SECOND FIVE-YEAR REVIEW REPORT
FOR
ENDICOTT WELLFIELD SUPERFUND SITE
BROOME COUNTY
ENDICOTT, NEW YORK

Prepared by:

United States Environmental Protection Agency
Region 2
New York, New York

September 2006

Second Five-Year Review Report
Endicott Wellfield Superfund Site

Table of Contents

Page

List of Acronyms....iv

Executive Summary....1

Five-Year Review Summary Form....2

I. Introduction....4

II. Site Chronology....4

III. Background....4
- Site Location....4
- Land and Resource Use....4
- History of Contamination....5
- Initial Response....5
- Basis for Taking Action....5

IV. Remedial Actions....6
- Remedy Selection OU1....6
- Remedy Implementation OU1....6
- Remedy Selection OU3....7
- Remedy Implementation OU3....7
- Remedy Selection OU2....8
- Remedy Implementation OU2....9
- Systems Operation/Operation and Maintenance (O&M)....9
- Institutional Controls Implementation....9

V. Progress Since the Last Five-Year Review....10

VI. Five-Year Review Process....10
- Administrative Components....10
- Community Involvement....10
- Document Review....10
- Monitoring and Data Review....11
- Site Inspection....11

Interviews.....12

VII. Technical Assessment.....12
Question A: Is the remedy functioning as intended by the decision documents?.....12
Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?.....12
Question C: Has any other information come to light that could call into question the protectiveness of the remedy?.....14
Technical Assessment Summary.....14

VIII. Issues, Recommendations and Follow-Up Actions 14

IX. Protectiveness Statement.....14
X. Next Review.....15

Tables:

Table 1- Chronology of Events at the Site

Table 2- Estimated Annual Operation and Maintenance Costs

Table 3- List of Documents Reviewed

Table 4 - Comparison of the maximum detected concentrations of Contaminants of Potential Concern (COPCs) detected in the on-Site monitoring wells to their respective human health risk based screening criteria (Preliminary Remediation Goal), Primary Drinking Water Standard (Maximum Contaminant Level) and New York Department of Environmental Conservation Water Quality Regulations (NYSDEC WQR)

Table 5 - Comparison of the maximum detected concentrations of COPCs detected in the monitoring wells to their respective vapor intrusion screening criteria Estimated Annual Monitoring Costs

Table 6 - Comparison of the maximum detected concentrations of COPCs detected in the monitoring wells to their respective vapor intrusion screening criteria

Table 7- Other Comments on Operation, Maintenance, Monitoring, and Institutional Controls

List of Acronyms

CAA	Controlled Activity Area
CIC	Community Involvement Coordinator
COPC	Contaminant of Potential Concern
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
IRM	Interim Remedial Measure
MCL	Maximum Contaminant Level
NPL	National Priorities List
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
O&M	Operation and Maintenance
OU	Operable Unit
PRP	Potentially Responsible Party
RA	Remedial Action
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SPW	Supplemental Purge Well
VOCs	Volatile Organic Compounds

Executive Summary

This second Five-Year Review for the Endicott Wellfield Superfund Site (the Site) located in Endicott, Broome County, New York, has been completed by EPA Region 2.

Based upon reviews of the three Records of Decision, the Explanation of Significant Differences, Semi-Annual Ground-Water Sampling Results, Annual Operation & Maintenance Reports, Site Inspection Reports as conducted by the Village of Endicott, and a Site visit by EPA personnel in August 2006, EPA has concluded that the remedies as set forth in the decision documents for the Site continue to protect human health and the environment.

Five-Year Review Summary Form

SITE IDENTIFICATION

Site Name *(from WasteLAN)*: Endicott Wellfield Superfund Site

EPA ID *(from WasteLAN)*: NYD980780746

Region: 2	**State:** NY	**City/County:** Endicott/Broome

SITE STATUS

NPL Status: ■ Final ☐ Deleted ☐ Other (specify) _____

Remediation Status (choose all that apply): ☐ Under Construction ■ Operating ☐ Complete

Multiple OUs? ■ YES ☐ NO	**Construction completion date:** 09/26/97

Has site been put into reuse? ☐ ■ YES ☐ NO ☐ N/A

REVIEW STATUS

Lead agency: ■ EPA ☐ State ☐ Tribe ☐ Other Federal Agency _____

Author name: Sherrel D. Henry

Author title: Remedial Project Manager	**Author affiliation:** EPA

Review period:** 09/01/2001 to 09/30/2006

Date(s) of site inspection: 08/02/2006

Type of review:

☐ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only
☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead
☐ Regional Discretion ■ Statutory

Review number: ☐ 1 (first) ■ 2 (second) ☐ 3 (third) ☐ Other (specify) _____

Triggering action:

☐ Actual RA Onsite Construction at OF #____ ☐ Actual RA Start at OF#__1__
☐ Construction Completion ■ Previous Five-Year Review Report
☐ Other (specify) _____

Triggering action date *(from Wasteland)*: 09/29/2001

Due date *(five years after triggering action date)*: 09/29/06

Does the report include recommendation(s) and follow-up action(s)? ☐ yes ■ no
Acres in use or available for use: restricted: 14 **unrestricted:**

Issues, Recommendations, and Follow-Up Actions

This site has ongoing operation, maintenance and monitoring activities as part of the selected remedy. This report includes suggestions for improving, modifying, and/or adjusting the implemented remedy (see Table 7). This report finds the groundwater remedy protects against human exposure to contaminated groundwater, but may benefit from an improved presentation of potentiometric data in the form of contouring. Landfill subsidence should be corrected. This report did not identify any issue or make any recommendation for the protection of public health or the environment which was not included or anticipated by the site decision documents.

Protectiveness Statement

The remedy as implemented for the Site protects human health and the environment. There are no exposure pathways that could result in unacceptable risks, and none are expected as long as the Site ownership and use do not change and the engineered and institutional controls currently in place continue to be properly operated, monitored, and maintained.

I. Introduction

The U.S. Environmental Protection Agency (EPA) conducted this Five-Year Review for the Endicott Wellfield Superfund Site (the "Site") pursuant to Section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §9601 *et seq.* and 40 CFR 300.430(f)(4)(ii), and in accordance with the Comprehensive Five-Year Review Guidance, OSWER Directive 9355.7-03B-P (June 2001). The purpose of a Five-Year review is to ensure that implemented remedies protect public health and the environment and continue to function as intended by the Site's decision documents. This document will become part of the Site file.

To expedite actions at the Site, EPA addressed the Site using three separate components called operable units (OUs). OU-1 covers the Ranney Well. OU-2 covers the Endicott Landfill. OU-3 covers the Supplemental Purge Well. This is the second Five-Year Review. In accordance with Section 1.3.3 of the Five-Year Review guidance, a subsequent statutory Five-Year Review is triggered by the signature date of the previous Five-Year Review Report. The trigger for this subsequent Five-Year Review is the date of the previous Five-Year Review Report, which was September 29, 2001.

II. Site Chronology

Table 1, which is attached, summarizes the Site-related events running from the disposal of hazardous wastes at the Site through the cleanup process.

III. Site Background

Site Location

The Site is located on South Grippen Street at the western end of the Village of Endicott (The Village), New York. The boundaries of the Site are delineated by Main Street to the north, 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.

Land and Resource Use

Most of the Site is on land owned by the Village (En-Joie Golf Course, Endicott Landfill, Sewage Treatment Plant (STP) and Tri-Cities Airport) and is zoned industrial. The Site is composed primarily of flat to gently rolling open land associated with the En-Joie Golf Course, facilities of the Village's 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 (FAA) as the Controlled Activity Area (CAA), 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 to compost yard waste; approximately 2 acres of the composting area are

paved. Private homes are not located within the Site. These or similar uses are expected to continue well into the future.

History of Contamination

The Ranney Well operated without major problems until May 1981, when 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's Municipal system. Sampling of the area wells was undertaken after a chemical spill occurred at the IBM's Endicott plant in 1978. 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.

Initial Response

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 installed a purge well designed to pump approximately 600 gallons per minute (gpm), and three additional monitoring wells on the Enjoie Golf Course to intercept and monitor contamination before it reached the Ranney Well.

The Site was proposed for inclusion on EPA's National Priorities List (NPL) on October 15, 1984 and was added to the NPL on June 10, 1986. To expedite actions at the Site, EPA addressed the Site using three separate components called operable units (OUs).

Basis for Taking Action

After listing on the NPL, 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 evaluate further 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 supplying potable water (i.e. treatment of the existing well by air stripping and a new surface water supply).

IV. Remedial Actions

OU1-Ranney Well

Remedy Selection

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 3,700 gpm;
- Treatment of the contaminated Ranney Well water to drinking water quality standards (i.e., Maximum Contaminant Levels (MCLs) under the Safe Drinking Water Act);
- 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
- Performing a supplemental RI/FS to investigate further the nature and extent of contamination in suspected source areas, to evaluate possible source control measures for such areas, and to evaluate further the extent of aquifer contamination together with alternatives for aquifer restoration.

Remedy Implementation

Pursuant to a Consent Decree, the Town of Union (the Town) and the Village agreed to perform the Remedial Design and Remedial Action (RD/RA) to implement the selected remedy for OU1. The RA was formally initiated on December 10, 1989 when the Village 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 in the Fall of 1991 and has been in continuous operation since that time.

In a letter dated September 26, 1996, the Village requested that EPA allow them 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.

[1] The Village presently samples the Ranney Well for VOCs on a weekly basis.

OU3-Groundwater-Supplemental Purge Well

Remedy Selection

As noted above, 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 investigate further 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.

Based upon the conclusions of a September 1990 Phase I RI Report, two Interim Remedial Measures (IRMs) were identified to protect public health and the environment. The appropriateness of these IRMs, which were designated as OU3, was evaluated under the nine remedy selection criteria of the NCP in a Technical Memorandum dated January 1991. Thereafter, on March 29, 1991, a ROD was issued 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 an aquifer pump test to determine treatment requirements.

The intent of the remedy is to expedite cleanup of the groundwater aquifer and to reduce the potential threat to the Ranney Well.

Remedy Implementation

Pursuant to a second consent decree, the Village, the Town, Endicott Johnson Corporation (EJ), IBM and George Industries, Inc. agreed to performed the OU3 RD/RA. The RA was formally initiated in June 1995 by means of work performed by Village personnel. To determine if the water pumped from the SPW could be treated by the 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. 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 discontinuing the operation of the original purge well.

OU2-Endicott Landfill

Remedy Selection

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 potential contaminant sources areas which were identified in the interim RI Report. The environmental characterization is described in the February 1992 RI Report for the Site. The evaluation of remedial alternatives for OU2 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 gpm) extended beyond the limits of the Endicott Landfill, the source of contamination to the Ranney Well. As a result, contaminants entering the groundwater from the Endicott Landfill will migrate to those wells.

In September 1992, EPA issued a ROD for OU2 selecting the following remedy:

- Capping the majority of the Landfill surface with a low permeability barrier cap;
- Capping with bituminous (asphalt) the 6-acre parcel of the Landfill where the Village has a permitted yard waste composting facility and the 8-acre CAA of the Tri-Cities Airport regulated by the FAA;
- Performing an explosive gas investigation and installing a passive gas-venting system;
- Collecting, treating, and disposing of the leachate seep;
- Recommending that institutional controls in the form of deed restrictions be established 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;
- Performing long-term air and water quality monitoring;
- Continuing operation and maintenance of the groundwater collection and treatment measures already selected for the Site; and
- Continuing groundwater monitoring.

The OU2 ROD identified federal MCLs and the New York State Ambient Water Quality Standards and Guidance Values as the groundwater standards for the Site. Specifically, the

chemical-specific applicable or relevant and appropriate requirements (ARARs) for groundwater were identified as follows: 5 µg/l for TCE; 2 µg/lfor vinyl chloride; 7 µg/l for 1,1-dichloroethylene; and 50 µg/l for 1,2-DCE.

Remedy Implementation

Pursuant to a third consent decree, EJ, the Village, the Town and IBM (together, the PRPs) agreed to perform the OU2 RD/RA. The general goal 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.

Systems Operation/Operation and Maintenance (O&M)

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

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

Table 2 is an estimate of annual monitoring costs.

Institutional Controls Implementation

The OU2 ROD recommended that the Village implement institutional controls in the form of deed restrictions on future uses of the Landfill, and EPA has recommended that the Village do so. However, the village's ownership is substantially equivalent to the deed restrictions recommended in the ROD. The Village is legally required by the Consent Decree(CD) to regularly maintain the Landfill in accordance with the O&M Plan, to regularly report to EPA on the status of its work under the CD, and to advise EPA of any changes in any conditions, including ownership. The Landfill is also independently regulated by the NYSDEC's programs. In addition, the Landfill's status as an NPL site is information which is publicly available and accessible by means more broadly accessible than the deed restrictions. Current state and county requirements prevent the installation of wells at a hazardous waste site. Finally, access restrictions including fencing and signs exist at the Landfill.

With respect to drinking water, the entire Village, including the affected downgradient area, has drinking water provided by public supplies. In addition, there is a local ordinance in place restricting well drilling.

V. Progress Since Last Five-Year Review

The first Five-Year Review was completed in September 2001, pursuant to OSWER Directives 9355.7-02 (1991), 9355.7-02A (1994), and 9355.7-03A (1995). The first Five-Year Review concluded that the implemented remedy continued to be protective of public health and the environment. There were no recommendations, follow-up actions, or issues presented in the first Five-Year Review. Additional monitoring which has occurred since the first Five-Year Review has been discussed in this report.

VI. Five-Year Review Process

Administrative Components

The Five-Year Review Team consisted of: Sherrel Henry (Remedial Project Manager), Grant Anderson (Hydrogeologist), Marion Olsen (Risk Assessor), and Brian Carr (Attorney).

Community Involvement

The EPA Community Involvement Coordinator for the Site, Cecilia Echols, published a notice in the *Press and Sun Bulletin*, a local newspaper, on April 16, 2006, notifying the community of the initiation of the Five-Year Review process. The notice indicated that EPA would be conducting a Five-Year Review of the remedy for the Site to ensure that the implemented remedy remains protective of public health and the environment and is functioning as designed. It also indicated that once the Five-Year Review is completed, the results will be made available in the local Site repository. The notice also solicited public comments or questions related to the Five-Year Review process or to the Site.

In addition, the notice included the RPM's mailing address, e-mail address, and telephone number for any public comments or questions. A similar notice will be published when the review is completed.

Document Review

The documents, data, and information which were reviewed in conducting this second Five-Year Review are summarized in Table 3 (attached).

Monitoring and Data Review

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 potential 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 (OU1). To ensure that the implemented remedy remains effective, a long-term monitoring program was designed. The long-term monitoring program, which is being conducted by the Village, includes the quarterly collection of groundwater samples from the SPW, and gauging of water levels in monitoring wells at and 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.

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 three compounds (see Table 4). Groundwater level monitoring demonstrates that the extraction well in combination with capping of the Landfill is achieving containment and capture of contaminated groundwater.

Groundwater Elevation Level Monitoring

Water levels within the aquifer fluctuate seasonally. 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 inspections of the Landfill, NYSDEC and EPA rely on the 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 dated August 2006 indicated that several of the paved areas of the landfill cap have settled and pooling of water has occurred.

Site Inspection

The Site was inspected by the Remedial Project Manager, the Hydrogeologist, and the Risk Assessor on August 2, 2006.

Interviews

No interviews were conducted for this review.

VII. Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

The primary objectives of the implemented remedies are to control the source of contamination at the Site, to 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 an air stripper (OU1) for the protection of the public water supply system, installation of a landfill cap (OU2), and treatment of the ground water plume(OU3) by the SPW.

Data continue to show no detections of VOCs or low detections below the ARARs, except for four compounds (see Table 4). The subject monitoring shows that benzene, chloroethane, cis-1,2-dichloroethene and vinyl chloride exceeded the federal or state MCLs. Groundwater level monitoring demonstrates that the extraction well is generally effective in containing the VOC plume.

In general the landfill cap is well-maintained, mowed, and operating as designed. Several areas of the paved landfill cap, however, have settled, allowing pooling to occur. Some of these areas are associated with truck traffic and some are associated with the end of the 8-acre area designated by the FAA as the CAA, which include the Runaway Object Free Area.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid?

There have been no changes in the physical conditions of the Site over the past five years that would change the protectiveness of the remedy. The Site has limited access based on its location within an industrial area, fencing, the presence of the Tri-Cities Airport and Airport Road that borders the Site to the west, the eastern boundary of the En-Joie Golf Course to the east, and the Susquehanna River to the south.

Soil and groundwater use at the Site are not expected to change during the next five years, the period of time considered in this review. The risk assessment in 1987 identified ingestion of groundwater by area residents as the principle route of exposure. The main contaminants of concern identified at the site included: trichloroethene (TCE), 1,2-dichloroethene (DCE), vinyl chloride, and chloroethane in groundwater.

The land use considerations and potential exposure pathways considered in the baseline human health risk assessment are consistent with the current land use.

The ROD for OU-1 called for an air stripper to provide potable water. The ROD for OU-2 included source control measures for the landfill including the implementation of a low permeability barrier cap and site access restrictions. The ROD for OU-3 called for upgrading the existing purge well system for the further reduction of contaminated groundwater and the potential threat to the Ranney Well.

The implementation of the RODs for OU-1 and OU-3 address groundwater contamination related to the VOCs listed above through air stripping and operating and maintaining the existing purge well system to meet MCLs. The OU-2 ROD called for the capping of the majority of the surface of the landfill with a barrier cap which would interrupt any potential ingestion and direct contact with soil as well as minimize contaminant migration. These actions have interrupted exposures and the remedy remains protective.

The ROD established the MCLs as the cleanup criteria for the contaminants of concern identified above. The toxicity values for these chemicals have been modified or are undergoing toxicological review as is the case for TCE. The selected MCLs remain protective. Comparison of the maximum detected concentrations of COPCs to the MCLs is presented in Table 4. Table 5 is a comparison of the cleanup goals established for the site specific indicators to the New York State Department of Environmental Conservation TAGMs and the EPA Region 9 PRGs - Residential.

Comparison of the 2004 and 2005 groundwater data indicates detections of the following chemicals: benzene (11 ug/l); chloroethane (18 ug/l); cis-1,2-dichloroethene (26 ug/l); and vinyl chloride (28 ug/l). The associated MCLs for these chemicals are 5 ug/l for benzene; 70 ug/l for cis-1,2-dichloroethene; and 2 ug/l for vinyl chloride. There is currently no MCL value available for chloroethane. The concentrations for vinyl chloride and benzene exceed the MCL.

Soil vapor intrusion based on groundwater concentrations was also evaluated. This evaluation was based on comparing the concentrations found during the 2004 sampling event to the residential values identified in the OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway for Groundwater and Soil. The concentration of vinyl chloride in groundwater at 28 ug/l slightly exceeds the 10^{-4} screening level for a residential land use of 25 ug/l. The concentration of cis-1,2-dichloroethene at 70 ug/l is below the 10^{-4} screening level of 210 ug/l. The concentration of benzene at 11 ug/l is below the 10^{-4} screening level of 140 ug/l. The concentration of chloroethane at 15 ug/l is below the 10^{-4} screening level of 28,000 ug/l. In the future, in the unlikely event that a building is constructed on the Landfill property, vapor intrusion should be evaluated. Table 6 is a comparison of the maximum detected concentrations of COPCs detected in the monitoring wells to their respective vapor intrusion screening criteria.

Overall, based on the past remedial action and ongoing monitoring at the site, the remedy remains protective.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

There is no information that calls into question the protectiveness of the remedy**.**

Technical Assessment Summary

Based upon the results of this second Five-Year Review process, it has been concluded that the remedy is functioning as intended by the Site's remedial decision documents. The specific points are as follows:

- The cap is intact and in generally good condition;
- The fence around the Landfill is intact and in good repair;
- The contaminant levels in the SPW have been reduced, and this may have created a reduction in the size of the plume. 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 trespassing or that vandalism has occurred.

VIII. Issues, Recommendations and Follow-up Actions

This site has ongoing operation, maintenance and monitoring activities as part of the selected remedy. This report includes suggestions for improving, modifying, and/or adjusting the implemented remedy (see Table 7). This report finds the groundwater remedy protects against human exposure to contaminated groundwater, but may benefit from an improved presentation of potentiometric data in the form of contouring. Landfill subsidence should be corrected. This report did not identify any issue or make any recommendation for the protection of public health or the environment which was not included or anticipated by the site decision documents.

IX. Protectiveness Statement

The remedy as implemented for the Site protects human health and the environment. There are no exposure pathways that could result in unacceptable risks, and none are expected as long as the Site ownership and use do not change and the engineered and institutional controls currently in place continue to be properly operated, monitored, and maintained.

X. Next Review

The next Five-Year Review for the Site will be completed before September 2011, five years from the date of this review.

Approved:

George Pavlou, Director
Emergency and Remedial Response Division

9-29-06
Date

Table 1: Chronology of Site Events

DATES	EVENTS
OU1-RANNEY WELL	
1986-June	Site listed on the National Priorities List
1987-July	RI/FS completed by contractors for NYSDEC
1987-September	ROD signed by the EPA
1989-January	Consent Decree signed with EPA and the PRPs
1991-September	Construction of the OU1 remedy completed
OU3-SUPPLEMENTAL PURGE WELL	
1988-September	Administrative Order signed for RI/FS
1990-September	Interim RI approved
1991-January	Technical Memorandum issued
1991-March	ROD signed by the EPA
1992-March	Consent Decree signed with EPA and the PRPs
1995-June	Construction of the OU3 remedy completed
1995-December	Explanation of Significant Differences Issued
OU2-ENDICOTT LANDFILL	
1992-February	Final RI submitted by PRPs
1991-January	Final FS submitted by PRPs
1992-September	ROD signed by the EPA
1994-January	Consent Decree signed with EPA and the PRPs
1997-May	Construction of the OU2 remedy completed
2001-September	First Five-Year Review Report issued by the EPA

Table 2: Estimated Annual Monitoring Costs

Sampling and Analysis	$3,500
Site Inspection and Maintenance	$3,700
Total Estimated Annual Monitoring Costs	$7,200

Table 3. List of Documents Reviewed

The following documents were reviewed in completing the second Five-Year Review:

- Remedial Investigation, Final Report, January 1991;
- Record of Decision for OU3 (Supplemental Purge Well), March 1991;
- Explanation of Significant Differences, December 1995;
- Record of Decision for OU2 (Endicott Landfill), September 1992;
- OU2 Consent Decree, January1994;
- Annual Operation and Maintenance Report for 2001;
- Annual Operation and Maintenance Report for 2002;
- Annual Operation and Maintenance Report for 2003;
- Annual Operation and Maintenance Report for 2004;
- Annual Operation and Maintenance Report for 2005; and,
- EPA Guidance for conducting Five-Year reviews.

Table 4: Comparison of the maximum detected concentrations of Contaminants of Potential Concern (COPC) detected in the on-site monitoring wells to their respective human health risk based screening criteria (Preliminary Remediation Goal), Primary Drinking Water Standard (Maximum Contaminant Level) and New York Department of Environmental Conservation Water Quality Regulations (NYSDEC WQR).

COPC	Maximum Detected Concentration (ug/l)	Region 9 Preliminary Remediation Goal (ug/l)	Primary Drinking Water Standard - MCL (ug/l)	NYSDEC WQR (ug/l)	Location
benzene	11	0.35 c	5	1	SPW – 2004 SMP-002 7/23/04
chloroethane	37	4.6 ©	--	5 (generic value)	SPW-2003
cis-1,2 dichloroethene	26	61	70	0.6	SPW-2004
trichloroethylene	ND	0.028	5	5	SPW-2005
vinyl chloride	28	0.02 ©	2	2	SPW-2005

Footnotes:

©: Value is based on a Cancer endpoint

(nc): Value is based on a Non-cancer endpoint

*: Values are National Secondary Drinking water regulations, which are non-enforceable guidelines regulating contaminants that may cause cosmetic or aesthetic effects in drinking water.

Bold: The maximum detected concentration of the contaminant of concern has exceeded the human health risk-based concentration (PRG), its respective maximum contaminant level (MCL) and/or its respective NYSDEC WQR.

Source: Region 9 Preliminary Remediation Goals (PRGs) are human health risk based screening criteria. These values are equivalent to a cancer risk of 1 x 10-6 or a hazard index of 1. Refer to: http://www.epa.gov/Region9/waste/sfund/prg/index.htm

National Drinking Water Standards (MCLs) are legally enforceable standards that apply to public water systems. Refer to: http://www.epa.gov/cgi-bin/epaprintonly.cgi . New York State Department of Environmental Conservation Water Quality Regulations (NYSDEC WQR) are the ARARs established in the ROD. Refer to: http://www.dec.state.ny.us/website/regs/part703.html

Table 5: Comparison of the cleanup goals established for site specific indicators to the New York State Department of Environmental Conservation TAGMs and the EPA Region 9 PRGs - Residential.

COPC	Cleanup Goal established in the ROD (mg/kg)	NYSDEC Soil Cleanup Objective (mg/kg)	NYSDEC Protection of Groundwater Objective (mg/kg)	EPA Region 9 PRG - Residential (mg/kg)
chloroethane	15	280	28,000	
cis-1,2-dichloroethane	21	2.1	210	
trichloroethylene		0.053	5.3	600 (nc)
vinyl chloride	22	0.25	25	3.4 ©

Footnotes:

©: Value is based on a Cancer endpoint

(nc): Value is based on a Non-cancer endpoint

*: The cleanup goal for mercury in soil is 0.1 mg/kg and the cleanup goal for mercury in sediment is 0.2 mg/kg

Bold: The cleanup goal established in the ROD exceeds the current NYSDEC Protection of Groundwater Criteria

Source: Region 9 Preliminary Remediation Goals (PRGs) are human health risk based screening criteria. These values are equivalent to a cancer risk of 1 x 10^{-6} or a hazard index of 1. Refer to: http://www.epa.gov/Region9/waste/sfund/prg/index.htm

New York State Department of Environment Technical and Administrative Guidance Memo #4046. These values are state established cleanup objectives. Refer to: http://www.dec.state.ny.us/website/der/tagms/prtg4046.html

Table 6: Comparison of the maximum detected concentrations of COPCs detected in the monitoring wells to their respective vapor intrusion screening criteria

COPC	Maximum Detected Concentration (ug/l)	Vapor Intrusion Screening Value (ug/l)	Vapor Intrusion Screening Value (ug/l)
		Cancer Risk = $1 * 10^{-6}$ Non-cancer hazard = 0.1	Cancer Risk = $1 * 10^{-4}$ Non-cancer hazard = 1
benzene	11	1.4	140
chloroethane	37	280	28,000
cis-1,2-dichloroethane	26	2.1	210
trichloroethylene	ND	0.053	5.3
vinyl chloride	28	0.25	25

Footnotes:
©: Value is based on a Cancer endpoint
(nc): Value is based on a Non-Cancer endpoint
Bold: The maximum detected concentration of the contaminant of concern has exceeded its respective vapor intrusion risk-based criterion.
Source: Vapor Intrusion Screening Values are used for screening purposes. Refer to: http://www.epa.gov/correctiveaction/eis/vapor.htm

Table 7: Other Comments on Operation, Maintenance, Monitoring, and Institutional Controls	
Comment	**Suggestion**
Potentiometric data are being collected but are not being contoured.	For each sampling event all potentiometric data should be contoured to confirm that there is hydraulic containment.
The groundwater monitoring has not been re-evaluated since the landfill closure was completed.	NYSDEC, EPA and the Village should meet to discuss groundwater monitoring.
There are potholes and subsidence in the paved areas.	EPA will notify the PRPs to repair the potholes and subsided areas to prevent pooling of surface water.