FIVE-YEAR REVIEW REPORT

ENDICOTT WELLFIELD SUPERFUND SITE
BROOME COUNTY, NEW YORK

U.S. Environmental Protection Agency
Region II
New York, New York

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U.S. Environmental Protection Agency
Region II
Emergency and Remedial Response Division
Five-Year Review (Type I)

Endicott Wellfield Superfund Site
Broome County, New York

I. INTRODUCTION

The U.S. Environmental Protection Agency (EPA) Region II conducted this statutory Five-Year Review pursuant to §121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), §300.430 (f) (4) (ii) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and OSWER Directives 9355.7-02 (1991), 9355.7-02A (1994) and 9355.7-03A (1995). The purpose of a Five-Year Review is to ensure that a remedial action remains protective of public health and the environment and is functioning as designed. This document will become part of the site's Administrative Record file. This review (Type I) is applicable to sites at which remedial action activities have been completed. Ongoing monitoring of the response actions implemented at the site indicate that the remedy continues to be protective of public health and the environment.

II. SITE BACKGROUND

The Endicott Wellfield Superfund Site (the Site) is located on South Grippen Street at the western end of the Village of Endicott, New York. The boundaries of the Site are delineated by Main Street to the north, the eastern boundary of the En-Joie Golf Course to the east, the Susquehanna River to the south, and the Tri-Cities Airport and Airport Road to the west. The Site is composed primarily of flat to gently rolling open land associated with the En-Joie Golf Course, facilities of the Village of Endicott Sewage Treatment Plant (STP), and the Endicott Landfill. A portion of the Endicott Landfill adjacent to the Tri-Cities Airport extends into an approximately 8-acre area designated by the Federal Aviation Administration as the Controlled Activity Area, which includes the Runway Object Free Area. A 6-acre parcel on the Landfill near the entrance to the STP is currently permitted for use by the Village of Endicott to compost yard waste; approximately two acres of the composting area are paved. There are two inactive landfills and a few industrial tracts north of the Site. Private homes are not located within the Site.

During a routine inspection in May 1981, EPA detected vinyl chloride and trace amounts of other volatile organic compounds (VOCs) in the discharge from the Ranney Well, which provides approximately 47 percent of the total water supply to the Village of Endicott's Municipal system. Subsequent sampling by EPA and the New York State Department of Health confirmed EPA's initial findings and, as a result, four of the lateral supply lines to the

well were closed and diffused air aeration equipment was installed to reduce the levels of VOCs.

Beginning in April 1983, additional studies were undertaken by the New York State Department of Environmental Conservation (NYSDEC) Division of Water. Based on the results of these investigations, in July 1984, the Village of Endicott installed a purge well designed to pump approximately 600 gallons per minute (gpm), and three additional monitoring wells on the En-Joie Golf Course to intercept and monitor contamination before it reached the Ranney Well.

The Site was proposed for inclusion on the National Priorities List (NPL) on October 15, 1984 and was added to the final NPL list on June 10, 1986. To expedite actions at the Site, it was addressed in three separate phases called operable units (OUs).

OU1-Ranney Well

In July 1987, contractors for NYSDEC, pursuant to a cooperative agreement with EPA, completed a Remedial Investigation and Feasibility Study (RI/FS) at the Site that was intended to define the nature and extent of contamination and to identify the source(s) of contamination to the Ranney Well. The RI indicated that the most probable source was the Endicott Landfill. However, additional data were required to further evaluate contaminant distribution and conclusively identify the source. Trichloroethene (TCE), 1,2-dichloroethene (DCE), vinyl chloride, and chloroethane were identified as the primary contaminants of concern in groundwater.

The FS evaluated alternatives for the residential supply (i.e., treatment of the existing well by air stripping and a new surface water supply).

EPA issued a Record of Decision (ROD) for the Site on September 25, 1987. The major components of the selected remedy include the following:

- Constructing an air stripper at the Ranney Well designed to treat approximately 3700 gallon per minute (gpm);
- Continuing operation of the existing purge well system;
- Continuing the monitoring program designed to detect the presence of VOCs in the Ranney Well water[1]; and

[1] The Village of Endicott presently samples the Ranney Well for volatile organic compounds on a weekly basis. This monitoring program is necessary to ensure a safe drinking water supply for the community.

- Performing a supplemental RI/FS to further investigate the nature and extent of contamination in suspected source areas and to evaluate possible source control measures and to further evaluate the extent of aquifer contamination and evaluate alternatives for its restoration.

The ROD specified that the contaminated Ranney Well water be treated to drinking water quality. Maximum Contaminant Levels (MCLs) were the specified cleanup levels identified.

In a Consent Decree signed with EPA, the Town of Union (the Town) and the Village of Endicott (the Village) agreed to perform the Remedial Design and Remedial Action (RD/RA). The RA was formally initiated on December 10, 1989, when the Village of Endicott awarded the RA Contract. The remedy was implemented in a manner consistent with the 1987 ROD and in accordance with the plans and specifications of the RD. Construction of the air stripping unit at the Ranney Well was completed by the Village of Endicott in the Fall of 1991 and has been in continuous operation.

In a letter dated September 26, 1996, the Potentially Responsible Parties (PRPs) requested that EPA allow the Village of Endicott to discontinue operation of the air stripper. After a review of all available data from the Ranney Well, EPA determined that water from the Ranney Well was meeting MCLs prior to treatment. Therefore, EPA gave permission to discontinue operation of the air stripper with the understanding that the Village will maintain the air stripper so that it can be restarted immediately in the event that MCLs are exceeded in the future. However, as a precautionary measure, the air stripper is still being operated by the Village.

OU3-Groundwater-Supplemental Purge Well

The RI/FS for OU1 did not determine the source(s) of the VOCs in the groundwater at the Ranney Well. Therefore, in accordance with the 1987 ROD, a supplemental RI/FS was initiated to further investigate the nature and extent of contamination in suspected source areas and to evaluate possible source control measures.

In an Administrative Order on Consent signed with EPA, the International Business Machines Corporation (IBM), the Village and the Town agreed to perform the supplemental RI/FS. The supplemental RI/FS activities were undertaken in two phases.

The Phase I RI included air sampling, geophysical surveys, soil gas surveys, sewer evaluation and media sampling (surface water, sediment, leachate and groundwater sampling). The environmental characterization for the Phase I RI is described in the September1990 Interim RI Report.

Phase I of the RI concluded that the Endicott Landfill was the most probable source of the VOCs to the aquifer, based on the distribution of VOCs in the Ranney Well. This report also concluded that groundwater flow in the Ranney aquifer is from the Endicott Landfill toward the Ranney Well, influenced by the pumping of the Ranney and Purge Wells. The interim RI report identified two

VOC plumes, consisting primarily of vinyl chloride and 1,2,-dichloroethene. The largest plume was observed in the outwash and ice contact deposit and appears to have its core near the northern corner of the Endicott Landfill. The highest concentration encountered in the plume were 86 parts per billion (ppb) of vinyl chloride, and 270 ppb of 1,2-DCE.

Based upon the conclusions of the Phase I RI Report, two Interim Remedial Measures (IRMs) were identified to further protect public health and the environment, and to begin the aquifer restoration process. These measures were evaluated in a Technical Memorandum, dated January 1991, using the nine criteria from the NCP. These remedial measures were designated as OU3. On March 29, 1991, a ROD was signed selecting the following remedy for OU3:

- Upgrading the existing purge well system with the installation of a Supplemental Purge Well (SPW);
- Implementing a SPW monitoring program;
- Continuing operation and maintenance of the existing purge well system; and
- Conducting a aquifer pump test to determine treatment requirements.

The intent of the remedy is to expedite cleanup of the groundwater aquifer and the potential threat to the Ranney Well. In a consent decree signed with EPA, the Village, the Town , Endicott Johnson Corporation (EJ) and George Industries, Inc. agreed to performed the OU3 RD/RA. The RA was formally initiated by the Village of Endicott's personnel in June 1995. To determine if the water pumped from the SPW could be treated by the Village's STP, a temporary SPW pumping system and a discharge pipeline were constructed. Pumping of the SPW, with discharge to the STP, was initiated in August 1993. The permanent hook-up to the STP was completed in June 1995. EPA and NYSDEC determined that the remedy was implemented in a manner consistent with the 1991 ROD and in accordance with the plans and specifications of the RD. SPW pumping and treatment of the contaminated groundwater at the STP will continue until the aquifer is remediated. The monitoring results indicate that the SPW is performing as designed. Groundwater level monitoring demonstrates that the SPW system is achieving containment and capture of contaminated groundwater. As a result, EPA issued an Explanation of Significant Differences (ESD) on December 11, 1995 which allowed for the shut-down of the original purge well.

OU2-Endicott Landfill

EPA designated Phase II of the supplemental RI/FS work and the resulting source control measures identified for the Endicott Landfill as OU2. The purpose of the Phase II activities was to address the data gaps that were identified in the Phase I investigation, and to characterize the areas identified in the interim RI Report as potential contaminant sources. The environmental characterization is

described in the February 1992 RI Report for the site. The evaluation of remedial alternatives is contained in the February 1992 FS Report.

The Phase II report concluded that groundwater was the only significantly impacted media, with impacts limited to VOCs. Additionally, it was concluded that the combined influence developed by the Ranney Well and the Purge Wells (approximately 4,300 gallons per minute) extended beyond the limits of the Endicott Landfill, the source of contamination to the Ranney Well. Therefore, contaminants entering the groundwater system from the Endicott Landfill will generally migrate to those wells.

The RI report identified two leachate seeps emanating from the Endicott Landfill contaminated primarily with VOCs, mostly chloroethane and chlorobenzene, up to 1 ppm.

The primary contaminants in ground water at the Site are VOCs. These include PCE, TCE, 1,2-DCE, 1,1-DCE, vinyl chloride, and chloroethane. Chloroethane was found to be most prevalent contaminant in groundwater, occurring in most wells in the vicinity of the Endicott Landfill, west of the Nanticoke Creek. The highest chloroethane concentrations were detected in the shallow wells within the vicinity of the Landfill. Three of the monitoring wells installed within the limits of the Landfill exhibited chloroethane concentrations exceeding 1 ppm.

On September 30, 1992, the Regional Administrator signed the ROD for OU2 selecting the following remedy:

- Capping the majority of the surface of the Landfill with a low permeability barrier cap;
- Capping with bituminous (asphalt) caps the remaining 14-acre parcel of the Landfill property;
- Performing an explosive gas investigation and installing a passive gas-venting system;
- Collecting, treating, and disposing of the leachate seep;
- Establishing institutional controls in the form of deed restrictions on future uses of the Landfill;
- Implementing site access restrictions;
- Performing long-term operation and maintenance of the landfill cap, gas-venting, and leachate systems to provide for inspections and repairs;
- Performing long-term air and water quality monitoring;
- Continuing operation and maintenance of the groundwater collection and treatment remedial measures already selected for the Site; and
- Continuing groundwater monitoring.

The ROD identified the chemical-specific applicable or relevant and appropriate requirements (ARARs) for the site, which are the federal MCLs. Examples of these levels are: 5 ppb for TCE; 2 ppb for vinyl chloride; 7 ppb for 1,1-dichloroethylene; and 50 ppb for 1,2-DCE.

In the ROD, EPA recommended that the Village establish institutional controls in the form of deed restrictions on future uses of the Landfill. While EPA continues to recommend them, the Village's ownership of the Landfill provides a significant institutional control for the property. In addition, since the current state and county requirements prevent the installation of wells at a hazardous waste site, the remedy appear to be adequate to protect human health.

In a Consent Decree signed with EPA, the PRPs (EJ, the Village, the Town, and IBM) agreed to perform the RD/RA for OU2. The general intent of the design was to grade the Landfill to create a series of ridges oriented roughly perpendicular to the Susquehanna River. The ridges would be separated by drainage swales which slope toward the River. The remedy was implemented in a manner consistent with the 1992 ROD and in accordance with the plans and specifications of the RD.

The ROD provides for capping the majority of the Landfill with a low permeability soil barrier cap, with a minimum of 12 inches of protective barrier. During construction, the extent of the waste was discovered to be outside of the Landfill's designed cap limits in several areas. It was decided to relocate the wastes from one area, then extend the landfill cap over all of the waste. The total area capped is 72.25 acres. The approximate amount of waste relocated was 5,000 cubic yards. The construction of the cap is documented in a May 1997 Remedial Action Report for the Site.

The OU2 ROD provided for collecting, treating and disposing of the leachate seep. However, during the design of the remedy, it was noted that the leachate seeps were greatly reduced, which made it impossible to collect any of the leachate. Therefore, it was decided that a groundwater interceptor trench would be built so that the seep would be captured by the supplemental purge well for treatment at the STP. A groundwater interception trench measuring 100-feet long by 20-feet wide by 28-feet deep was installed west of the leachate seep limit along the Susquehanna River bank. A 44-feet wide by 100-feet long, factory-seamed barrier of geomembrane was installed into the trench.

The PRPs developed an operation and maintenance program for use at the Site during the post-closure period. It requires the inspection of the Landfill on a quarterly basis over a 30-year

monitoring period. The quarterly inspections[2] were instituted to help to identify hazards, potential hazards, damages and deterioration so that appropriate actions may be taken. A checklist type post-closure inspection form was developed for use in documenting these inspections. This program was approved by EPA and NYSDEC and includes the following: inspection of the physical security of the Site, including checking the perimeter of the fence and all locks on gates and monitoring wells; inspection of the capped area for cracks, erosion, burrowing rodents, undesirable vegetation, bare areas, settlement or ponding, with repair as necessary; inspection of the paved areas and access roads for surface breakups or pot holes, with repair as necessary; inspection of the site drainage system for obstructions, sediment buildup in ditches and culverts, and ponding; air sampling with field instruments for the detection of combustible and toxic gases; mowing of the grass cover on an as- needed basis[3] and quarterly reporting to NYSDEC.[4]

The Site achieved construction completion status when the Preliminary Close-Out Report was signed on September 26, 1997.

III. REMEDIAL OBJECTIVES AND MONITORING RESULTS

The primary objectives of the implemented remedies are to control the source of contamination at the Site, to reduce and minimize the migration of contaminants into the groundwater and surface water, and to minimize any potential human health and ecological impacts resulting from the exposure to contamination at the Site. These objectives were accomplished by, among other things, the installation of a landfill cap (OU2), treatment of the groundwater plume(OU3) by the SPW, and protection of the public water supply system by installation of an air stripper. To ensure that the implemented remedy remains effective, a long-term monitoring program was established. The long-term monitoring program, which is being conducted by the Village, includes the quarterly[5] collection of groundwater samples from the SPW, and gauging of water levels in monitoring wells at and

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[2] Inspection frequency was monthly during the first year following closure, quarterly thereafter, and following major rainfall events.

[3] At a minimum, the grass is mowed each spring and each fall.

[4] EPA is routinely provided with a copy of each quarterly report sent to NYSDEC.

[5] In a letter dated May 6, 1999, the Village of Endicott requested and got approval to reduce the frequency of monitoring and analysis required for the SPW from monthly to quarterly. Permission was also given to stop sampling the plant influent.

adjacent to the SPW on a monthly basis. Results from the long-term monitoring of the SPW and the Landfill Inspection Report are submitted to EPA on a quarterly basis.

The following documents, data, and information were reviewed in completing the Five-Year Review:

- 1987, 1991, 1992 RODs;
- 1995 ESD;
- 1997 Preliminary Close-Out Report;
- Remedial Action Report;
- Monthly and Quarterly Progress Reports;
- Operation and Maintenance Plan; and
- EPA Guidance for conducting five-year reviews and other guidance and regulations to determine if any new applicable or relevant and appropriate requirements relating to the protectiveness of the remedy have been developed since EPA issued the ROD.

There are no changes in standards or Applicable or Relevant and Appropriate Requirements known to the Remedial Project Manager which would affect the remedies selected at this Site.

Pursuant to the RODs, as amended by the ESD and as otherwise approved by EPA, the necessary O&M activities currently include:

- Groundwater quality monitoring at the SPW to determine if the levels of contamination are meeting MCLs;
- Sampling of effluent from the SPW;
- Groundwater elevation monitoring at 27 monitoring wells to determine if changes occur in the direction of groundwater flow; and
- Inspection of the landfill to insure that no erosion damage has occurred and submittal of a quarterly reports.

Groundwater Quality Monitoring

Long-term monitoring data indicate that VOC concentrations in the SPW, which is downgradient of the Landfill, have been declining since 1995, and have generally stabilized over the last two years. Data continue to show no detections of VOCs or low detections below the ARARs, except for four compounds. The subject monitoring shows concentrations exceeding federal or state Maximum Contaminant Levels for vinyl chloride, chloroethane, methylene chloride and cis-1,2-dichloroethene. Groundwater level monitoring demonstrates that the SPW in combination with capping of the Landfill is achieving containment and capture of contaminated groundwater. The total VOC

concentrations in the SPW decreased from 200 ppb in 1995 to 68 ppb in 1999. Sampling results collected from the SPW effluent after treatment continue to show no detection of VOCs.

Groundwater Elevation Level Monitoring

Water levels within the aquifer fluctuate seasonally. The data obtained on November 23, 1998 and July 10, 2001 are representative of low and high water table conditions over the last five years. Based on the results of the groundwater level elevation monitoring, the direction of groundwater flow has not changed since the RI.

Landfill Cap Inspection

For inspection of the Landfill, NYSDEC and EPA rely on the quarterly checklist post-closure reports which are submitted by the Village on a quarterly basis. Over the years, both NYSDEC and EPA have found these reports to be factually accurate. The Village's most recent quarterly checklist report indicates that there are three small bare areas of grass that will require seeding. The seeding will occurred in spring 2002.

IV. STATEMENT OF PROTECTIVENESS

This Five-Year Review is based on Site visits and the review of site-related documents and O&M data collected as part of the ongoing long-term response action. The EPA remedial project manager (RPM) visited the Site on at least ten occasions from 1996 to 1998 during construction of the groundwater extraction and treatment system and during construction of the cap. The most recent Site inspection was conducted by the RPM on July 17, 2001. The purpose of the Site inspection was to access the protectiveness of the remedies, including the presence of fencing to restrict access, the integrity of the cap, and the condition of paved areas and access road, conditions of monitoring wells, and drainage swales. Based upon a review of the data, relevant documents, and Site inspections, the following Site conditions relating to the implementation of the remedy have been achieved:

- The cap is intact and in good condition;
- The fence around the Landfill is intact and in good repair;
- The groundwater plume is being reduced;
- Groundwater within the plume is not being used for drinking water purposes;
- The monitoring wells required for O&M are securely locked and functional; and
- There is no evidence of that trespassing or vandalism have occurred.

Based upon observations from Site visits and a review of site-related data and documents, as described above, EPA concludes that the response actions implemented at the Endicott Wellfield Site are in accordance with the remedy selected by EPA and that the remedy continues to be protective of human health and the environment.

V. NEXT FIVE-YEAR REVIEW

In accordance with 40 CFR §300.430(f)(4)(ii), the lead agency shall review the remedial action for the Site at least every five years.

Since hazardous substances, pollutants, or contaminants remain at the Site which do not allow for unlimited use or unrestricted exposure, EPA will conduct another Five-Year Review before September 2006.

for John S. Fusco — 9/29/01

Kathleen C. Callahan, Acting Director — Date
Emergency and Remedial Response Division

ENDICOTT WELL FIELD