

Timeline: Key Events that Lead to the Installation of a Public Water Supply for Fernald Area Residents

Introduction

August 1983, the public became aware that there is a Nuclear Feed Processing plant in their community. A uranium processing plant was hiding behind a veil of secrecy, a façade of cows grazing in front of the plant, a checkered red and white water tower, and a sign reading National Lead of Ohio Fernald Feed Materials Plant. A newspaper article tells of elevated radiation levels around two waste storage tanks at the plant.

December 10, 1984, National Lead of Ohio (NLO) issues a press release about a dust leak. A leak, which had gone undetected for several weeks, allowed an estimated 60 kilograms of uranium dust to escape.

December 11, 1984, the public hears three residential wells are found to have contamination from the site. These releases are of great concern to families living within the five-mile radius (exposure domain) of the Fernald site because groundwater and the Great Miami aquifer are the main source of water that supplies their wells and cisterns.

Community residents may have been exposed to both radiological and non-radiological contaminants through groundwater pathways, soil contamination, and air dispersion of emissions from the plant. (*Voillequé, et al., 1995*)

Information from groundwater modeling indicates that private wells south of the Fernald Nuclear Feed Material site may have been first impacted by the contaminated South Plume some time after 1962. No private well sampling was conducted before 1981 (*Voillequé, et al., 1995 Ref: ATSDR Fernald Public Health Assessment 2000*).

Eventual installation of the public water supply was due to the persistence of Fernald Residents for Environmental, Safety and Health, Inc. (F.R.E.S.H.), a grassroots organization.

Background

In 1951, the U.S. Department of Energy (DOE) built a nuclear Feed Processing Plant formerly the Fernald Feed Material Production Center (FMPC) in Crosby Township, Hamilton County, Ohio a rural community 17 miles northwest of Cincinnati, Ohio.

During the thirty-four years of plant operation, it has been estimated 310,000kg; of airborne uranium dust was released in the atmosphere. An additional 99,000 kg. of radioactive liquid waste from water used for processing uranium was released into service and storm drains that emptied into the Great Miami River and /or Paddy's Run Creek. In addition to radioactive contaminant, other non-radiologic toxic substances were released including chlorinated and non-chlorinated solvents, metals and metal salts.

Key events leading up to the US Department of Energy (DOE) providing a public water system to residents whose wells and cisterns are impacted by the contaminated South Plume:

December 1951

Atomic Energy Commission (AEC) and Ohio Department of Health (ODH) agree to a maximum level of 0.35 parts per million standard for uranium concentration in the Great Miami River.

January 1961

A report by a University of Cincinnati Professor J.D. Eye documents groundwater contamination caused by activities at the Fernald site.

September 1962

The U.S. Geologic Survey (USGS) report confirms contamination from Fernald waste pits. This report notes that the contamination would affect Paddy's Run Creek and nearby aquifer if left unchecked.

1973

Ohio Environmental Protection Agency (OEPA) replaces Ohio Department of Health (ODH) as agency responsible for monitoring water quality **outside** the Fernald plant.

1976

Fernald obtains National Pollution Discharge Emission System (NPDES) permit from the U.S. Environmental Protection Agency (USEPA). This requires the facility to sample and report on the characteristic of its wastewater discharges according to USEPA regulations. NPDES data is reported annually in Fernald Environmental Monitoring reports.

Mid-1980

Investigation of the groundwater contamination around the Fernald site is undertaken by Dames and Moore for the FMPC. Their work includes a compilation of the monthly uranium concentrations in three private wells south of the site from November 1981 through February 1985 (Dames and Moore, 1985).

1981

Ohio Environmental Protection Agency (OEPA) first notes radioactive contamination in wells around Fernald, while investigating neighboring chemical companies. These findings are confirmed by studies the following year.

1983

Fleming and Ross observe results of the FMPC monitoring program of the three private wells were not reported in the environmental report for 1982.

March 1984

OEPA conducts an inspection at Fernald, finding many violations of hazardous waste laws at the site.

December 10, 1984

DOE contractor NLO issues a press release of an estimated sixty kilograms of uranium dust escaping from the building.

December 1984

Congressman Thomas Luken through newspaper articles becomes aware of three contaminated residential wells south of the FMPC. Luken notifies one family of their private well being contaminated with uranium and unspecified toxic chemicals. At the same time, Luken requests DOE to hold a public meeting officially announcing the contamination of the three residential wells. Residents attending the public meeting demand DOE to provide testing of all residential wells and cisterns in the contaminated area.

Health and safety becomes a great concern to families living within the area because groundwater and the Great Miami Aquifer are the main source of water that supplies their wells and cisterns.

This concern brings together residents to form F.R.E.S.H., Inc. The organization begins to track information on the extent of off-site contamination as it becomes available.

January 1985

OEPA samples fourteen wells in the Fernald area to determine the extent of off-site contamination.

March 1985

Due to the residents demand to have their wells and cisterns tested, the ODH enters into a co-operative agreement with DOE to perform environmental samplings within a three-mile radius of the Fernald facility (FMPC). Approximately 309 water sources are sampled and analyzed for radioactivity context. The water sources include private and public wells, cisterns, and surface waters such as ponds.

The water samples, collected by ODH, are taken from residents' kitchen faucets. Many of the residents with cisterns feel that the faucet samples are inadequate and should be taken directly from the bottom of the cistern.

July 1986

A Federal Facility Compliance Agreement (FFCA) is jointly signed by DOE and the USEPA pertaining to environmental impact associated with the FMPC.

July 1986 (continued)

In response to the FFCA, a Remedial Investigation and Feasibility Study (RI/FS) is in progress pursuant to the Comprehensive Environmental Responses Compensation and Liability Act (CERCLA). The purpose of the Fernald RI/FS is to control uranium migration in groundwater south of the plant. *[Ref: April 1990 EE/CA South Plume]*

December 1988

The ODH report concludes that airborne uranium has been deposited off-site and an assessment of the long term impact upon cistern owners near the Fernald site is needed. The report cites uranium concentration of 25Ci/liter in water in a cistern located just north of the FMPC on State Route (SR) 126, lower levels of uranium are found in other cisterns close to the site. *[Ref: 1988 –ODH Study of Radioactivity in Drinking Water and Other Environmental Media in the Vicinity of the U.S. Dept of Energy's Feed Material Production Center].*

September 1989

DOE makes available the RI/FS analytical data that was used in the evaluation of the South Plume removal action. The data indicates the presence of radionuclides and inorganic metals in the ground water south of the FMPC. At this time, the chemical toxicity of the soluble uranium compounds in the groundwater is the main concern as a potential health risk. If ingested, these compounds can lead to kidney damage, arterial lesions and damage to the cardiovascular, hematopoietic, endocrine and immunological systems. *[Ref: April 1990 EE/CA South Plume]*

Fall 1989

F.R.E.S.H. continues to compile information as it becomes available from the DOE contactor in order to track the development of transport modeling system proposed to measure the extent of uranium contamination in the ground water and assess the logic and scientific integrity.

F.R.E.S.H. meets with DOE site manager, and requests that DOE provide a safe drinking water system.

F.R.E.S.H contacts and visits their local government officials as well as State and Federal Representatives requesting their support of a public water system.

April 1990

DOE publishes a report Engineering Evaluation Cost Analysis South Plume Report (EE/CA). This report identifies the removal action alternatives for the South Plume. Based on the EE/CA, DOE selects alternative #5. This option includes Groundwater Pumping with Treatment, Alternative Water Supply, Groundwater Monitoring and Institutional Controls.

The center of the South Plume extends approximately 800 feet south of Willey Road and north of the residential area along Paddy's Run Road and New Haven Road. The plume consists of approximately 100 acres of off-site property. The associated groundwater uranium concentration is thirty-three microgram per liter of drinking water.

April 1990 (continued)

[Ref: April 1990 Engineering Evaluation /Cost Analysis South Plume Feed Material Production Center]

Summer 1990

DOE supplies bottled water to residents living in the contaminated South Plume area as an alternative water supply. The affected families do not accept this alternative. On their behalf, F.R.E.S.H. demands a public water system citing CERCLA Sec.9618- High Priority for Drinking Water Supplies.

1991

Byrne et al. (1991) provides a brief history of the measurement of offsite uranium contamination in groundwater around the FMPC. *[Ref: Radiological Assessment Corporation (RAC) Appendix B- Regional Environmental Monitoring. Part 7-Groundwater, Cisterns, Ponds and Pools]*.

February 1991

Leo Duffy, Assistant Secretary of Energy for Environmental Restoration and Waste Management, notifies F.R.E.S.H. in writing of DOE's willingness to investigate the possibility of providing a public water supply to the area "affected or potentially affected by the uranium contamination in the *South Plume* area". *[PW: 01-1992-Crosby Public water meeting]*

March 1991

DOE and its Contractor meet with Hamilton County Department of Public Works (HCDPW) to discuss the overall water supply within Hamilton County.

May 1991

Hamilton County Commissioners contract an engineering firm Finkbeiner, Pitts, and Strout, Ltd. (FP&S) to update and make recommendation on the Hamilton County Master Water Plan West of the Great Miami River, which includes Phase 1A - service to Crosby Township, Phase1B - service to Blue Jay, Whitewater Township and Harrison and evaluation of potential supplier of water service to these communities.

The Commissioners authorize FP&S to assist the HCDPW in negotiation with the City of Harrison Municipal Water Supply and Cincinnati Water Works. *[PW: 01-1992-Crosby Public water meeting]*

October 1991

The Fernald site changes its name to Fernald Environmental Management Project (FEMP). FEMP personnel review the updated Hamilton County Water Service Plan.

In response to letters from F.R.E.S.H., US Representative, Charles J. Luken, contacts DOE and Hamilton County Commissioners to begin implementing Phase 1 of the Master Water Plan and to avoid any undo delay in providing water to the affected residents.

[PW: 02 1991B-letter] [PW: 03-1991-letter]

October 1991 (continued)

HCDPW meet with FP&S to discuss the updated recommendations on the potential water suppliers, City of Harrison Municipal Water Supply and Cincinnati Water Works (CWW). The report outlines the advantages of CWW as supplier to Crosby Township area compared to obtaining water from the City of Harrison's Municipal Water Supply. The report designates CWW as supplier of choice for Crosby Township. The report is transmitted to the FEMP for review so that a decision regarding the DOE's "fair share" of the project cost can be estimated. *[PW: 10-1992-corr-FP&S recommendation]*

DOE continues to conduct Regular Public Water Supply Status Update meetings. In attendance are F.R.E.S.H., a Crosby Township Trustee, OEPA, Fernald Environmental Restoration Management Co. of Ohio (FERMCO), Westinghouse Environmental Management Company (WEMCO), HCDPW, ODH and Ohio Department of Transportation (ODOT). *[PW: 23-1993-95 - meeting sign in sheets]*

December 1991

HCDPW is contacted by DOE regarding the Updated Hamilton County Water Services Plan. HCDPW will issue a revision to the Updated Water Services Plan in February 1992. *[PW: 01-1992-Crosby Community public water meeting]*

February 1992

The report by Finkbeiner, Petts, and Strout, Ltd., Recommendations for Water Services to Western Hamilton County, and the proposals from the City of Harrison Municipal Water Supply and Cincinnati Water Works as the suppliers to Crosby Township are presented to the Hamilton County Administrator and Commissioners. *[PW 10-1992-corr]*

March 1992

The Hamilton County Commissioners determine Cincinnati Water Works (CWW) would supply water to Crosby Township. *[PW 01-1992 Crosby Community public water-meeting]*

May 1992

DOE Assistant Secretary of Environmental Management (EM), Leo Duffy, contacts F.R.E.S.H. stating DOE received the revised report, Recommendation for Water Service for Western Hamilton County. The report is used to determine DOE's "fair share." *[PW: 09-1992-Corr]*

October 1992

The Foppee Thelen Group Inc. is retained by HCDPW to render an engineering opinion regarding migration of the South Plume as presented in the report Engineering Evaluation/ Cost Analysis of South Plume prepared by DOE. The purpose of the Foppee report is to determine if the area proposed by DOE for cost sharing and the local properties to be served by the construction of a water system adequately represent the area that potentially may be impacted by the South Plume. *[PW: 11-1992-Corr]*

June-July 1992

Negotiations are conducted between the DOE and HCDPW to determine DOE's "fair share".
[PW: 01-1992 Crosby Community - public water meeting]

July 1992

DOE transmits a letter informing the HCDPW of the final decision to support the Public Water supply to residents whose water supply had been "affected or potentially affected" from the uranium contaminated South Plume and to fund a total amount of \$4,190,825.00 towards completion of the project. The funds will be used to support the design and construction of transmission and distribution mains, water reservoir, taps and connections to 110 properties in the in the "affected or potentially affected area by the South Plume." *[PW: 01-1992- Crosby Community public water meeting August 5, 1992.]*

August 1992

HCDPW solicits the approval of the Hamilton County Administrator and Commissioners on the proposed "cost share" offered by DOE. *[PW: 01-1992- Crosby Community public water meeting]*

December 1992

HCDPW sends out Request for Proposal (RFP) for the engineering service. *[PW: 12-1992- Corr]*

January 1993

HCDPW and DOE conclude negotiations to install a public water system to the "affected area". *[PW: 20-1993-corr]*

DOE continues to conduct Regular Public Water Supply Status Update meetings. In attendance are F.R.E.S.H., a Crosby Township Trustee, OEPA, FERMCO, WEMCO, HCDPW, ODH and ODOT.

February 1993

HCDPW communicates concern regarding the travel time of water through pipe line from the CWW Bolton plant to the South Plume area. Due to limited numbers of initial tie-in customers, it is estimated that the water system travel time would be thirty days. Stating that five days or less of travel time is required to ensure adequate water quality in the system, HCDPW requests that FEMP become a CWW customer and that part of the Fernald site water supply come from the public water system. *[PW: 16-1993-corr]*

March 1993

FEMP conducts a water assessment to determine feasibility of tapping into proposed CWW. *[PW: 16-1993-corr]*

April 1993

The feasibility study is submitted to DOE Headquarters (HQ) for approval. *[PW: 19-1993-corr]*

June 1993

DOE's water assessment study shows that it would be beneficial to become a CWW customer. *[PW: 16-1993-corr]*

July 1993

HCDPW submits the water line plans to Ohio Department of transportation (ODOT) for approval.

August 1993

DOE begins to draw up the design plan to become a CWW customer.

September 1993

HCDPW receives a grant award from DOE, funding the public water system. *[PW 22-1993-corr] [PW 26-1994-grant]*

October 1993

FEMP Utility Procurement Plan (UPP) for water service on site is approved with the understanding that Fernald will continue to meet its non-potable water needs using treated water from on-site wells.

[PW: 19-1993-Corr]

November 1993

ODOT does not approved the proposed water line location along SR 128 because the location does not follow the guidelines of ODOT's manual. This issue had not been brought to attention at the Public Water Supply Status Update Meeting. To follow ODOT's manual would be time consuming and an added expense to the construction of the water line. *[PW 25-1993-corr]*

February 1994

ODOT has not received permit applications from the County nor CWW for the water main to cross U.S. Route 27. *[PW: 27-1994-corr]*

March 1994

ODOT approves alignment of water main down SR 128. *[PW 27-1994-corr]*

December 1994

Hamilton County Commissioner Guy Guckenberger officiates at the ground breaking ceremony at the CWW Bolton Treatment Plant for a four phase water system extension to

December 1994 (continued)

bring water to residents whose wells are contaminated or potentially contaminated by radioactive runoff from the Fernald facility.

January 1995

Bidding and construction begin on Phase 1A Service to Crosby Township of the Western Hamilton County Master Water Plan.

February 1995

Project A - Remodeling the Cincinnati Water Works Bolton Plant to run pipe line southwest on East Miami River Road to old Colerain Road, then northwest on the bridge over the Great Miami River to the Hamilton/Butler County line to SR 128. This takes approximately 120 days.

Project B - DOE Department of Culture Resource locates Native American remains. Bidding, construction and laying pipe from the Hamilton/Butler County line at SR 128 north to New Haven is placed on hold until remains are removed. SR 128 to Crosby Road is completed in May 1997.

March 1996

Project C - Bidding and Construction on Willey Road and Paddy's Run Road. Project D - Construction of the Water Reservoir on Crosby Road.

Spring 1997

The water system along SR 128 to Crosby Road is completed.

The public water system now supplies 129 families that are "affected or potentially affected by the contaminated South Plume". The total cost is \$9,529,368.10. *[PW 24-1993-corr]*