						
1081	482070.62	1347534.73	4	33.00	Stainless	6-22-98
1082	482040.83	1347618.18	4	24.00	Stainless	6-23-98
1083	481834.38	1347771.03	4	22.50	Stainless	6-22-98
1084	481954.65	1347465.35	4	33.00	Stainless	6-23-98
1085	481999.79	1350270.53	4	18.00	Stainless	1-30-97
1086	481013.95	1350247.41	4	18.00	Stainless	1-30-97
1087	481992.43	1350217.35	4	18.00	Stainless	1-30-97
1088	482006.65	1350199.84	4	18.00	Stainless	1-30-97
1089	481995.46	1350247.44	4	18.00	Stainless	1-30-97
1090	482024.87	1350215.43	4	18.00	Stainless	1-30-97
1110	480455.69	1350420.77	2	10.50	PVC	5-27-97
1111	480225.57	1350409.05	2	11.50	PVC	5-28-97
1112	480020.92	1350194.14	2	19.50	PVC	5-27-97
1113	480022.10	1349934.25	2	13.50	PVC	5-27-97
1117	480732.88	1350193.45	2	15.50	PVC	6-3-97
1130	480748.32	1349284.31	2	10.00	PVC	6-3-97
1134	480774.54	1348380.29	2	16.00	PVC	6-11-97
1137	480527.53	1349569.52	2	12.90	PVC	6-12-97
1145	480480.06	1350214.42	2	20.00	PVC	5-15-97
1150	480449.25	1349280.84	2	14.50	PVC	6-12-97
1151	480472.46	1349702.64	2	10.50	PVC	5-1-97
1156	480225.75	1349561.98	2	7.50	PVC	6-3-97
1157	480192.77	1349683.99	2	13.50	PVC	5-7-97
1167	480052.10	1349272.18	2	10.00	PVC	5-28-97
1172	479941.34	1350044.33	2	10.00	PVC	7-1-98
1177	480758.10	1348609.60	2	25.00	PVC	6-9-97
1178	480749.2	1348726.59	2	13.50	PVC	7-16-97
1179	480759.21	1348769.48	2	18.00	PVC	7-16-97
1180	480757.63	1348799.19	2	9.00	PVC	7-22-97
1182	480734.45	1348853.7	2	13.00	PVC	7-22-97

Well/ Lysimeter	Coordinates NAD83 N	Coordinates NAD83 E	Diameter (In)	Depth (Ft)	Riser Material	Sealing Date
1183	480733.39	1348886.28	2	15.50	PVC	7-21-97
1185	480717.67	1349002.78	2	19.00	PVC	7-17-97
Method 2 (Continued)						
1186	480731.32	1349064.36	2	15.50	PVC	7-21-97
1187	480754.52	1349116.98	2	15.00	PVC	7-14-97
1198	480631.06	1349235.11	2	15.00	PVC	6-5-97
1199	480627.99	1348744.21	2	17.40	PVC	7-24-97
1200	480606.47	1348846.25	2	16.50	PVC	7-10-97
1201	480603.46	1348921.6	2	13.50	PVC	8-7-97
1202	480611.23	1348990.6	2	16.00	PVC	8-7-97
1203	480598.33	1349017.9	2	16.50	PVC	8-7-97
1204	480623.94	1349088.45	2	19.00	PVC	8-6-97
1205	480595.44	1349088.69	2	15.00	PVC	8-6-97
1206	480575.96	1349056.9	2	15.00	PVC	8-6-97
1207	480596.5	1348585.81	2	9.00	PVC	7-14-97
1208	480579.91	1348729.73	2	20.00	PVC	7-9-97
1210	480514.80	1348375.44	2	10.50	PVC	6-10-97
1211	480518.6	1348571.1	2	10.50	PVC	7-7-97
1212	480512.98	1348706.47	2	16.50	PVC	7-24-97
1213	480549.24	1348748.84	2	10.00	PVC	7-9-97
1214	480499.33	1348817.67	2	14.50	PVC	7-28-97
1215	480535.37	1349065	2	15.50	PVC	8-6-97
1216	480494.8	1348992.48	2	16.50	PVC	8-5-97
1218	480441.26	1348483.54	2	10.50	PVC	6-10-97
1219	480431.4	1348621.93	2	11.50	PVC	7-7-97
1220	480426.43	1348740.35	2	19.60	PVC	7-23-97
1221	480474.82	1348795.74	2	14.00	PVC	7-30-97
1224	480388.56	1348798.46	2	20.00	PVC	7-15-97
1225	480436.77	1349073.24	2	16.50	PVC	8-14-97
1226	480445.03	1349231.29	2	15.00	PVC	6-9-97
1228	480330.53	1348829.89	2	15.00	PVC	7-8-97
1230	480310.50	1348586.00	2	18.00	PVC	6-10-97

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Well/ Lysimeter	Coordinates NAD83 N	Coordinates NAD83 E	Diameter (In)	Depth (Ft)	Riser Material	Sealing Date
1231	480266.36	1348740.42	2	20.00	PVC	7-8-97
1232	480313.29	1348763.41	2	20.00	PVC	7-7-97
1234	480237.28	1348761.48	2	10.50	PVC	7-8-97
Method 2 (Continued)						
1236	480336.43	1349048.67	2	13.30	PVC	8-4-97
1237	480309.19	1349217.19	2	15.00	PVC	6-5-97
1241	480059.37	1348808.93	2	15.50	PVC	6-9-97
1242	480059.98	1349038.20	2	15.00	PVC	6-5-97
1243	480068.85	1349089.21	2	13.50	PVC	6-5-97
1244	480089.56	1349149.72	2	15.00	PVC	6-17-97
1245	479981.29	1348588.82	2	16.50	PVC	6-10-97
1255	479830.97	1348779.74	2	13.00	PVC	9-30-97
1259	479770.77	1348509.36	2	20.00	PVC	7-02-97
1260	479784.96	1348446.7	2	9.00	PVC	9-16-97
1262	479891.83	1348752.68	2	12.00	PVC	9-12-97
1263	479830.36	1348731.64	2	13.50	PVC	7-3-97
1266	479743	1348744.48	2	20.00	PVC	7-3-97
1267	479637	1348429.87	2	16.50	PVC	7-3-97
1268	479652.86	1348539.31	2	15.00	PVC	9-2-97
1269	479601.87	1348780.76	2	12.0	PVC	1-21-98
1270	479601.59	1348997.32	2	9.0	PVC	1-21-98
1278	481884.27	1349504.33	2	10.50	PVC	5-14-97
1279	481880.51	1349889.40	2	14.40	PVC	5-14-97
1283	481733.10	1349618.88	2	10.50	PVC	5-22-97
1299	481214.54	1349734.56	2	18.00	PVC	6-4-97
1301	481190.80	1350180.36	2	12.00	PVC	2-10-97
1317	480976.94	1349777.88	2	20.00	PVC	8-19-97
1340	481647.98	1349265.90	2	20.00	PVC	5-13-97
1344	481392.42	1349259.30	2	20.00	PVC	5-8-97
1351	480969.82	1348430.73	2	20.00	PVC	6-19-97
1352	480919.15	1348535.38	2	15.00	PVC	6-19-97
1354	480922.93	1349022.64	2	20.00	PVC	6-23-97

Well/ Lysimeter	Coordinates NAD83 N	Coordinates NAD83 E	Diameter (In)	Depth (Ft)	Riser Material	Sealing Date
1356	480858.01	1348568.70	2	20.00	PVC	6-11-97
1357	480837.61	1348568.68	2	16.50	PVC	6-16-97
1358	480822.13	1348645.59	2	13.00	PVC	6-16-97
1359	480833.36	1348671.05	2	15.00	PVC	6-17-97
Method 2 (Continued)						
1360	480812.82	1349037.34	2	16.50	PVC	7-1-97
1363	481641.39	1349681.55	2	20.00	PVC	5-22-97
1411	479830.33	1348445.9	2	12.00	PVC	9-16-97
1418	480713.50	1350413.70	2	10.50	PVC	5-28-97
1433	478020.87	1347647.18	4	12.50	Stainless	12-31-97
1442	480114.55	1351641.67	2	9.00	PVC	4-8-97
1443	480152.53	1351763.46	2	18.00	PVC	4-8-97
1444	480099.57	1351723.33	2	15.00	PVC	4-8-97
1448	480015.79	1351642.84	2	15.00	PVC	4-8-97
1645	481612.63	1347591.23	4	25.50	Stainless	6-24-98
1646	481772.46	1347625.83	4	25.50	Stainless	6-18-98
1711	478155.87	1347499.9	4	15.50	Stainless	12-30-97
1733	477109.82	1351687.50	4	29.50	Stainless	4-8-97
1754	484167.70	1351998.38	4	30.00	Stainless	6-25-97
1765	481407.07	1346820.94	4	22.50	Stainless	7-1-98
1766	481378.92	1346771.49	4	20.50	Stainless	7-1-98
1767	481318.63	1346809.72	4	21.00	Stainless	7-1-98
1769	481503.69	1346999.54	4	22.00	Stainless	7-1-98
1772	481801	1347031.33	4	36.50	Stainless	7-2-98
1777	481807.11	1347187.55	4	26.00	Stainless	7-13-98
1786	480857.93	1350212.70	4	15.00	Stainless	2-10-97
1837	480868.56	1347258.08	4	8.50	Stainless	8-27-98
1842	479956.65	1350503.90	2	12.20	PVC	2-18-97
1891	480390.48	1378334.69	2	9.00	PVC	9-1-98
1892	480475.35	1346870.21	2	21.00	PVC	9-1-98
1893	480590.26	1346876.17	2	12.00	PVC	9-1-98
1941	477962.12	1348223.01	2	13.50	Stainless	12-31-97

Well/ Lysimeter	Coordinates NAD83 N	Coordinates NAD83 E	Diameter (In)	Depth (Ft)	Riser Material	Sealing Date
1942	477691.89	1348158.56	2	16.00	Stainless	1-7-97
1943	481924.04	1378726.28	4	30.00	Stainless	6-23-98
1944	481640.17	1347173.22	4	30.00	Stainless	7-13-98
1954	477894.08	1347931.10	2	19.00	Stainless	1-6-97
2084	481951.94	1347471.27	4	77.00	Stainless	9-21-98
Method 2 (Continued)						
2435	481778.4	1347608.23	4	72.00	Stainless	9-18-98
2822	481262.82	1347015.42	4	70.00	Stainless	7-15-98
11073	481092.08	1348322.52	4	20.00	Stainless	5-20-97
11074	481228.50	1349308.34	4	20.00	Stainless	5-12-97
11075	479784.75	1350182.54	2	15.00	Stainless	6-2-97
11076	481448.28	1346440.1	4	21.50	Stainless	7-29-98
11079	481067.78	1347002.7	4	23.50	Stainless	9-14-98
Method 3						
1235	480254.63	1348925.37	4	17.50	Stainless	6-2-97
1606	480404.27	1350161.21	4	20.00	Stainless	6-3-97
1607	480333.17	1350167.74	4	20.00	Stainless	6-3-97
1612	480409.46	1350262.05	4	19.60	Stainless	6-3-97
1613	480312.56	1350244.77	4	20.00	Stainless	6-3-97
Method 4						
1447	480020.94	1351550.16	2	8.00	PVC	4-9-97
1843	479935.00	1351053.37	2	18.50	PVC	4-23-97
1844	479930.33	1351331.92	2	18.00	PVC	4-17-97
11067	480223.10	1351313.70	4	19.40	Stainless	4-24-97
11548	479737.948	1350943.25	2	14.25	Stainless	4-22-97
11693	480088.52	1351312.37	2	25.00	Stainless	4-22-97
Method 5						
11130	478540.45	1351264.49	2	22.50	PVC	4-16-97

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ENCLOSURE II

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**ENCLOSURE II - WELL PLUGGING AND ABANDONMENT
SUMMARY INFORMATION JANUARY 1997 THROUGH SEPTEMBER 1998**

The plugging methods used are described below:

NOTE: Asterisk (*) indicates the deepest well/lysimeter per method.

Method 1: Fill the screened interval with sand and cap with a 2 to 5-foot thick bentonite seal. Cut the riser 5 feet below the base of the glacial overburden and remove. Inject expansive cement grout or bentonite grout into the remaining riser and hole bringing grout flush to the surface.

Note: Wells 2420, 2028, 2643, and 3435 were sealed with expansive cement grout to 12 feet below the surface, bentonite grout to six inches below the surface, and concrete the remaining six inches.

Wells plugged using Method 1: 2004, 2047, 2401, 2420, 2754, 2943, 2944, 2945, 2954, 2955, 2028, 2643, 3004, 3435*

Method 2: Pull riser and screen from the ground. Inject expansive cement grout or bentonite grout into the resultant hole, bringing grout flush to the surface.

Wells plugged using Method 2: 1010, 1039, 1046, 1047, 1054, 1055, 1085, 1086, 1087, 1088, 1089, 1090, 11073, 11074, 11075, 1110, 1111, 1112, 1113, 1117, 1130, 1134, 1137, 1145, 1150, 1151, 1156, 1157, 1167, 1177, 1198, 1210, 1226, 1230, 1237, 1241, 1242, 1243, 1244, 1245, 1278, 1279, 1283, 1299, 1301, 1340, 1344, 1351, 1352, 1354, 1356, 1357, 1358, 1359, 1363, 1418, 1442, 1443, 1444, 1733, 1754, 1786, 1842, 1942, 1954, 1268, 1266, 1211, 1267, 1219, 1232, 1263, 1360, 1234, 1231, 1186, 1185, 1208, 1224, 1213, 1178, 1200, 1187, 1207, 1183, 1180, 1182, 1259, 1228, 1220, 1199, 1179, 1212, 1214, 1221, 1203, 1202, 1201, 1216, 1236, 1205, 1204, 1317, 1225, 1206, 1215, 1262, 1260, 1255, 1411, 1218, 1941, 1433, 1711, 1269, 1270, 1172, 1025, 1028, 1033, 1034, 1073, 1075, 1078, 1079, 1080, 1081, 1082, 1083, 1084, 2084*, 2435, 1645, 1646, 1765, 1766, 1767, 1769, 1772, 1777, 1837, 1891, 1892, 1893, 1943, 1944, 2822, 11076, 11079, 1448

Method 3: Fill riser and screen with bentonite pellets and hydrate the pellets.

Wells temporarily plugged using Method 3: 1235, 1606, 1607, 1612, 1613*.

This is a temporary plugging method. The well casing will be removed later as the building foundations are excavated.

Method 4: Pull well riser and screen and overdrill original boring to remove all well construction materials. Inject expansive cement grout or bentonite grout into the resultant hole. If expansive cement is used, fill to a depth of 12 feet below ground surface and inject bentonite grout slurry into the remaining hole to six inches below the surface. If only bentonite grout is used, fill hole to six inches below ground surface. Fill remaining six inches with concrete.

Wells plugged using Method 4: 11067, 11548, 11693*, 1447, 1843, 1844

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Method 5: Pull inner riser, lysimeter cup, and outer steel casing from the ground. Inject expansive cement grout into the resultant hole, bringing grout flush to the surface.

Lysimeters plugged using Method 5: 11130*

ENCLOSURE III

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WATER WELL SEALING REPORT
(For Abandoned or Unused Wells)
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Water, Ground Water Resources Section
1939 Fountain Square Drive
Columbus, Ohio 43224-1360

LOCATION Fernald Environmental Management Project (FEMP)

County Hamilton Township Crosby Section 6
Property Owner United States Department of Energy

Address of Property 7400 Willey Road, Fernald, Ohio 45013
Location (NAD83 State Planar Coordinates) N481769.03 E1347612.82

ORIGINAL WELL

ODNR Well Log Number NA Copy attached? Yes or No FEMP ID# 3435
(circle one)

MEASURED CONSTRUCTION DETAILS Date of Measurements 11-4-92

Depth of Well 131.0 feet Static Water Level 48.45 feet
Size of Casing 4 inch ID Length of Casing 118 feet
Well Condition good

SEALING PROCEDURE

Method of Placement Poured sand and bentonite pellets. Tremied bentonite grout.

Placement:	From	To	Sealing Material	Volume
	<u>131.0 feet</u>	<u>115.3 feet</u>	<u>Sand (Global #5)</u>	<u>1.28 feet³</u>
	<u>115.3 feet</u>	<u>102.9 feet</u>	<u>bentonite pellets</u>	<u>1.08 feet³</u>
	<u>102.9 feet</u>	<u>0.0 feet</u>	<u>bentonite grout</u>	<u>8.95 feet³</u>

Was Casing Removed? Yes or No Amount Removed 47.0 feet (partial well removed)
(circle one)

Condition of Casing good

Perforations: From NA To NA
From NA To NA

Date Sealing Performed 6-17-98

Reason(s) for Sealing Abandoned in advance of excavation and construction remediation activities.

CONTRACTOR

Name Moody's of Dayton ODH Registration # _____
Address 4359 Infirmary Road P.O. Box 509
City/State/Zip Miamisburg, Ohio 45343

FEMP Geologist Signature Keith Payne
(Keith Payne)

NOTE: Length of casing does not include length of screen.
NA: Not Applicable or Not Available.

WATER WELL SEALING REPORT
(For Abandoned or Unused Wells)
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Water, Ground Water Resources Section
1939 Fountain Square Drive
Columbus, Ohio 43224-1360

1875

LOCATION Fernald Environmental Management Project (FEMP)

County Hamilton Township Crosby Section 6
Property Owner United States Department of Energy

Address of Property 7400 Willey Road, Fernald, Ohio 45013
Location (NAD83 State Planar Coordinates) N481951.94 E1347471.27

ORIGINAL WELL

ODNR Well Log Number NA Copy attached? Yes or No FEMP ID# 2084
(circle one)

MEASURED CONSTRUCTION DETAILS Date of Measurements 11-19-87

Depth of Well 77.0 feet Static Water Level 63.3 feet
Size of Casing 4 inch ID Length of Casing 58.4 feet
Well Condition good

SEALING PROCEDURE

Method of Placement Tremied bentonite grout.

Placement:	From	To	Sealing Material	Volume
	<u>77.0 feet</u>	<u>0.0 feet</u>	<u>bentonite grout</u>	<u>13.09 feet³</u>
	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

Was Casing Removed? Yes or No Amount Removed 77.0 feet
(circle one)

Condition of Casing good

Perforations: From NA To NA
From NA To NA

Date Sealing Performed 9-21-98

Reason(s) for Sealing Abandoned in advance of excavation and construction remediation activities.

CONTRACTOR

Name Moody's of Dayton ODH Registration # _____
Address 4359 Infirmary Road P.O. Box 509
City/State/Zip Miamisburg, Ohio 45343

FEMP Geologist Signature *Keith Payne*
(Keith Payne)

NOTE: Length of casing does not include length of screen.
NA: Not Applicable or Not Available.

000015

SUBMIT COMPLETED FORM TO ODNR-DIVISION OF WATER

WATER WELL SEALING REPORT
(For Abandoned or Unused Wells)
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Water, Ground Water Resources Section
1939 Fountain Square Drive
Columbus, Ohio 43224-1360

LOCATION Fernald Environmental Management Project (FEMP)

County Hamilton Township Crosby Section 8 5
Property Owner United States Department of Energy

Address of Property 7400 Willey Road, Fernald, Ohio 45013
Location (NAD83 State Planar Coordinates) N480312.56 E1350244.77

ORIGINAL WELL

ODNR Well Log Number NA Copy attached? Yes or No FEMP ID# 1613
(circle one)

MEASURED CONSTRUCTION DETAILS

Date of Measurements 2-3-91

Depth of Well 20.0 feet Static Water Level 8.45 feet
Size of Casing 4 inch ID Length of Casing 9.5 feet
Well Condition good

SEALING PROCEDURE

Method of Placement Fill riser and screen with bentonite pellets (hydrated).

Placement:	From	To	Sealing Material	Volume
	<u>20.0 feet</u>	<u>0.0 feet</u>	<u>bentonite pellets</u>	<u>3.4 feet³</u>
	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

Was Casing Removed? Yes or No Amount Removed none
(circle one)

Condition of Casing good

Perforations: From NA To NA
From NA To NA

Date Sealing Performed 6-3-97

Reason(s) for Sealing Abandoned in advance of excavation and construction remediation activities.

CONTRACTOR

Name Alliance Environmental, Inc. ODH Registration # 2119
Address 117 Industry Road
City/State/Zip Marietta, Ohio 45750

FEMP Geologist Signature Keith Payne
(Keith Payne)

NOTE: Length of casing does not include length of screen.
NA: Not Applicable or Not Available.

000016

SUBMIT COMPLETED FORM TO ODNR-DIVISION OF WATER

WATER WELL SEALING REPORT
(For Abandoned or Unused Wells)
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Water, Ground Water Resources Section
1939 Fountain Square Drive
Columbus, Ohio 43224-1360

1875

LOCATION Fernald Environmental Management Project (FEMP)

County Hamilton Township Crosby Section 5
Property Owner United States Department of Energy

Address of Property 7400 Willey Road, Fernald, Ohio 45013
Location (NAD83 State Planar Coordinates) N480088.52 E1351312.37

ORIGINAL WELL

ODNR Well Log Number NA Copy attached? Yes or No FEMP ID# 11693
(circle one)

MEASURED CONSTRUCTION DETAILS

Date of Measurements 4-27-95

Depth of Well 25.00 Static Water Level 4.3
Size of Casing 2 inch ID Length of Casing 21.00 feet
Well Condition good

SEALING PROCEDURE

Method of Placement Tremied bentonite grout.

Placement:	From	To	Sealing Material	Volume
	<u>25.0 feet</u>	<u>0.0 feet</u>	<u>bentonite grout</u>	<u>1.08 feet³</u>
	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

Was Casing Removed? Yes or No Amount Removed 25.00
(circle one)

Condition of Casing good

Perforations: From NA To NA
From NA To NA

Date Sealing Performed 4-22-97

Reason(s) for Sealing Abandoned in advance of excavation and construction remediation activities.

CONTRACTOR

Name Alliance Environmental, Inc. ODH Registration # 2119
Address 117 Industry Road
City/State/Zip Marietta, Ohio 45750

FEMP Geologist Signature Keith Payne
(Keith Payne)

NOTE: Length of casing does not include length of screen.
NA: Not Applicable or Not Available.

000017

WATER WELL SEALING REPORT
(For Abandoned or Unused Wells)
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Water, Ground Water Resources Section
1939 Fountain Square Drive
Columbus, Ohio 43224-1360

1875

LOCATION Fernald Environmental Management Project (FEMP)
County Hamilton Township Crosby Section 5
Property Owner United States Department of Energy
Address of Property 7400 Willey Road, Fernald, Ohio 45013
Location (NAD83 State Planar Coordinates) N47540.45 E1351264.49

ORIGINAL WELL

ODNR Well Log Number NA Copy attached? Yes or No FEMP ID# 11130
(circle one)

MEASURED CONSTRUCTION DETAILS Date of Measurements 9-25-93
Lysimeter
Depth of ~~WELL~~ 22.5 Static Water Level NA
Size of Casing 2 inch ID Length of Casing 22.5
~~Well~~ Condition good
Lysimeter _____

SEALING PROCEDURE

Method of Placement Tremied bentonite grout.
Placement:

From	To	Sealing Material	Volume
<u>22.5 feet</u>	<u>0.0 feet</u>	<u>bentonite grout</u>	<u>.97 feet³</u>
<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

Was Casing Removed? Yes or No Amount Removed 22.5 feet
(circle one)

Condition of Casing good
Perforations: From NA To NA
From NA To NA
Date Sealing Performed 4-16-97
Reason(s) for Sealing Abandoned in advance of excavation and construction remediation activit

CONTRACTOR

Name Alliance Environmental, Inc. ODH Registration # 2119
Address 117 Industry Road
City/State/Zip Marietta, Ohio 45750

FEMP Geologist Signature Keith Payne
(Keith Payne)

Note: Length of casing includes permeable section and does not include outer protective casing which was also completely removed.

NA: Not Applicable or Not Available.

000018

SUBMIT COMPLETED FORM TO ODNR-DIVISION OF WATER

1875

ENCLOSURE IV

000019

WELL LOG AND DRILLING REPORT

Ohio Department of Natural Resources
 Division of Water, 1939 Fountain Square Drive
 Columbus, Ohio 43224 Phone (614) 265-6739

1875 821326

Permit Number _____

COUNTY Butler Hamilton TOWNSHIP Crosby SECTION/LOT No. 6
(Circle One)

OWNER/BUILDER Department of Energy PROPERTY ADDRESS 7400 Willey Rd. Cincinnati
(Circle One or Both) First Last (Address of well location) Number Street City

LOCATION OF PROPERTY Fernald Environmental Management Project Zip Code + 4 _____

CONSTRUCTION DETAILS

CASING *(Length below grade) Borehole Diameter 10 in.
 Diameter 4 in. Length 210.6 ft. Wall Thickness 3/8 in.
 Diameter N/A in. Length N/A ft. Wall Thickness N/A in.

Type: Steel Galv. PVC Other _____
 Joints: Threaded Welded Solvent Other _____
 Liner: Length N/A Type N/A Wall Thickness N/A in.

SCREEN
 Type (wire wrapped, louvered, etc.) Slotted Material Stainless Steel
 Length 10.4' ft. Diameter 4 in.
 Set between 190.4 ft. and 200.8 ft. Slot -0.10

GROUT
 Material Voiclay Volume used 6.51 yd³
 Method of installation side discharge Tremie line
 Depth: placed from 180.0' ft. to 0.0'
GRAVEL PACK (Filter Pack)
 Material 10x20 Sand Volume used 2.31 yd³
 Method of installation POURED
 Depth: placed from 202.8' ft. to 180.0
 Pitless Device Adapter Preassembled unit
 Use of Well Maintaining well
 Rotary Cable Augered Driven Dug Other _____
 Date of Completion 2/27/89

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.
 Show color, texture, hardness, and formation:
 sandstone, shale, limestone, gravel, clay, sand, etc.

	From	To
<u>FEMP Well No. 4010</u>		
<u>Stiff brown-gray clay</u>	<u>0</u>	<u>42</u>
<u>Dense yellow-brown sand</u>	<u>42</u>	<u>61</u>
<u>Dense gray sand w/trace gravel</u>	<u>61</u>	<u>66</u>
<u>Wet gray sand w/gravel</u>	<u>66</u>	<u>131</u>
<u>Very stiff blue-gray clay w/trace sand, gravel</u>	<u>131</u>	<u>146.5</u>
<u>Dense gray-brown sand w/ gravel</u>	<u>146.5</u>	<u>210.6</u>
<u>Bottom of boring = 210.6 FT</u>		

WELL TEST

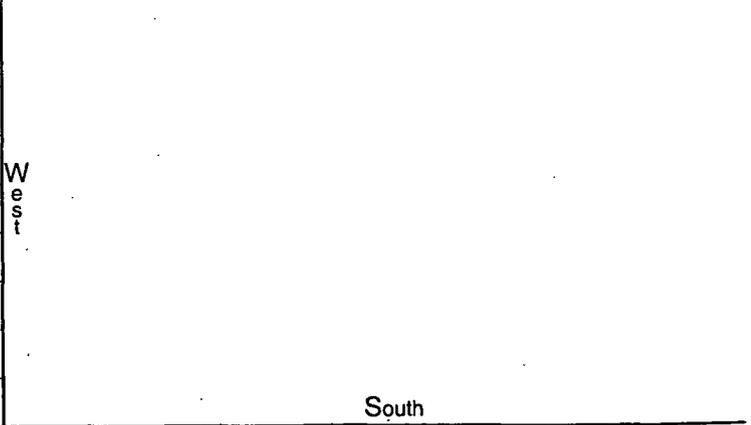
Bailing Pumping* Other _____
 Test rate _____ gpm Duration of test _____ h
 Drawdown _____
 Measured from: top of casing ground level Other _____
 Static Level (depth to water) N/A ft. Date: _____
 Quality (clear, cloudy, taste, odor) _____
 *(Attach a copy of the pumping test record, per section 1521.05, ORC)

PUMP

Type of pump _____ Capacity _____ g
 Pump set at _____
 Pump installed by _____

WELL LOCATION

Location of well in State Plane coordinates, if available:
 Zone N/A x E 1348230.13 y N 481484.83
 Elevation of well 582.2 ft. Datum plain: NAD27 NAD83
 Source of coordinates: GPS Survey Other _____
 Sketch a map showing distance well lies from numbered state highways, street intersections, county roads, buildings or other notable landmarks.



*(If additional space is needed to complete well log, use next consecutively numbered form.) I hereby certify the information given is accurate and correct to the best of my knowledge.

Drilling Firm Penn Drill Signed _____ Date _____
 Address _____

000020

City, State, Zip _____ ODH Registration Number _____

COUNTY Hamilton TOWNSHIP Coharian **CROSBY** SECTION 6 LOT No. 6
(Circle One)

OWNER/BUILDER Dept. of Energy PROPERTY ADDRESS 7400 Wilkey Rd. Cincinnati
(Circle One or Both) First Last (Address of well location) Number Street City

LOCATION OF PROPERTY Fernald Environmental Management Project Zip Code +4 _____

CONSTRUCTION DETAILS

CASING (Length below grade) Borehole Diameter 8 in.
 Diameter 4 in. Length* 193.0 ft. Wall Thickness 3/8 in. Material Volclay Volume used 352.5 feet 56
 Diameter N/A in. Length* N/A ft. Wall Thickness N/A in. Method of installation Side discharge Tremie line.
 Type: Steel Galv. PVC Other _____
 Joints: Threaded Welded Solvent Other _____
 Liner: Length N/A Type N/A Wall Thickness N/A in. Depth: placed from 0.0 ft. to 165.0
GRAVEL PACK (Filter Pack) Material Sand 10/20 Volume used .946 yd³
 Method of installation Poured down hole Depth: placed from 165.0 ft. to 193.0
SCREEN Type (wire wrapped, louvered, etc.) Slotted Material Stainless Steel Use of Well Monitoring Well
 Length 10 ft. Diameter 4 in. Rotary Cable Augered Driven Dug Other _____
 Set between 170.0 ft. and 180.0 ft. Slot .010 Date of Completion 9/7/90
 Adapter Preassembled unit

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.
Show color, texture, hardness, and formation:
sandstone, shale, limestone, gravel, clay, sand, etc.

	From	To
<u>FEMP Well No. 4011</u>		
<u>Stiff brownish-yellow silt</u>	<u>0</u>	<u>3</u>
<u>Stiff gray-brown clay w/ trace of gravel.</u>	<u>3</u>	<u>37</u>
<u>Dense, brownish-yellow sand</u>	<u>37</u>	<u>80.5</u>
<u>Fine, dark gray gravel w/ trace of coarse rock frag.</u>	<u>80.5</u>	<u>131</u>
<u>Clayey, wet gravel</u>	<u>131</u>	<u>150</u>
<u>Dense, dark gray, well graded sand</u>	<u>150</u>	<u>193.0</u>
<u>Bottom of Boring = 193.0 FT</u>		

WELL TEST

Bailing Pumping* Other _____
 Test rate _____ gpm Duration of test _____ h
 Drawdown _____
 Measured from: top of casing ground level Other _____
 Static Level (depth to water) _____ ft. Date: _____
 Quality (clear, cloudy, taste, odor) N/A
 *(Attach a copy of the pumping test record, per section 1521.05, ORC)

PUMP

Type of pump _____ Capacity _____ gpm
 Pump set at _____
 Pump installed by _____

WELL LOCATION

Location of well in State Plane coordinates, if available:
 Zone N/A x 1346486.35 y 482286.46
 Elevation of well 582.33 m. Datum plain: NAD27 NAD83
 Source of coordinates: GPS Survey Other _____
 Sketch a map showing distance well lies from numbered state highways,
 street intersections, county roads, buildings or other notable landmarks.
 North

West

South

(If additional space is needed to complete well log, use next consecutively numbered form.) I hereby certify the information given is accurate and correct to the best of my knowledge.

Drilling Firm Pennsylvania Drilling Signed _____
 Address _____ Date _____
 City, State, Zip _____ ODH Registration Number 000021

DNR 7802.94
 TYPE OR USE PEN
 SELF TRANSCRIBING
 PRESS HARD

WELL LOG AND DRILLING REPORT

Ohio Department of Natural Resources
 Division of Water, 1939 Fountain Square Drive
 Columbus, Ohio 43224 Phone (614) 265-6739

1875821329
 Permit Number _____

COUNTY Hamilton TOWNSHIP Coburn CROSBY SECTION 1 LOT No. 7
(Circle One)

OWNER/BUILDER Dept. of Energy PROPERTY ADDRESS 7400 Willey Rd. Cincinnati
(Circle One or Both) First Last (Address of well location) Number Street City

LOCATION OF PROPERTY Fernald Environmental Management Project Zip Code + 4 _____

CONSTRUCTION DETAILS

CASING *(Length below grade) Borehole Diameter 10 in.
 Diameter 4 in. Length* 1500 ft. Wall Thickness 3/8 in. Material Volclay Volume used 4.69 55.00 yd³
 Diameter N/A in. Length* N/A ft. Wall Thickness N/A in. Method of installation side discharge Trench line
 Type: Steel Galv. PVC Other _____
 Joints: Threaded Welded Solvent Other _____
 Liner: Length N/A Type N/A Wall Thickness N/A in. Depth: placed from 0.0 ft. to 121.0 ft.
GRAVEL PACK (Filter Pack)
 Material Sand 10/20 Volume used .98 30.78 yd³
 Method of installation poured down hole
 Depth: placed from 121.0 ft. to 150.0 ft.
SCREEN
 Type (wire wrapped, louvered, etc.) Slotted Material Stainless Steel
 Length 10.0 ft. Diameter 4 in. Rotary Cable Augered Driven Dug Other _____
 Set between 129.5 ft. and 139.5 ft. Slot .010" Date of Completion 11/9/88
 Pitless Device Adapter Preassembled unit
 Use of Well Monitoring Well

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.

Show color, texture, hardness, and formation:
 sandstone, shale, limestone, gravel, clay, sand, etc.

	From	To
<u>FEMP Well No. 4014</u>		
<u>Gray, Silty sand w/gravel</u>	<u>0</u>	<u>25</u>
<u>Dark, yellow-brown gravelly sand</u>	<u>25</u>	<u>75</u>
<u>Dark, yellow-brown, well graded sand</u>	<u>75</u>	<u>95</u>
<u>Dense, lt. brownish, well graded gravel.</u>	<u>95</u>	<u>110</u>
<u>Dense, yellowish-brown, poorly graded sand w/traces of gravel</u>	<u>110</u>	<u>150.0</u>

Bottom of Boring = 150.0 ft.

WELL TEST

Bailing Pumping* Other _____
 Test rate _____ gpm Duration of test _____ hr:
 Drawdown _____ ft.
 Measured from: top of casing ground level Other _____
 Static Level (depth to water) _____ ft. Date: _____
 Quality (clear, cloudy, taste, odor) N/A
 *(Attach a copy of the pumping test record, per section 1521.05, ORC)

PUMP

Type of pump _____ Capacity _____ gp
 Pump set at _____ ft.
 Pump installed by _____

WELL LOCATION

Location of well in State Plane coordinates, if available:
 Zone N/A x 1348113.59 y 476816.12
 Elevation of well 534.5 ft./m. Datum plain: NAD27 NAD83
 Source of coordinates: GPS Survey Other _____

Sketch a map showing distance well lies from numbered state highways, street intersections, county roads, buildings or other notable landmarks.

North

West

South

*(If additional space is needed to complete well log, use next consecutively numbered form.) I hereby certify the information given is accurate and correct to the best of my knowledge

Drilling Firm Pennsylvania Drilling Signed _____

Address _____ Date _____

City, State, Zip _____ ODH Registration Number _____

000023

COUNTY Hamilton TOWNSHIP Cotearin CROSBY SECTION/LOT No. 5
 (Circle One)
 OWNER/BUILDER Dept. of Energy PROPERTY ADDRESS 7400 Willey Rd Cincinnati
 (Circle One or Both) First Last (Address of well location) Number Street City

LOCATION OF PROPERTY Fernald Environmental Management Project Zip Code + 4 _____

CONSTRUCTION DETAILS

CASING (Length below grade) Borehole Diameter 10.0 in.
 Diameter 4.0 in. Length 220.7 ft. Wall Thickness 3/8 in. Material Valclay Volume used 6.45 106.92 yds³
 Diameter N/A in. Length N/A ft. Wall Thickness N/A in. Method of installation side discharge Tremie Line
 Type: Steel Galv. PVC Other _____ Depth: placed from 0.0 ft. to 191.0 ft.
 Threaded Welded Solvent Other _____ Joints: Threaded Welded Solvent Other _____
 Liner: Length N/A Type N/A Wall Thickness N/A in. Depth: placed from 191.0 ft. to 220.75 ft.
SCREEN Type (wire wrapped, louvered, etc.) Slot Material Stainless Steel Use of Well Monitoring well
 Length 10.0 ft. Diameter 4.0 in. Rotary Cable Augered Driven Dug Other _____
 Set between 20.0 ft. and 21.0 ft. Slot .010 Date of Completion 2/1/89

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.
 Show color, texture, hardness, and formation:
 sandstone, shale, limestone, gravel, clay, sand, etc.

	From	To
<u>FEEMP Well No. 4067</u>		
<u>Hard, yellowish-brown, silty clay w/gravel slag</u>	<u>0</u>	<u>11.5</u>
<u>Hard, gray, gravelly clay w/trace silt/sand</u>	<u>11.5</u>	<u>31.5</u>
<u>Dense, yellowish-brown sand and gravel w/trace silt/clay</u>	<u>31.5</u>	<u>56</u>
<u>Dense, brown-gray sand and gravel w/trace silt/clay</u>	<u>56</u>	<u>141.5</u>
<u>Very Dense, gray fine sand w/trace gravel</u>	<u>141.5</u>	<u>200</u>
<u>Dense, gray, well sorted, gravelly sand</u>	<u>200</u>	<u>220.75</u>
<u>Bottom of Boring = 220.75 ft.</u>		

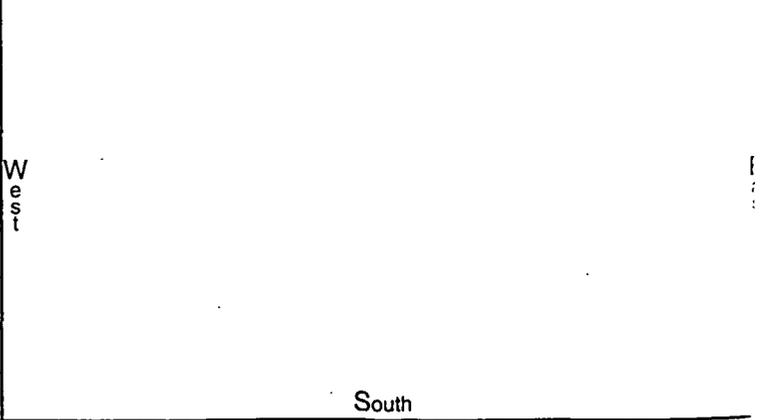
WELL TEST

Bailing Pumping* Other _____
 Test rate _____ gpm Duration of test _____ hrs
 Drawdown _____ ft.
 Measured from: top of casing ground level Other _____
 Static Level (depth to water) _____ ft. Date: _____
 Quality (clear, cloudy, taste, odor) N/A

*(Attach a copy of the pumping test record, per section 1521.05, ORC)
PUMP
 Type of pump _____ Capacity _____ gpm
 Pump set at _____ ft.
 Pump installed by _____

WELL LOCATION

Location of well in State Plane coordinates, if available:
 Zone N/A x 1351525.38 y 479802.02
 Elevation of well 593.0 ft. Datum plain: NAD27 NAD83
 Source of coordinates: GPS Survey Other _____
 Sketch a map showing distance well lies from numbered state highways, street intersections, county roads, buildings or other notable landmarks.



*(If additional space is needed to complete well log, use next consecutively numbered form.) I hereby certify the information given is accurate and correct to the best of my knowledge
 Drilling Firm Pennsylvania Drilling Signed _____
 Address _____ Date _____
 City, State, Zip _____ ODH Registration Number _____

1875
 Permit Number

COUNTY Hamilton TOWNSHIP Crosby SECTION/LOT No. 5
 (Circle One)
 OWNER/BUILDER Dept. of Energy PROPERTY ADDRESS 744 Willey Rd. Cincinnati
 (Circle One or Both) First Last (Address of well location) Number Street City
 LOCATION OF PROPERTY Fernald Environmental Management Project Z4 Code + 4

CONSTRUCTION DETAILS

CASING (Length below grade) Borehole Diameter 1φφ in. GROUT 6.51
 Diameter 4φφ in. Length 218.3 ft. Wall Thickness 3/8 in. Material VOICLAY Volume used 26.78 yd³
 Diameter N/A in. Length N/A ft. Wall Thickness N/A in. Method of installation Side discharge Tremie line.
 Type: Steel Galv. PVC Other _____ Depth: placed from φφ ft. to 193.φ
 Threaded Welded Solvent Other _____ **GRAVEL PACK** (Filter Pack) .85
 Threaded Welded Solvent Other _____ Material Sand Volume used 3.45 yd³
 Liner: Length N/A Type N/A Wall Thickness N/A in. Method of installation Poured Down Hole
 Depth: placed from 193.φ ft. to 218.3
SCREEN Pitless Device Adapter Preassembled unit
 Type (wire wrapped, louvered, etc.) Slotted Material Stainless Steel Use of Well Monitoring well
 Length 1φφ ft. Diameter 4φφ in. Rotary Cable Augered Driven Dug Other _____
 Set between 198.φ ft. and 2φ8.φ ft. Slot .φ1φ Date of Completion 11/22/88

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.
 Show color, texture, hardness, and formation:
 sandstone, shale, limestone, gravel, clay, sand, etc.

	From	To
<u>FEMP Well No. 4064</u>		
<u>Stiff, hard, brown clay w/ silt/gravel</u>	<u>0</u>	<u>32.5</u>
<u>Gray sand w/ silt, clay, gravel</u>	<u>32.5</u>	<u>140</u>
<u>Stiff, blueish-green clay w/ silt w/ rootlets</u>	<u>140</u>	<u>158</u>
<u>Loose, gray gravel w/ traces of coarse sand</u>	<u>158</u>	<u>165.5</u>
<u>Dense, gray silty sand (wet)</u>	<u>165.5</u>	<u>204</u>
<u>Loose, gray gravel w/ silty sand</u>	<u>204</u>	<u>213</u>
<u>Dense, gray silty sand</u>	<u>213</u>	<u>218.2</u>
<u>Bottom of Boring = 218.2 FT</u>		

WELL TEST

Bailing Pumping* Other _____
 Test rate _____ gpm Duration of test _____
 Drawdown _____
 Measured from: top of casing ground level Other _____
 Static Level (depth to water) _____ ft. Date: _____
 Quality (clear, cloudy, taste, odor) N/A

*(Attach a copy of the pumping test record, per section 1521.05, ORC)

PUMP

Type of pump _____ Capacity _____
 Pump set at _____
 Pump installed by _____

WELL LOCATION

Location of well in State Plane coordinates, if available:
 Zone N/A x 135φ724.59 y 480759.64
 Elevation of well 588.3 ft. Datum plain: NAD27 NAD83
 Source of coordinates: GPS Survey Other _____
 Sketch a map showing distance well lies from numbered state highways, street intersections, county roads, buildings or other notable landmarks.

North

West

South

(If additional space is needed to complete well log, use next consecutively numbered form.) I hereby certify the information given is accurate and correct to the best of my knowledge.

Drilling Firm Pennsylvania Drilling Signed _____
 Address _____ Date _____
 City, State, Zip _____ ODH Registration Number 000026

WELL LOG AND DRILLING REPORT

Ohio Department of Natural Resources
 Division of Water, 1939 Fountain Square Drive
 Columbus, Ohio 43224 Phone (614) 265-6739

1875 821331
 Permit Number _____

COUNTY Hamilton TOWNSHIP Goderain **CROSSBY** SECTION 5 LOT No. 5
 (Circle One)
 OWNER/BUILDER Dept of Energy PROPERTY ADDRESS 7400 Willey Rd. Cincinnati
 (Circle One or Both) First Last (Address of well location) Number Street City
 LOCATION OF PROPERTY Fernald Environmental Management Project Zip Code + 4 _____

CONSTRUCTION DETAILS

CASING (Length below grade) Borehole Diameter 10.0 in.
 Diameter 4.0 in. Length 140.0 ft. Wall Thickness 3/8 in. Material Volclay Volume used 3.81 yd³
 Diameter N/A in. Length N/A ft. Wall Thickness N/A in. Method of installation Side discharge Tremie Lines
 Type: Steel Galv. PVC Other _____
 Joints: Threaded Welded Solvent Other _____
 Liner: Length N/A Type N/A Wall Thickness N/A in. Depth: placed from 113.5 ft. to 113.5 ft.
GRAVEL PACK (Filter Pack)
 Material sand Volume used .888 yd³
 Method of installation Poured Downhole
 Depth: placed from 113.5 ft. to 140.0 ft.
SCREEN
 Type (wire wrapped, louvered, etc.) Slotted Material stainless steel
 Length 10.0 ft. Diameter 4.0 in. Rotary Cable Augered Driven Dug Other _____
 Set between 118.0 ft. and 128.0 ft. Slot .010 Date of Completion 5/18/88
 Pitless Device Adapter Preassembled unit
 Use of Well Monitoring Well

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.
 Show color, texture, hardness, and formation:
 sandstone, shale, limestone, gravel, clay, sand, etc.

	From	To
<u>FF MP Well No. 4091</u>		
<u>Stiff, dark, yellowish-brown silt w/trace sand</u>	<u>0</u>	<u>10</u>
<u>Dense, yellowish-brown, coarse gravel w/sand/pebbles</u>	<u>10</u>	<u>29</u>
<u>Dense, brown, fine gravel w/med sand</u>	<u>29</u>	<u>89</u>
<u>Med. Dense, brown-gray fine gravel w/coarse sand.</u>	<u>89</u>	<u>113</u>
<u>Dense, gray-brown, fine sand w/silt</u>	<u>113</u>	<u>130</u>
<u>Dense, brown gravelly sand w/coarse gravel</u>	<u>130</u>	<u>138.6</u>
<u>Gray-green clay w/ angular limestone fragments</u>	<u>138.6</u>	<u>140</u>
<u>Bottom of Boring = 140.0 FT</u>		

WELL TEST

Bailing Pumping* Other _____
 Test rate _____ gpm Duration of test _____ h.
 Drawdown _____
 Measured from: top of casing ground level Other _____
 Static Level (depth to water) N/A ft. Date: _____
 Quality (clear, cloudy, taste, odor) _____
 *(Attach a copy of the pumping test record, per section 1521.05, ORC)

PUMP

Type of pump _____ Capacity _____ gpm
 Pump set at _____
 Pump installed by _____

WELL LOCATION

Location of well in State Plane coordinates, if available:
 Zone N/A x 1352990.58 y 477873.1
 Elevation of well 533.4 ft/m. Datum plain: NAD27 NAD83
 Source of coordinates: GPS Survey Other _____
 Sketch a map showing distance well lies from numbered state highways, street intersections, county roads, buildings or other notable landmarks.

North

West

South

(If additional space is needed to complete well log, use next consecutively numbered form.) I hereby certify the information given is accurate and correct to the best of my knowledge.
 Drilling Firm Pennsylvania Drilling Signed _____
 Address _____ Date 000027
 City, State, Zip _____ ODH Registration Number _____

TYPE OR USE PEN
SELF TRANSCRIBING
PRESS HARD

WELL LOG AND DRILLING REPORT 870 821332

Ohio Department of Natural Resources
Division of Water, 1939 Fountain Square Drive
Columbus, Ohio 43224 Phone (614) 265-6739

Permit Number _____

COUNTY Hamilton TOWNSHIP Crosby SECTION 7 LOT No. 7
(Circle One)

OWNER/BUILDER Dept. of Energy PROPERTY ADDRESS 7400 Willey Rd. Cincinnati
(Circle One or Both) First Last (Address of well location) Number Street City

LOCATION OF PROPERTY Fernald Environmental Management Project Zip Code + 4 _____

CONSTRUCTION DETAILS

CASING (Length below grade) Borehole Diameter 10" (0-10) in. (8" (120-200)) **GROUT**

Diameter 4.0 in. Length* 198.8 ft. Wall Thickness 3/8 in. Material Volclay Volume used 4.99 yd³

Diameter N/A in. Length* N/A ft. Wall Thickness N/A in. Method of installation Side discharge Tremie Line

Type: Steel Galv. PVC Other _____

Depth: placed from 0.0 ft. to 169.0 ft.

Joints: Threaded Welded Solvent Other _____

GRAVEL PACK (Filter Pack)

Material Sand 10/20 Volume used .56 yd³

Method of installation poured downhole

Liner: Length N/A Type N/A Wall Thickness N/A in. Depth: placed from 169.0 ft. to 198.8 ft.

SCREEN

Type (wire wrapped, louvered, etc.) Slotted Material Stainless Steel

Length 10.0 ft. Diameter 4.0 in.

Set between 178.0 ft. and 188.0 ft. Slot .010 in.

Pitless Device Adapter Preassembled unit

Use of Well Monitoring well

Rotary Cable Augered Driven Dug Other _____

Date of Completion 7/26/88

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.

Show color, texture, hardness, and formation:
sandstone, shale, limestone, gravel, clay, sand, etc.

	From	To
<u>FEMP Well No. 4096</u>		
<u>Stiff, yellow-brown, silty clay / w/ fine-gravel</u>	<u>0</u>	<u>7.5</u>
<u>Stiff, gray, silty clay w/ fine gravel</u>	<u>17.5</u>	<u>35</u>
<u>Very dense, yellow-brown, poorly graded, fine sand.</u>	<u>35</u>	<u>55</u>
<u>Med. Dense, gray-brown, poorly graded, fine sand</u>	<u>55</u>	<u>90</u>
<u>Very Dense, gray-brown, poorly graded, fine sand</u>	<u>90</u>	<u>106.5</u>
<u>Stiff, gray clay</u>	<u>106.5</u>	<u>114</u>
<u>Dense, gray-brown fine sand</u>	<u>114</u>	<u>141</u>
<u>Dense, yellow-brown gravelly sand</u>	<u>141</u>	<u>171.3</u>
<u>Soft, yellow-brown silty clay</u>	<u>171.3</u>	<u>186</u>
<u>Dense, gray-brown silty sand w/ coarse gravel</u>	<u>186</u>	<u>198.8</u>
<u>Bottom of Boring = 198.8 Ft.</u>		

WELL TEST

Bailing Pumping* Other _____

Test rate _____ gpm Duration of test _____ h:

Drawdown _____

Measured from: top of casing ground level Other _____

Static Level (depth to water) _____ ft. Date: _____

Quality (clear, cloudy, taste, odor) N/A

*(Attach a copy of the pumping test record, per section 1521.05, ORC)

PUMP

Type of pump _____ Capacity _____ gpm

Pump set at _____

Pump installed by _____

WELL LOCATION

Location of well in State Plane coordinates, if available:

Zone N/A x 1345738.35 y 476581.61

Elevation of well 579.4 ft. Datum plain: NAD27 NAD83

Source of coordinates: GPS Survey Other _____

Sketch a map showing distance well lies from numbered state highways, street intersections, county roads, buildings or other notable landmarks.

North

South

(If additional space is needed to complete well log, use next consecutively numbered form.) I hereby certify the information given is accurate and correct to the best of my knowledge.

Drilling Firm Pennsylvania Drilling Signed _____ 000028

Address _____ Date _____

City, State, Zip _____ ODH Registration Number _____

COUNTY Hamilton TOWNSHIP Crosby SECTION/LOT No. 4
(Circle One)
OWNER/BUILDER Dept. of Energy PROPERTY ADDRESS 7400 Willey Rd. Cincinnati
(Circle One or Both) First Last (Address of well location) Number Street City
LOCATION OF PROPERTY Fernald Environmental Management Project Zip Code + 4

CONSTRUCTION DETAILS

CASING *(Length below grade) Borehole Diameter 1φφ in. GROUT Bentonite Pellets 1.2 yd³
 Diameter 4φ in. Length 149.0 ft. Wall Thickness 3/8 in. Material Volclay Volume used 3.55 yd³
 Diameter N/A in. Length N/A ft. Wall Thickness N/A in. Method of installation side discharge Tremie Line
 Type: Steel Galv. PVC Other _____ Depth: placed from 09.5 2 15 ft. to 15 2 12φ ft.
 Joints: Threaded Welded Solvent Other _____ GRAVEL PACK (Filter Pack)
 Material Gravel 10/20 Volume used .98 yd³
 Method of installation poured down hole
 Liner: Length N/A Type N/A Wall Thickness N/A in. Depth: placed from 12φφ ft. to 149φ ft.
SCREEN Pitless Device Adapter Preassembled unit
 Type (wire wrapped, louvered, etc.) Slotted Material Stainless Steel Use of Well Monitoring
 Length 1φφ ft. Diameter 4φ in. Rotary Cable Augered Driven Dug Other _____
 Set between 132.5 ft. and 140.5 ft. Slot .01φ" Date of Completion 8/6/98

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.
Show color, texture, hardness, and formation:
sandstone, shale, limestone, gravel, clay, sand, etc.

	From	To
<u>FEMP Well No. 4097</u>		
<u>Stiff, yellow-brown, silty clay</u>	<u>0</u>	<u>15</u>
<u>Very dense, brown, sandy gravel</u>	<u>15</u>	<u>40</u>
<u>Med dense, gray-brown, sand w/ gravel</u>	<u>40</u>	<u>97</u>
<u>Dense, blue-gray, clay</u>	<u>97</u>	<u>107</u>
<u>Dense, gray, sandy gravel</u>	<u>107</u>	<u>120</u>
<u>Dense, brown, fine-med sand w/gravel</u>	<u>120</u>	<u>145</u>
<u>Sandy coarse gravel w/limes. fragments</u>	<u>145</u>	<u>149</u>
<u>Bottom of Boring = 149.0 FT</u>		

WELL TEST

Bailing Pumping* Other _____
 Test rate _____ gpm Duration of test _____ hr
 Drawdown _____
 Measured from: top of casing ground level Other _____
 Static Level (depth to water) N/A ft. Date: _____
 Quality (clear, cloudy, taste, odor) _____
 *(Attach a copy of the pumping test record, per section 1521.05, ORC)

PUMP

Type of pump _____ Capacity _____ gp
 Pump set at _____
 Pump installed by _____

WELL LOCATION

Location of well in State Plane coordinates, if available:
 Zone N/A x 1355480.92 y 480327.45
 Elevation of well 536.95 m. Datum plain: NAD27 NAD83
 Source of coordinates: GPS Survey Other _____
 Sketch a map showing distance well lies from numbered state highways, street intersections, county roads, buildings or other notable landmarks.

North

West

South

*(If additional space is needed to complete well log, use next consecutively numbered form.) I hereby certify the information given is accurate and correct to the best of my knowledge.

Drilling Firm Pennsylvania Drilling Signed _____
 Address _____ Date _____ **000029**
 City, State, Zip _____ ODH Registration Number _____

COUNTY Hamilton TOWNSHIP Crosby SECTION 5 LOT No. 5
 (Circle One)
 OWNER/BUILDER Dept of Energy PROPERTY ADDRESS 7400 Wilkey Rd. Cincinnati
 (Circle One or Both) First Last (Address of well location) Number Street City
 LOCATION OF PROPERTY Fernald Environmental Management Project. Zip Code + 4 _____

CONSTRUCTION DETAILS

CASING (Length below grade) Borehole Diameter 10.0 in.
 Diameter 4.0 in. Length 212.0 ft. Wall Thickness 3/8 in. Material Volclay Volume used 6.59 yd³
 Diameter N/A in. Length N/A ft. Wall Thickness N/A in. Method of installation sien discharge Truss Lines
 Type: Steel Galv. PVC Other _____
 Joints: Threaded Welded Solvent Other _____
 Liner: Length N/A Type N/A Wall Thickness N/A in. Depth: placed from 0 ft. to 195.1 ft.
SCREEN Type (wire wrapped, louvered, etc.) staked Material Stainless Steel
 Length 10.0 ft. Diameter 4.0 in. Rotary Cable Augered Driven Dug Other _____
 Set between 200.0 ft. and 210.0 ft. Slot .010 Date of Completion 7/13/93

GROUT
 Material Sand 10/20 Volume used .836 yd³
 Method of installation packed down hole
 Depth: placed from 195.1 ft. to 220.0 ft.
GRAVEL PACK (Filter Pack)
 Material _____ Volume used _____
 Method of installation _____
 Depth: placed from _____ ft. to _____ ft.
 Pitless Device Adapter Preassembled unit
 Use of Well Monitoring well
 Rotary Cable Augered Driven Dug Other _____

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.
 Show color, texture, hardness, and formation:
 sandstone, shale, limestone, gravel, clay, sand, etc.

	From	To
<u>FEMP Well No. 41066</u>		
<u>v. stiff, brown, silty clay, trace gravel, moist</u>	<u>0</u>	<u>21</u>
<u>stiff, gray, silty clay, trace gravel, moist</u>	<u>21</u>	<u>37.5</u>
<u>Dense, gray, poorly graded, fine sand, slightly moist</u>	<u>37.5</u>	<u>110</u>
<u>v. dense, olive gray, well graded gravelly sand, wet</u>	<u>110</u>	<u>135</u>
<u>Hydro punch</u>	<u>135</u>	<u>150</u>
<u>v. dense, olive gray, poorly graded fine sand, wet</u>	<u>150</u>	<u>220</u>
<u>Bottom of Boring = 220.0 ft.</u>		

WELL TEST

Bailing Pumping* Other _____
 Test rate _____ gpm Duration of test _____ hr
 Drawdown _____
 Measured from: top of casing ground level Other _____
 Static Level (depth to water) _____ ft. Date: _____
 Quality (clear, cloudy, taste, odor) N/A
 *(Attach a copy of the pumping test record, per section 1521.05, ORC)

PUMP

Type of pump _____ Capacity _____ gp
 Pump set at _____
 Pump installed by _____

WELL LOCATION

Location of well in State Plane coordinates, if available:
 Zone N/A x 1349820.3 y 482055.59
 Elevation of well 590.5 ft./m. Datum plain: NAD27 NAD83
 Source of coordinates: GPS Survey Other _____
 Sketch a map showing distance well lies from numbered state highways, street intersections, county roads, buildings or other notable landmarks.

North

South

West

(If additional space is needed to complete well log, use next consecutively numbered form.) I hereby certify the information given is accurate and correct to the best of my knowledge
 Drilling Firm Pennsylvania Drilling Signed _____
 Address _____ Date _____
 City, State, Zip _____ ODH Registration Number _____

000030

WELL LOG AND DRILLING REPORT

Ohio Department of Natural Resources
 Division of Water, 1939 Fountain Square Drive
 Columbus, Ohio 43224 Phone (614) 265-6739

1875 821381
 Permit Number _____

COUNTY Hamilton TOWNSHIP Abtain Crosby SECTION/LOT No. 6
 (Circle One)
 OWNER/BUILDER Dept. of Energy PROPERTY ADDRESS 7400 Willey Rd, Cincinnati
 (Circle One or Both) Fin (Address of well location) Number Street City
 LOCATION OF PROPERTY Fernald Environmental Management Project Zip Code + 4 _____

CONSTRUCTION DETAILS

CASING (Length below grade) Borehole Diameter 10.0 in.
 Diameter 4.0 in. Length 117.0 ft. Wall Thickness 3/8 in. Material Voteclay Volume used 3.18 yd³
 Diameter N/A in. Length N/A ft. Wall Thickness N/A in. Method of installation Side discharge Tramic Line
 Type: Steel Galv. PVC Other _____
 Joints: Threaded Welded Solvent Other _____
 Liner: Length N/A Type N/A Wall Thickness N/A in. Depth: placed from 0.0 ft. to 95.0 ft.
SCREEN
 Type (wire wrapped, louvered, etc.) Slotted Material _____
 Length 10.0 ft. Diameter 4 in. Rotary Cable Augered Driven Dug Other _____
 Set between 104.0 ft. and 114.0 ft. Slot .010" Date of Completion 7/13/90

GROUT
 Material Voteclay Volume used 3.18 yd³
 Method of installation Side discharge Tramic Line
 Depth: placed from 0.0 ft. to 95.0 ft.
GRAVEL PACK (Filter Pack)
 Material Sand 10/20 Volume used .75 yd³
 Method of installation poured down hole
 Depth: placed from 95.0 ft. to 117.0 ft.
 Pitless Device Adapter Preassembled unit
 Use of Well Monitoring
 Rotary Cable Augered Driven Dug Other _____

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.
 Show color, texture, hardness, and formation:
 sandstone, shale, limestone, gravel, clay, sand, etc.

	From	To
<u>FEMP Well No. 4108</u>		
<u>Dense, stiff, yellowish-brown</u>	<u>0</u>	<u>15</u>
<u>Sandy clay.</u>		
<u>Med. Dense, damp, yellowish-</u>	<u>15</u>	<u>95.4</u>
<u>brown sand.</u>		
<u>Stiff, dark, gray clay, moist</u>	<u>95.4</u>	<u>110</u>
<u>Very dense, gray, clayey gravel</u>	<u>110</u>	<u>117</u>
<u>Bottom of Boring = 117.0 ft</u>		

WELL TEST

Bailing Pumping* Other _____
 Test rate _____ gpm Duration of test _____ hrs
 Drawdown _____ ft
 Measured from: top of casing ground level Other _____
 Static Level (depth to water) _____ ft. Date: _____
 Quality (clear, cloudy, taste, odor) N/A
 *(Attach a copy of the pumping test record, per section 1521.05, ORC)

PUMP

Type of pump _____ Capacity _____ gpm
 Pump set at _____ ft
 Pump installed by _____

WELL LOCATION

Location of well in State Plane coordinates, if available:
 Zone N/A x 1346467.18 y 480094.07
 Elevation of well 559 ft/m. Datum plain: NAD27 NAD83
 Source of coordinates: GPS Survey Other _____
 Sketch a map showing distance well lies from numbered state highways,
 street intersections, county roads, buildings or other notable landmarks.

North

West

South

(If additional space is needed to complete well log, use next consecutively numbered form.) I hereby certify the information given is accurate and correct to the best of my knowledge

Drilling Firm Pennsylvania Drilling Signed _____
 Address _____ Date _____
 City, State, Zip _____ ODH Registration Number 000031

COUNTY Hamilton TOWNSHIP Crosby SECTION LOT No. 7
(Circle One)
OWNER/BUILDER Dept. of Energy PROPERTY ADDRESS 7400 Willey Rd. Cincinnati
(Circle One or Both) First Last (Address of well location) Number Street City
LOCATION OF PROPERTY Fernald Environmental Management Project Zip Code + 4 _____

CONSTRUCTION DETAILS

CASING (Length below grade) Borehole Diameter 10.0 in.
 Diameter 4.0 in. Length* 129.5 ft. Wall Thickness 3/8 in. Material Volclay Volume used 3.11 yd³
 Diameter N/A in. Length* N/A ft. Wall Thickness N/A in. Method of installation side discharge Ramie Line
Type: Steel Galv. PVC Other _____
Joints: Threaded Welded Solvent Other _____
Liner: Length N/A Type N/A Wall Thickness N/A in. Depth: placed from 0.0 ft. to 92.0 ft.
GRAVEL PACK (Filter Pack)
Material Sand 10/20 Volume used 1.26 yd³
Method of installation poured down hole.
Depth: placed from 92.0 ~~98.0~~^{HB} ft. to 129.5 ft.
SCREEN
Type (wire wrapped, louvered, etc.) Slotted Material Stainless Steel Use of Well monitoring
Length 10.0 ft. Diameter 4.0 in. Rotary Cable Augered Driven Dug Other _____
Set between 98.0 ft. and 108.0 ft. Slot _____ Date of Completion 6/28/99
 Adapter Preassembled unit

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.
Show color, texture, hardness, and formation:
sandstone, shale, limestone, gravel, clay, sand, etc.

	From	To
<u>FEMP Well No. 4125</u>		
<u>Firm, brown, silty sand w/trace gravel</u>	<u>0</u>	<u>3</u>
<u>Dense, yellowish-brown sand w/trace gravel</u>	<u>3</u>	<u>45</u>
<u>Very Dense, brown sand w/trace gravel</u>	<u>45</u>	<u>80</u>
<u>Loose, brown sand w/trace gravel</u>	<u>80</u>	<u>86.5</u>
<u>Very Dense, grayish-brown, silty sand</u>	<u>86.5</u>	<u>110</u>
<u>Hard, gray clay w/trace gravel and silt</u>	<u>110</u>	<u>128</u>
<u>Very Dense, lt. gray limestone bedrock</u>	<u>128</u>	<u>129.5</u>
<u>Bottom of Boring = 129.5 ft.</u>		

WELL TEST

Bailing Pumping* Other _____
Test rate _____ gpm Duration of test _____ hrs
Drawdown _____ ft
Measured from: top of casing ground level Other _____
Static Level (depth to water) N/A ft. Date: _____
Quality (clear, cloudy, taste, odor) _____
*(Attach a copy of the pumping test record, per section 1521.05, ORC)

PUMP

Type of pump _____ Capacity _____ gpm
Pump set at _____ ft
Pump installed by _____

WELL LOCATION

Location of well in State Plane coordinates, if available:
Zone N/A x 1348012.83 y 474396.32
Elevation of well 527.5 ft. Datum plain: NAD27 NAD83
Source of coordinates: GPS Survey Other _____
Sketch a map showing distance well lies from numbered state highways, street intersections, county roads, buildings or other notable landmarks.

North

West

South

(If additional space is needed to complete well log, use next consecutively numbered form.) I hereby certify the information given is accurate and correct to the best of my knowledge
Drilling Firm Pennsylvania Drilling Signed _____
Address _____ Date _____
City, State, Zip _____ ODH Registration Number _____

000032

WELL LOG AND DRILLING REPORT

Ohio Department of Natural Resources
 Division of Water, 1939 Fountain Square Drive
 Columbus, Ohio 43224 Phone (614) 265-6739

1875 821367
 Permit Number _____

COUNTY Hamilton TOWNSHIP Cotacoma CROSBY SECTION/LOT No. 5
 (Circle One)
 OWNER/BUILDER Dept. of Energy PROPERTY ADDRESS 7400 Willey Rd. Cincinnati
 (Circle One or Both) (Address of well location) Number Street City
 LOCATION OF PROPERTY Fernald Environmental Management Project Zip Code + 4

CONSTRUCTION DETAILS

CASING (Length below grade) Borehole Diameter 1φ.φ in.
 Diameter 4.0 in. Length 237φ ft. Wall Thickness 3/8 in. Material Vdclay Volume used 7.16 yd³
 Diameter N/A in. Length N/A ft. Wall Thickness N/A in. Method of installation Side Discharge Tremie Line
 Type: Steel Galv. PVC Other _____
 Joints: Threaded Welded Solvent Other _____
 Liner: Length N/A Type N/A Wall Thickness N/A in. Depth: placed from 0.0 ft. to 211.9 ft.
GRAVEL PACK (Filter Pack)
 Material Sand 1φ/2φ Volume used 2.55 yd³
 Method of installation Poured down hole
 Depth: placed from 211.9 ft. to 237.φ ft.
SCREEN
 Type (wire wrapped, louvered, etc.) Slotted Material Stainless Steel
 Length 1φ.φ ft. Diameter 4.φ in. Rotary Cable Augered Driven Dug Other _____
 Set between 211.φ ft. and 227.φ ft. Slot .01φ" Date of Completion 9/1/93
 Pitless Device Adapter Preassembled unit
 Use of Well Monitoring

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.
 Show color, texture, hardness, and formation:
 sandstone, shale, limestone, gravel, clay, sand, etc.

	From	To
FEMP Well No. 41217		
Stiff, yellowish-brown, silty clay	0	13.5
Stiff, grey, gravelly clay, moist	13.5	50
V. dense, yellowish-brown, fine sand, poorly sorted	50	65
V. dense, lt. brown, coarse sand well graded	65	160
V. dense, lt. brown, coarse sand w/rock frag., well graded	160	200
Dense, olive, poorly sorted, fine sand, wet, trace gravel	200	237
Bottom of Borehole = 237.0 FT.		

WELL TEST

Bailing Pumping* Other _____
 Test rate _____ gpm Duration of test _____ hr.
 Drawdown _____
 Measured from: top of casing ground level Other _____
 Static Level (depth to water) _____ ft. Date: _____
 Quality (clear, cloudy, taste, odor) NA
 *(Attach a copy of the pumping test record, per section 1521.05, ORC)

PUMP

Type of pump _____ Capacity _____ gp
 Pump set at _____
 Pump installed by _____

WELL LOCATION

Location of well in State Plane coordinates, if available:
 Zone N/A x 1351750.27 y 481665.27
 Elevation of well 675.370 ft. Datum plain: NAD27 NAD83
 Source of coordinates: GPS Survey Other _____
 Sketch a map showing distance well lies from numbered state highways, street intersections, county roads, buildings or other notable landmarks.

North

West

South

(If additional space is needed to complete well log, use next consecutively numbered form.) I hereby certify the information given is accurate and correct to the best of my knowledge.
 Drilling Firm Pennsylvania Drilling Signed _____
 Address _____ Date _____
 City, State, Zip _____ ODH Registration Number 000033

WELL LOG AND DRILLING REPORT

Ohio Department of Natural Resources
 Division of Water, 1939 Fountain Square Drive
 Columbus, Ohio 43224 Phone (614) 265-6739

1875 821366
 Permit Number _____

COUNTY Hamilton TOWNSHIP Coternin **CROSBY** SECTION/LOT No. 8
 (Circle One)
 OWNER/BUILDER Dept. of Energy PROPERTY ADDRESS 7400 Wilkey Rd. Cincinnati
 (Circle One or Both) First (Address of well location) Number Street City
 LOCATION OF PROPERTY Fernald Environmental Management Project Zip Code + 4 _____

CONSTRUCTION DETAILS

CASING *(Length below grade) Borehole Diameter 10.0 in.
 Diameter 4.0 in. Length 191 ft. Wall Thickness 3/8 in.
 Diameter NA in. Length NA ft. Wall Thickness NA in.
 Type: Steel Galv. PVC Other _____
 Threaded Welded Solvent Other _____
 Joints: Threaded Welded Solvent Other _____
 Liner: Length NA Type NA Wall Thickness NA in.
SCREEN
 Type (wire wrapped, louvered, etc.) Slotted Material Stainless Steel
 Length 10.0 ft. Diameter 4.0 in.
 Set between 175.0 ft. and 185.0 ft. Slot .010
GROUT
 Material Volclay Volume used 5.85 yd³
 Method of installation Sial Discharge Tremie Line
 Depth: placed from 0.0 ft. to 173.0 ft.
GRAVEL PACK (Filter Pack)
 Material Sand 10/20 Volume used .61 yd³
 Method of installation poured down hole
 Depth: placed from 173.0 ft. to 191.0 ft.
 Pitless Device Adapter Preassembled unit
 Use of Well monitoring
 Rotary Cable Augered Driven Dug Other _____
 Date of Completion 11-3/92

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.
 Show color, texture, hardness, and formation:
 sandstone, shale, limestone, gravel, clay, sand, etc.

	From	To
<u>FEMP Well No. 4398</u>		
<u>Stiff, gray clay, w/trace gravel, slightly moist</u>	<u>0</u>	<u>18</u>
<u>V. dense, gray, clayey gravel, moist</u>	<u>18</u>	<u>30</u>
<u>V. dense, well graded, coarse sand, trace gravel, slightly moist</u>	<u>30</u>	<u>50</u>
<u>V. dense, lt. olive brown, well graded gravel, trace sand, wet</u>	<u>50</u>	<u>75</u>
<u>V. dense, lt. olive brown, well graded sand, trace gravel, wet</u>	<u>75</u>	<u>186.5</u>
<u>V. dense, grayish brown, coarse gravelly sand, wet</u>	<u>186.5</u>	<u>191</u>
<u>Bottom of Boring = 191.0 FT.</u>		

WELL TEST

Bailing Pumping* Other _____
 Test rate _____ gpm Duration of test _____
 Drawdown _____
 Measured from: top of casing ground level Other _____
 Static Level (depth to water) _____ ft. Date: _____
 Quality (clear, cloudy, taste, odor) NA
 *(Attach a copy of the pumping test record, per section 1521.05, ORC)

PUMP

Type of pump _____ Capacity _____
 Pump set at _____
 Pump installed by _____

WELL LOCATION

Location of well in State Plane coordinates, if available:
 Zone NA x 1349873.99 y 476608.65
 Elevation of well 579.1 ft. Datum plain: NAD27 NAD83
 Source of coordinates: GPS Survey Other _____
 Sketch a map showing distance well lies from numbered state highways, street intersections, county roads, buildings or other notable landmarks.

North

South

West

(If additional space is needed to complete well log, use next consecutively numbered form.) I hereby certify the information given is accurate and correct to the best of my knowledge.

Drilling Firm Pennsylvania Drilling Signed _____ 000034
 Address _____ Date _____
 City, State, Zip _____ ODH Registration Number _____

COUNTY Hamilton TOWNSHIP Crosby SECTION/LOT No. 5
 (Circle One)
 OWNER/BUILDER Dept. of Energy PROPERTY ADDRESS 7400 Wilkey Rd. Cincinnati
 (Circle One or Both) First Last (Address of well location) Number Street City
 LOCATION OF PROPERTY Fernald Environmental Management Project Zip Code + 4 _____

CONSTRUCTION DETAILS

CASING (Length below grade) Borehole Diameter 10.0 in.
 Diameter 4.0 in. Length 250 ft. Wall Thickness 3/8 in. Material Volclay Volume used 769 yd³
 Diameter NA in. Length NA ft. Wall Thickness NA in. Method of installation Side Discharges Transm Line
 Type: Steel Galv. PVC Other _____
 Joints: Threaded Welded Solvent Other _____
 Liner: Length NA Type NA Wall Thickness NA in. Depth: placed from 0.0 ft. to 222.5 ft.
SCREEN
 Type (wire wrapped, louvered, etc.) Slotted Material Stainless Steel
 Length 10.0 ft. Diameter 4.0 in. Rotary Cable Augered Driven Dug Other _____
 Set between 230.0 ft. and 240.0 ft. Slot .010" Date of Completion 10/15/92
 Pitless Device Adapter Preassembled unit
 Use of Well Munition

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.
 Show color, texture, hardness, and formation:
 sandstone, shale, limestone, gravel, clay, sand, etc.

	From	To
<u>FEMP Well No. 4424</u>		
<u>Hard, olive yellow, silty clay</u>	<u>0</u>	<u>13.5</u>
<u>Stiff, gray, gravelly clay</u>	<u>13.5</u>	<u>60</u>
<u>Very Dense, lt. brown, silty sand</u>	<u>60</u>	<u>80</u>
<u>Very Dense, lt. brown, poorly graded</u>	<u>80</u>	<u>232</u>
<u>sandy gravel</u>		
<u>Very dense, gray, fine sand</u>	<u>232</u>	<u>250</u>
<u>Bottom of Boring = 250.0 FT</u>		

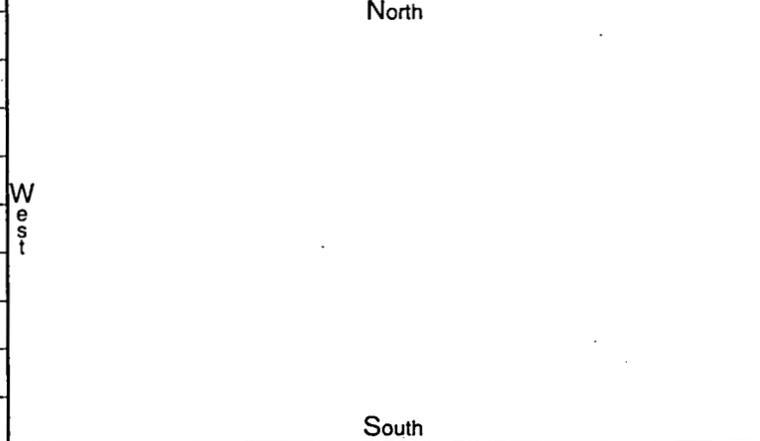
WELL TEST

Bailing Pumping* Other _____
 Test rate _____ gpm Duration of test _____ hr
 Drawdown _____
 Measured from: top of casing ground level Other _____
 Static Level (depth to water) _____ ft. Date: _____
 Quality (clear, cloudy, taste, odor) NA

*(Attach a copy of the pumping test record, per Section 1521.05, ORC)
PUMP
 Type of pump _____ Capacity _____ gp
 Pump set at _____
 Pump installed by _____

WELL LOCATION

Location of well in State Plane coordinates, if available: 482384.26
 Zone NA x 1351803.87 y 4822384.10
 Elevation of well 614.0 ft. Datum plain: NAD27 NAD83
 Source of coordinates: GPS Survey Other _____
 Sketch a map showing distance well lies from numbered state highways, street intersections, county roads, buildings or other notable landmarks.



*(If additional space is needed to complete well log, use next consecutively numbered form.) I hereby certify the information given is accurate and correct to the best of my knowledge.
 Drilling Firm Pennsylvania Drilling Signed _____
 Address _____ Date 000035
 City, State, Zip _____ ODH Registration Number _____

COUNTY Hamilton TOWNSHIP Columbian CROSBY SECTION/LOT No. 5
(Circle One)
OWNER/BUILDER Dept. of Energy PROPERTY ADDRESS 7400 Wilkey Rd. Cincinnati
(Circle One or Both) First Last (Address of well location) Number Street City
LOCATION OF PROPERTY Fernald Environmental Management Project Zip Code + 4 _____

CONSTRUCTION DETAILS

CASING * (Length below grade) Borehole Diameter 10.0 in.
 Diameter 4.0 in. Length 24.0 ft. Wall Thickness 3/8 in. Material Volclay Volume used 7.34 yd³
 Diameter NA in. Length NA ft. Wall Thickness NA in. Method of installation Side Discharge Trainee Line
 Type: Steel Galv. PVC Other _____
 Joints: Threaded Welded Solvent Other _____
 Liner: Length NA Type NA Wall Thickness NA in. Depth: placed from 0.0 ft. to 217.5 ft.
GRAVEL PACK (Filter Pack)
 Material Sand 4/30 Volume used .76 yd³
 Method of installation packed down hole
 Depth: placed from 217.5 ft. to 240.0 ft.
SCREEN
 Type (wire wrapped, louvered, etc.) Slotted Material Stainless Steel Use of Well monitoring
 Length 10.0 ft. Diameter 4.0 in. Rotary Cable Augered Driven Dug Other _____
 Set between 220.0 ft. and 230.0 ft. Slot .010" Date of Completion 11/18/92
 Adapter Preassembled unit

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.
Show color, texture, hardness, and formation:
sandstone, shale, limestone, gravel, clay, sand, etc.

	From	To
<u>FEMP Well No. 4425</u>		
<u>Stiff, yellowish-brown, silty clay</u>	<u>0</u>	<u>13.5</u>
<u>Stiff, gray, gravelly, clay, moist</u>	<u>13.5</u>	<u>50</u>
<u>Very Dense, yellowish-brown, fine sand, poorly sorted</u>	<u>50</u>	<u>65</u>
<u>Very Dense, lt. brown, coarse sand, well graded.</u>	<u>65</u>	<u>160</u>
<u>Very Dense, lt. brown, coarse sand w/ rock frag.</u>	<u>160</u>	<u>225</u>
<u>Very Dense, lt. brown, coarse sand w/ gravel, silt</u>	<u>225</u>	<u>240</u>
<u>Bottom of Boring = 240.0 ft.</u>		

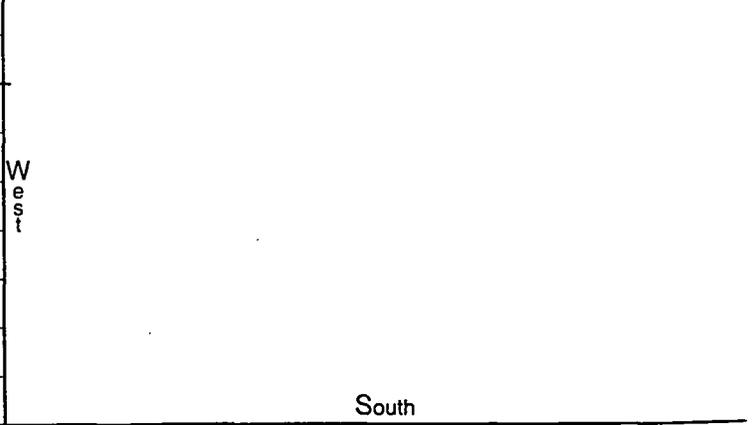
WELL TEST

Bailing Pumping* Other _____
 Test rate _____ gpm Duration of test _____ hr
 Drawdown _____
 Measured from: top of casing ground level Other _____
 Static Level (depth to water) _____ ft. Date: _____
 Quality (clear, cloudy, taste, odor) _____

*(Attach a copy of the pumping test record, per section 1521.05, ORC)
PUMP
 Type of pump _____ Capacity _____ gp
 Pump set at _____
 Pump installed by _____

WELL LOCATION

Location of well in State Plane coordinates, if available:
 Zone NA x 1351799.03 y 48167.57
 Elevation of well 607.1 ft./m. Datum plain: NAD27 NAD83
 Source of coordinates: GPS Survey Other _____
 Sketch a map showing distance well lies from numbered state highways, street intersections, county roads, buildings or other notable landmarks.



*(If additional space is needed to complete well log, use next consecutively numbered form.) I hereby certify the information given is accurate and correct to the best of my knowledge.
 Drilling Firm Pennsylvania Drillers Signed _____
 Address _____ Date _____
 City, State, Zip _____ ODH Registration Number 000036

WELL LOG AND DRILLING REPORT

Ohio Department of Natural Resources
 Division of Water, 1939 Fountain Square Drive
 Columbus, Ohio 43224 Phone (614) 265-6739

1875 821333
 Permit Number _____

COUNTY Hamilton TOWNSHIP Cotran Crosby SECTION/LOT No. 5
 (Circle One)
 OWNER/BUILDER Dept. of Energy PROPERTY ADDRESS 7400 Willey Rd. Cincinnati
 (Circle One or Both) First Last (Address of well location) Number Street City
 LOCATION OF PROPERTY Fernald Environmental Management Project Zip Code + 4 _____

CONSTRUCTION DETAILS

CASING *(Length below grade) Borehole Diameter 1φ.φ in.
 Diameter 4φ in. Length 227φ ft. Wall Thickness 3/8 in.
 Diameter NA in. Length NA ft. Wall Thickness NA in.
 Type: Steel Galv. PVC Other _____
 Joints: Threaded Welded Solvent Other _____
 Liner: Length NA Type NA Wall Thickness NA in.
SCREEN
 Type (wire wrapped, louvered, etc.) Slotted Material Stainless Steel
 Length 1φ.φ ft. Diameter 4φ in.
 Set between 2φ6.φ ft. and 2φ6.φ ft. Slot .φ10"
GROUT
 Material Volclay Volume used 6.89 yd³
 Method of installation Side Discharge Tremie Line
 Depth: placed from φ.φ ft. to 2φ4.φ ft.
GRAVEL PACK (Filter Pack)
 Material Sand 4φ Volume used .78 yd³
 Method of installation poured down hole
 Depth: placed from 2φ4.φ ft. to 227φ ft.
 Pitless Device Adapter Preassembled unit
 Use of Well Monitoring
 Rotary Cable Augered Driven Dug Other _____
 Date of Completion 12-9-92

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.
 Show color, texture, hardness, and formation:
 sandstone, shale, limestone, gravel, clay, sand, etc.

	From	To
<u>FEMP Well No. 4426</u>		
<u>Stiff, H. brown, silty clay w/ sand, gravel, moist</u>	<u>0</u>	<u>36</u>
<u>Very dense, yellowish-brown poorly graded medium sand w/gravel</u>	<u>36</u>	<u>80</u>
<u>Med. dense, dark gray, well sorted sand w/gravel, wet</u>	<u>80</u>	<u>223</u>
<u>Very dense, grayish-brown, well graded gravel including coal, granite and limestone w/little sand</u>	<u>223</u>	<u>226</u>
<u>Gray, weathered, limy shale</u>	<u>226</u>	<u>227</u>
<u>Bottom of Boring = 227.0 ft</u>		

WELL TEST

Bailing Pumping* Other _____
 Test rate _____ gpm Duration of test _____ hr:
 Drawdown _____ f
 Measured from: top of casing ground level Other _____
 Static Level (depth to water) _____ ft. Date: _____
 Quality (clear, cloudy, taste, odor) NA
 *(Attach a copy of the pumping test record, per section 1521.05, ORC)

PUMP

Type of pump _____ Capacity _____ gpm
 Pump set at _____ f
 Pump installed by _____

WELL LOCATION

Location of well in State Plane coordinates, if available:
 Zone NA x 1351224.77 y 480865.66
 Elevation of well 597.8 m. Datum plain: NAD27 NAD83
 Source of coordinates: GPS Survey Other _____
 Sketch a map showing distance well lies from numbered state highways, street intersections, county roads, buildings or other notable landmarks.

North

South

W
E
S
T

*(If additional space is needed to complete well log, use next consecutively numbered form.) I hereby certify the information given is accurate and correct to the best of my knowledge.

Drilling Firm Pennsylvania Drilling Signed _____
 Address _____ Date _____
 City, State, Zip _____ ODH Registration Number _____

000037

COUNTY Hamilton TOWNSHIP Crosby SECTION/LOT No. 5
(Circle One)
OWNER/BUILDER Dept. of Energy PROPERTY ADDRESS 7400 Wilkey Rd. Cincinnati
(Circle One or Both) (Address of well location) (Number) (Street) (City)
LOCATION OF PROPERTY Fernald Environmental Management Project Zip Code + 4 _____

CONSTRUCTION DETAILS

CASING (Length below grade) Borehole Diameter 10.0 in.
 Diameter 4.0 in. Length 213 ft. Wall Thickness 3/8 in. Material Volclay Volume used 645 yd³
 Diameter NA in. Length NA ft. Wall Thickness NA in. Method of installation Side Discharge Tremie Line
 Type: Steel Galv. PVC Other _____
 Joints: Threaded Welded Solvent Other _____
 Liner: Length NA Type NA Wall Thickness NA in. Depth: placed from 0.0 ft. to 190.9 ft.
GRAVEL PACK (Filter Pack)
 Material Sand Volume used 2.24 yd³
 Method of installation packed down hole
 Depth: placed from 190.9 ft. to 213.0 ft.
SCREEN
 Type (wire wrapped, louvered, etc.) Slotted Material Stainless Steel Use of Well Monitoring
 Length 10.0 ft. Diameter 4.0 in. Rotary Cable Augered Driven Dug Other _____
 Set between 193.0 ft. and 203.0 ft. Slot .010 Date of Completion 12/3/92
 Pitless Device Adapter Preassembled unit

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.
Show color, texture, hardness, and formation:
sandstone, shale, limestone, gravel, clay, sand, etc.

	From	To
FEMP Well No. 4432		
Stiff, brown, silty clay w/trace gravel	0	16
Stiff, gray, clayey silt w/trace gravel, moist, low plasticity	16	37.5
Very Dense, yellowish-brown, silty sand, dry	37.5	45
Very Dense, lt. brown, gravelly sand, dry	45	90
Med. Dense, brown, med. sand w/trace gravel	90	105
Dense, grayish-brown, well graded gravel, wet	105	150
Dense, gray sand w/trace gravel wet.	150	203
Very dense, olive brown, poorly graded silty fine sand, wet	203	213
Bottom of Boring = 213 ft.		

WELL TEST

Bailing Pumping* Other _____
 Test rate _____ gpm Duration of test _____ hrs
 Drawdown _____ f
 Measured from: top of casing ground level Other _____
 Static Level (depth to water) _____ ft. Date: _____
 Quality (clear, cloudy, taste, odor) NA

*(Attach a copy of the pumping test record, per section 1521.05, ORC)

PUMP

Type of pump _____ Capacity _____ gpm
 Pump set at _____ f
 Pump installed by _____

WELL LOCATION

Location of well in State Plane coordinates, if available:
 Zone NA x 1351620.83 y 478054.67
 Elevation of well 603.70 m. Datum plain: NAD27 NAD83
 Source of coordinates: GPS Survey Other _____

Sketch a map showing distance well lies from numbered state highways, street intersections, county roads, buildings or other notable landmarks.

North

South

(If additional space is needed to complete well log, use next consecutively numbered form.) I hereby certify the information given is accurate and correct to the best of my knowledge

Drilling Firm Pennsylvania Drilling Signed _____

Address _____ Date _____ **000038**

City, State, Zip _____ ODH Registration Number _____

WELL LOG AND DRILLING REPORT

Ohio Department of Natural Resources
 Division of Water, 1939 Fountain Square Drive
 Columbus, Ohio 43224 Phone (614) 265-6739

Permit Number _____

187221335

COUNTY Hamilton TOWNSHIP Cotentin Crosby SECTION/LOT No. 5
(Circle One)

OWNER/BUILDER Dept. of Energy PROPERTY ADDRESS 7400 Willey Rd. Cincinnati
(Circle One or Both) First Last (Address of well location) Number Street City

LOCATION OF PROPERTY Fernald Environmental Monitoring Project Zip Code + 4 _____

CONSTRUCTION DETAILS

CASING *Length below grade) Borehole Diameter 10.0 in.
 Diameter 4.0 in. Length 205 ft. Wall Thickness 3/8 in.
 Diameter NA in. Length NA ft. Wall Thickness NA in.

Type: Steel Galv. PVC Other _____
 Thru Joints: Threaded Welded Solvent Other _____
 Liner: Length NA Type NA Wall Thickness NA in.

GROUT
 Material Volctag Volume used 6.08 yd³
 Method of installation Side Discharge Tremie Line
 Depth: placed from 0.0 ft. to 180

GRAVEL PACK (Filter Pack)
 Material Sand 10/20 Volume used .85 yd³
 Method of installation Poured Down Hole
 Depth: placed from 180 ft. to 205

SCREEN
 Type (wire wrapped, louvered, etc.) Slotted Material stainless steel
 Length 10.0 ft. Diameter 4.0 in.
 Set between 185.0 ft. and 195.0 ft. Slot .010"

Pitless Device Adapter Preassembled unit
Use of Well Monitoring
 Rotary Cable Augered Driven Dug Other _____
 Date of Completion 3/9/93

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.
 Show color, texture, hardness, and formation:
 sandstone, shale, limestone, gravel, clay, sand, etc.

	From	To
<u>FEEMP Well No. 4436</u>		
<u>Stiff, dark gray, silty clay with organics, dry</u>	<u>0</u>	<u>10.5</u>
<u>Med. dense, clayey to coarse sand, moist</u>	<u>10.5</u>	<u>16</u>
<u>V. stiff, gray clay w/trace sand + gravel, moist</u>	<u>16</u>	<u>50</u>
<u>V. dense, gray med. sand w/ gravel, poorly graded, dry</u>	<u>50</u>	<u>145</u>
<u>V. stiff, olive brown clay, medium plasticity, moist</u>	<u>145</u>	<u>160</u>
<u>V. dense, gray, med. to coarse sand + gravel, well graded</u>	<u>160</u>	<u>203.5</u>
<u>shale w/sandstone and limest. fragments</u>	<u>203.5</u>	<u>205</u>
<u>Bottom of Boring = 205.0 ft.</u>		

WELL TEST

Bailing Pumping* Other _____
 Test rate _____ gpm Duration of test _____ h
 Drawdown _____
 Measured from: top of casing ground level Other _____
 Static Level (depth to water) NA ft. Date: _____
 Quality (clear, cloudy, taste, odor) _____

*(Attach a copy of the pumping test record, per section 1521.05, ORC)

PUMP

Type of pump _____ Capacity _____ gpm
 Pump set at _____
 Pump installed by _____

WELL LOCATION

Location of well in State Plane coordinates, if available:
 Zone NA x 1351799.03 y 481617.57
 Elevation of well 587.76 ft./m. Datum plain: NAD27 NAD83
 Source of coordinates: GPS Survey Other _____
 Sketch a map showing distance well lies from numbered state highways, street intersections, county roads, buildings or other notable landmarks:

North

West

South

(If additional space is needed to complete well log, use next consecutively numbered form.) I hereby certify the information given is accurate and correct to the best of my knowledge.

Drilling Firm Pennsylvania Drilling Signed _____
 Address _____ Date _____
 City, State, Zip _____ ODH Registration Number 006039

COUNTY Hamilton TOWNSHIP Cotermis CROSBY SECTION/LOT No. 5
(Circle One)
OWNER/BUILDER Dept. of Energy PROPERTY ADDRESS 7400 Willey Rd. Cincinnati
(Circle One or Both) First Last (Address of well location) Number Street City
LOCATION OF PROPERTY Fernald Environmental Management Project Zip Code +4

CONSTRUCTION DETAILS

CASING *(Length below grade) Borehole Diameter 8.0 in.
 Diameter 4.0 in. Length* 221 ft. Wall Thickness 3/8 in. Material Volclay Volume used 3.74 yd³
 Diameter NA in. Length* NA ft. Wall Thickness NA in. Method of installation Side Discharge Tremie Line
Type: Steel Galv. PVC Other _____
Joints: Threaded Welded Solvent Other _____
Liner: Length NA Type NA Wall Thickness NA in. Depth: placed from 196.0 ft. to 221.0 ft.
GRAVEL PACK (Filter Pack)
Material Sand 4/30 Volume used .48 yd³
Method of installation Poured Down Hole
Depth: placed from 196.0 ft. to 221.0 ft.
SCREEN
Type (wire wrapped, louvered, etc.) Slotted Material Stainless Steel Use of Well Monitoring Well
Length 10.0 ft. Diameter 4.0 in. Rotary Cable Augered Driven Dug Other _____
Set between 201.0 ft. and 211.0 ft. Slot .20" Date of Completion 3/2/93
PITLESS DEVICE Adapter Preassembled unit

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.
Show color, texture, hardness, and formation:
sandstone, shale, limestone, gravel, clay, sand, etc.

	From	To
<u>FEMP Well No. 443a</u>		
<u>Stiff, yellowish-brown clay</u>	<u>0</u>	<u>33</u>
<u>w/trace gravel, slightly moist</u>		
<u>Dense, lt. brown, well graded</u>	<u>33</u>	<u>105</u>
<u>sand w/trace gravel</u>		
<u>Very Dense, lt. brown, well</u>	<u>105</u>	<u>180</u>
<u>graded, gravelly sand, wet</u>		
<u>Very Dense, olive brown, well</u>	<u>180</u>	<u>220</u>
<u>graded sand, trace gravel</u>		
<u>wet</u>		
<u>Very Dense, dive brown, well</u>	<u>220</u>	<u>221</u>
<u>graded sand, trace gravel,</u>		
<u>crystalline limestone/shale</u>		
<u>wet.</u>		
<u>Bottom of Boring = 221 ft.</u>		

WELL TEST

Bailing Pumping* Other _____
Test rate _____ gpm Duration of test _____ hrs
Drawdown _____ f
Measured from: top of casing ground level Other _____
Static Level (depth to water) _____ ft. Date: _____
Quality (clear, cloudy, taste, odor) NA

*(Attach a copy of the pumping test record, per section 1521.05, ORC)

PUMP

Type of pump _____ Capacity _____ gpm
Pump set at _____ f
Pump installed by _____

WELL LOCATION

Location of well in State Plane coordinates, if available:
Zone N/A x 1350730.75 y 481113.68
Elevation of well 590.646 m. Datum plain: NAD27 NAD83
Source of coordinates: GPS Survey Other _____
Sketch a map showing distance well lies from numbered state highways, street intersections, county roads, buildings or other notable landmarks.

North

South

West

*(If additional space is needed to complete well log, use next consecutively numbered form.) I hereby certify the information given is accurate and correct to the best of my knowledge

Drilling Firm Pennsylvania Drilling Signed _____
Address _____ Date _____
City, State, Zip _____ ODH Registration Number _____

000040

COUNTY Hamilton TOWNSHIP Caterino CROSBY SECTION/LOT No. 5
(Circle One)
OWNER/BUILDER Dept. of Energy PROPERTY ADDRESS 7400 Willey Rd. Cincinnati
(Circle One or Both) (First Last) (Address of well location) (Number Street City)
LOCATION OF PROPERTY Fernald Environmental Management Project Zip Code + 4 _____

CONSTRUCTION DETAILS

CASING (Length below grade) Borehole Diameter 10.0 in.
 Diameter 4.0 in. Length 210 ft. Wall Thickness 3/8 in. Material Volclay Volume used 6.08 yd³
 Diameter NA in. Length NA ft. Wall Thickness NA in. Method of installation Side Discharge Teevie Line
 Type: Steel Galv. PVC Other _____
 Joints: Threaded Welded Solvent Other _____
 Liner: Length NA Type NA Wall Thickness NA in. Depth: placed from 180.0 ft. to 210.0 ft.
SCREEN
 Type (wire wrapped, louvered, etc.) Slotted Material Stainless Steel
 Length 10.0 ft. Diameter 4.0 in. Rotary Cable Augered Driven Dug Other _____
 Set between 188.7 ft. and 198.7 ft. Slot .020" Date of Completion 3/2/93

GROUT
 Material Volclay Volume used 6.08 yd³
 Method of installation Side Discharge Teevie Line
 Depth: placed from 0.0 ft. to 180.0 ft.
GRAVEL PACK (Filter Pack) 4/30
 Material Sand #20 Volume used 1.01 yd³
 Method of installation Poured Down Hole
 Depth: placed from 180.0 ft. to 210.0 ft.
 Pitless Device Adapter Preassembled unit
 Use of Well Monitoring Well
 Rotary Cable Augered Driven Dug Other _____
 Date of Completion 3/2/93

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.
 Show color, texture, hardness, and formation:
 sandstone, shale, limestone, gravel, clay, sand, etc.

	From	To
<u>FEEMP Well No. 4446</u>		
<u>Stiff, brownish-yellow, silty clay, low plasticity, slightly moist</u>	<u>0</u>	<u>24</u>
<u>Dense, brownish-yellow, poorly graded, fine sand, dry</u>	<u>24</u>	<u>46.5</u>
<u>Very Dense, yellowish-brown, well-graded gravelly sand, dry</u>	<u>46.5</u>	<u>70</u>
<u>Very Dense, grayish brown, well-graded sand, wet, w/trace gravel</u>	<u>70</u>	<u>145</u>
<u>Dense, olive brown, well-graded sandy gravel, wet</u>	<u>145</u>	<u>170</u>
<u>Dense, olive brown, well-graded sand w/trace gravel.</u>	<u>170</u>	<u>209</u>
<u>Shale</u>	<u>209</u>	<u>210</u>
<u>Bottom of Boring = 210.0ft.</u>		

WELL TEST

Bailing Pumping* Other _____
 Test rate _____ gpm Duration of test _____ hr:
 Drawdown _____ f
 Measured from: top of casing ground level Other _____
 Static Level (depth to water) _____ ft. Date: _____
 Quality (clear, cloudy, taste, odor) NA
 *(Attach a copy of the pumping test record, per section 1521.05, ORC)

PUMP

Type of pump _____ Capacity _____ gpm
 Pump set at _____ f
 Pump installed by _____

WELL LOCATION

Location of well in State Plane coordinates, if available:
 Zone N/A x 1350 727.47 y 479409.92
 Elevation of well 582.96 ft. Datum plain: NAD27 NAD83
 Source of coordinates: GPS Survey Other _____

Sketch a map showing distance well lies from numbered state highways, street intersections, county roads, buildings or other notable landmarks.

North

South

(If additional space is needed to complete well log, use next consecutively numbered form.) I hereby certify the information given is accurate and correct to the best of my knowledge.

Drilling Firm Pennsylvania Drilling Signed _____
 Address _____ Date _____
 City, State, Zip _____

000041

COUNTY Hamilton TOWNSHIP Crosby SECTION/LOT No. 6
 (Circle One)
 OWNER/BUILDER Dept. of Energy PROPERTY ADDRESS 7400 Wilkey Rd. Cincinnati
 (Circle One or Both) First Last Number Street City
 LOCATION OF PROPERTY Fernald Environmental Management Project Zip Code +4

CONSTRUCTION DETAILS

CASING (Length below grade) Borehole Diameter 10.0 in.
 Diameter 4.0 in. Length 206.5 ft. Wall Thickness 3/8 in. Material Volclay Volume used 5.98 yd³
 Diameter NA in. Length NA ft. Wall Thickness NA in. Method of installation Side Discharge Tremie Line
 Type: Steel Galv. PVC Other _____
 Threaded Welded Solvent Other _____
 Joints: Threaded Welded Solvent Other _____
 Liner: Length NA Type NA Wall Thickness NA in. Depth: placed from 0.0 ft. to 177.0 ft.
GRAVEL PACK (Filter Pack)
 Material Sand 4/30 Volume used 1.0 yd³
 Method of installation Poured Down Hole
 Depth: placed from 177.0 ft. to 206.5 ft.
SCREEN
 Type (wire wrapped, louvered, etc.) Slotted Material Stainless Steel
 Length 10.0 ft. Diameter 4.0 in. Rotary Cable Augered Driven Dug Other _____
 Set between 194.9 ft. and 194.9 ft. Slot .020" Date of Completion 4/2/93
 Pitless Device Adapter Preassembled unit
 Use of Well Monitoring well

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.
 Show color, texture, hardness, and formation:
 sandstone, shale, limestone, gravel, clay, sand, etc.

	From	To
<u>FEMP Well No. 4451</u>		
<u>Stiff, yellowish-brown, silty clay moist</u>	<u>0</u>	<u>23.5</u>
<u>Very dense, yellowish-brown sand, poorly graded, moist</u>	<u>23.5</u>	<u>45</u>
<u>Dense, yellowish-brown, sand, gravel, poorly graded, moist</u>	<u>45</u>	<u>45</u>
<u>Very dense, grayish-brown, sand w/trace gravel, wet</u>	<u>45</u>	<u>205</u>
<u>Very dense, grayish-brown coarse gravel</u>	<u>205</u>	<u>206</u>
<u>Shale, wet to moist</u>	<u>206</u>	<u>206.5</u>
<u>Bottom of Boring = 206.5 FT</u>		

WELL TEST

Bailing Pumping* Other _____
 Test rate _____ gpm Duration of test _____ hrs
 Drawdown _____ ft.
 Measured from: top of casing ground level Other _____
 Static Level (depth to water) _____ ft. Date: _____
 Quality (clear, cloudy, taste, odor) NA
 *(Attach a copy of the pumping test record, per section 1521.05, ORC)

PUMP

Type of pump _____ Capacity _____ gpm
 Pump set at _____ ft.
 Pump installed by _____

WELL LOCATION

Location of well in State Plane coordinates, if available:
 Zone NA x 1348533.16 y 479390.74
 Elevation of well _____ ft./m. Datum plain: NAD27 NAD83
 Source of coordinates: GPS Survey Other _____

Sketch a map showing distance well lies from numbered state highways, street intersections, county roads, buildings or other notable landmarks.

North

West

South

*(If additional space is needed to complete well log, use next consecutively numbered form.) I hereby certify the information given is accurate and correct to the best of my knowledge.

Drilling Firm Pennsylvania Drilling Signed _____
 Address _____ Date _____

000042

City, State, Zip _____ ODH Registration Number _____

WELL LOG AND DRILLING REPORT

Ohio Department of Natural Resources
Division of Water, 1939 Fountain Square Drive
Columbus, Ohio 43224 Phone (614) 265-6739

1875821362

DNR 7802.94
TYPE OR USE PEN
SELF TRANSCRIBING
PRESS HARD

Permit Number _____

COUNTY Hamilton TOWNSHIP ~~Ceteran~~ CROSBY SECTION/LOT No. 7
(Circle One)

OWNER/BUILDER Dept of Energy PROPERTY ADDRESS 7400 Willey Rd. Cincinnati
(Circle One or Both) First Last (Address of well location) Number Street City

LOCATION OF PROPERTY Fernald Environmental Management Project Zip Code + 4 _____

CONSTRUCTION DETAILS

CASING (Length below grade) Borehole Diameter 8.0 in.

Diameter 2.0 in. Length 166.0 ft. Wall Thickness 3/8 in. Material Volclay Volume used 3.67 yd³

Diameter NA in. Length NA ft. Wall Thickness NA in. Method of installation Side Discharge Tremie Lines

Type: Steel Galv. PVC Other _____

Joints: Threaded Welded Solvent Other _____

Liner: Length NA Type NA Wall Thickness NA in.

GROUT

Depth: placed from 0.0 ft. to 1550 ft.

GRAVEL PACK (Filter Pack)

Material Sand (Natural Formation) Volume used NA

Method of installation Collapse

Depth: placed from NA ft. to NA ft.

SCREEN

Type (wire wrapped, louvered, etc.) Slotted Material Stainless Steel

Length 5.0 ft. Diameter 2.0 in.

Set between 160.0 ft. and 165.0 ft. Slot .010"

Pitless Device Adapter Reassembled unit

Use of Well Monitoring Well

Rotary Cable Augered Driven Dug Other _____

Date of Completion 4/16/93

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.
Show color, texture, hardness, and formation:
sandstone, shale, limestone, gravel, clay, sand, etc.

	From	To
<u>FEMP Well No. 4920</u>		
<u>Yellowish-orange, silty, sandy clay, moist</u>	<u>0</u>	<u>25</u>
<u>Yellowish-orange sand and gravel w/fines, well-graded, moist</u>	<u>25</u>	<u>50</u>
<u>Yellowish-orange sand w/trace gravel, poorly graded.</u>	<u>50</u>	<u>70</u>
<u>lt. brown sand and gravel, well graded, wet</u>	<u>70</u>	<u>80.1</u>
<u>Yellowish-orange sand and gravel w/fines, well graded, wet.</u>	<u>80.1</u>	<u>109</u>
<u>Olive gray sand and gravel well, graded, wet</u>	<u>109</u>	<u>129</u>
<u>Olive gray sand, trace gravel poorly graded, wet</u>	<u>129</u>	<u>140</u>
<u>Olive gray silty sand, trace gravel</u>	<u>140</u>	<u>150</u>
<u>Olive gray sand and gravel, poorly graded, wet</u>	<u>150</u>	<u>166</u>
<u>Bottom of boring = 166.0 ft.</u>		

WELL TEST

Bailing Pumping* Other _____

Test rate _____ gpm Duration of test _____ hrs.

Drawdown _____ ft.

Measured from: top of casing ground level Other _____

Static Level (depth to water) _____ ft. Date: _____

Quality (clear, cloudy, taste, odor) NA

*(Attach a copy of the pumping test record, per section 1521.05, ORC)

PUMP

Type of pump _____ Capacity _____ gpm

Pump set at _____ ft.

Pump installed by _____

WELL LOCATION

Location of well in State Plane coordinates, if available:
Zone NA x 1349131.63 y 474512.01

Elevation of well 592.07 ft./m. Datum plain: NAD27 NAD83

Source of coordinates: GPS Survey Other _____

Sketch a map showing distance well lies from numbered state highways, street intersections, county roads, buildings or other notable landmarks.

North

South

West

East

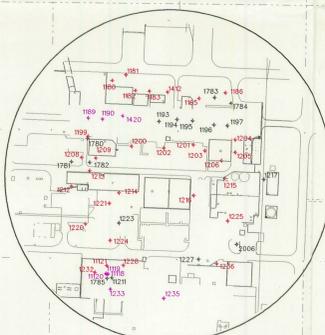
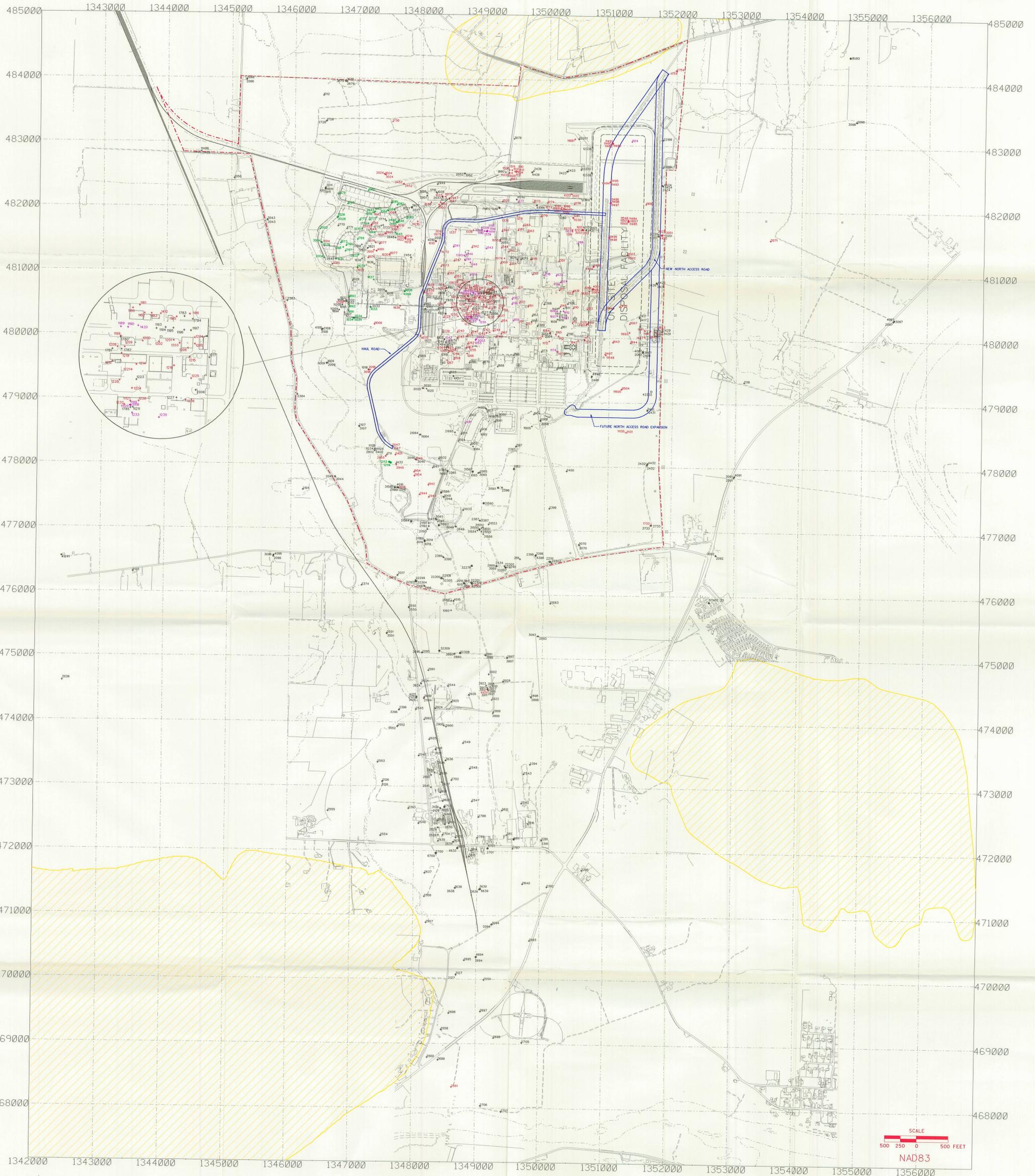
(If additional space is needed to complete well log, use next consecutively numbered form.) I hereby certify the information given is accurate and correct to the best of my knowledge.

Drilling Firm ATEC Environmental Signed _____ Date _____

000043

Address _____

City, State, Zip _____ ODH Registration Number _____



REVISIONS	DATE	REVISED BY
CREATED BY FERMC GIS	3/13/96	P. HILDEBRAND
FORMAT AND SYMBOL UPDATE	1/22/97	L. McCANDLESS
UPDATED BY SED ENTRIES/LISA LUDWICK	7/21/97	L. McCANDLESS
UPDATED BY SED ENTRIES/LISA LUDWICK	10/26/97	L. McCANDLESS
UPDATED BY SED ENTRIES/EXISTING WELLS	12/10/97	L. McCANDLESS
UPDATED BY SED ENTRIES/WELL RE-SURVEY	10/02/98	L. McCANDLESS

Fernald Environmental Management Project

FLUOR DANIEL FERNALD

U.S. DEPARTMENT OF ENERGY

- WELL SYMBOL DESCRIPTION:
- ◆ TYPE 1 MONITORING WELLS
 - ◆ TYPE 2 MONITORING WELLS
 - ◆ TYPE 3 MONITORING WELLS
 - ◆ TYPE 4 MONITORING WELLS
 - TYPE 6 MONITORING WELLS
 - LYSIMETER

LEGEND:

- COLOR CODE DESCRIPTION:
- WELLS PROPOSED FOR ABANDONMENT IN 1998-1999
 - WELLS PLUGGED IN PLACE
 - ABANDONED WELLS/LYSIMETERS
 - WELLS DEPICTED IN BLACK ARE ACTIVE
 - BEDROCK OUTLINE

FEMP PROPOSED WELL ABANDONMENTS FOR 1996-1997