Five-Year Review Report
Conklin Dumps Superfund Site
Town of Conklin
Broome County, New York

Prepared by:

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

January 2008

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SYMBOL --->	CNYRS	CNYRS	NYRB	ERRD	ERRD			
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EXECUTIVE SUMMARY

This is the third five-year review for the Conklin Dumps Superfund site, located in the Town of Conklin, Broome County, New York. The assessment of this five-year review is that although there have been changes in the physical conditions of the site, these changes do not affect the protectiveness of the selected remedy under current conditions of site usage. The possibility exists, however, that some contamination may be escaping the leachate collection system. Further investigation needs to be conducted and, if necessary, corrective actions should be performed.

Five-Year Review Summary Form

SITE IDENTIFICATION

Site Name *(from WasteLAN)*: Conklin Dumps

EPA ID *(from WasteLAN)*: NYD981486947

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

SITE STATUS

NPL Status: G Final O Deleted G Other (specify)_____

Remediation Status (choose all that apply): G Under Construction G Operating O Complete

Multiple OUs? G YES O NO	**Construction completion date:** January 1996

Has site been put into reuse? G YES O NO G N/A (site involves groundwater plume and not real property)

REVIEW STATUS

Lead agency: G EPA O State G Tribe G Other Federal Agency _____

Author name: George Jacob

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

Review period:** 01/30/2003 to 1/30/2008

Date(s) of site inspection: 10/18/2007

Type of review:

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

Review number: G 1 (first) G 2 (second) O 3 (third) G Other (specify) _____

Triggering action:

G Actual RA Onsite Construction at OU #____ G Actual RA Start at OU#__1__
G Construction Completion O Previous Five-Year Review Report
G Other (specify) _____

Triggering action date *(from WasteLAN)*: 01/30/2003

Due date *(five years after triggering action date)*: 01/30/2008

Does the report include recommendation(s) and follow-up action(s)? O yes G no
Is human exposure under control? O yes G no
Is migration of contaminated groundwater stabilized? G yes G no O not yet determined
Is the remedy protective of the environment? O yes G no G not yet determined
Acres in use or suitable for use: **restricted:** 5.5 acres **unrestricted:** 31.5

Five-Year Review Summary Form (continued)

Issues, Recommendations, and Follow-Up Actions

Although there have been changes in the physical conditions of the site, these changes do not affect the protectiveness of the selected remedy under current conditions of site usage. Further investigations related to the integrity of the cap and the effectiveness of the leachate collection system should be conducted. In addition, institutional controls to prevent the withdrawal and use of groundwater in the vicinity of the landfill and to restrict activities which could affect the integrity of the cap should be put into place.

This site has ongoing operation, maintenance, and monitoring activities as part of the selected remedy. As was anticipated by the decision documents, these activities are subject to routine modification and adjustment. This report includes suggestions for improving, modifying and/or adjusting these activities. Other than the need to investigate the cap and leachate collection system, this report did not identify any issue or make any recommendation for the protection of public health and/or the environment which was not included or anticipated by the site decision documents.

Protectiveness Statement

Based on the current and reasonably anticipated site and groundwater uses, the Environmental Protection Agency has determined that the site-wide remedy protects human health and the environment in the short-term. There are no current risks present at the site in either groundwater or soils and none are expected, as long as the site use does not change and the engineered and access controls are properly operated, monitored, and maintained. The five-year review indicated, however, that there are potential problems with the operation and maintenance of the remedy. In order to ensure the continued protectiveness of the remedy, additional investigation of the efficacy of the implemented actions is necessary and institutional controls need to be implemented.

I. Introduction

This five-year review was conducted pursuant to Section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act, 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 a remedial action remains protective of public health and the environment and is functioning as designed. This document will become part of the site file.

This is the third five-year review for the Conklin Dumps site. Since, after the completion of the remedial action, contaminants remain on-site, a statutory five-year review is required. In accordance with the 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 is January 30, 2003.

This five-year review covers the entire site. Based upon this five-year review, it has been determined that there have been changes in the physical condition of the landfill cap which may be affecting the remedy.

II. Site Chronology

Table 1 (attached) summarizes the site-related events from discovery to site deletion.

III. Background

Site Location

The Conklin Dumps site in located in the Town of Conklin, Broome County, New York, approximately10 miles southeast of Binghamton about 1 mile north of the Kirkwood exit of Route 81.

Physical Characteristics

The 37-acre site, originally consisted of two landfilled areas referred to as the Upper and Lower Landfills. The 5.5-acre Upper Landfill is located on the western border of the site; the now excavated Lower Landfill (2.5 acres) was situated on the eastern border of the site. County Route 322, also known as Broome Parkway, runs down the middle of the site in a north-south direction. Carlin Creek is located adjacent to the northeastern portion of the Upper Landfill. Wetlands and a Delaware and Hudson railroad track border the eastern perimeter of the site. The Susquehanna River is located approximately 0.5 miles to the east of the site.

Geology/Hydrogeology

Shale/siltstone bedrock underlies the entire site, with depth to bedrock varying from 80 feet to 130 feet from west to east. Glacial till underlies the Upper Landfill. The area immediately to the east of the landfill is underlain by a lens of low permeability silt and fine sand. The silt layer varies in depth from 10 to 30 feet. Sand and gravel glacial outwash underlies the area where the former Lower Landfill was located. The sand and gravel layer is approximately 20 feet thick and is underlain by glacial till.

Groundwater is encountered at approximately 24 feet below the ground surface in the vicinity of the Upper Landfill and 1 foot below the ground surface to the east. The horizontal groundwater flow direction is from west to east toward the Susquehanna River.

Land and Resource Use

The site is situated in a sparsely populated area within the eastern perimeter of the Broome County Corporate Park. The Broome County Corporate Park is adjacent to the site on the eastern side. The predominant land use in the surrounding area is agricultural. The population within one mile of the site is about 700. The closest residents live along Route 7, about a quarter mile from the site. A Town of Conklin public water supply well is located 2,000 feet northeast of the site.

History of Contamination

The Lower Landfill, which was operated between 1964 and 1969, contained approximately 48,000 cubic yards of municipal wastes before it was excavated and consolidated with the Upper Landfill. The Upper Landfill, which originally contained approximately 55,000 cubic yards of municipal and industrial waste, was operated from 1969 until 1975, when a closure order was issued by the New York State Department of Environmental Conservation (NYSDEC). The property is currently owned by the Town of Conklin.

Initial Response

Beginning in 1983, field investigations, including the sampling of leachate seeps, groundwater, and drinking water supplies, were conducted. A two-phase hydrogeologic investigation was conducted by O'Brien and Gere Engineers for the Broome County Industrial Development Agency from 1983 to 1985. This investigation included the sampling of 17 private drinking water wells located near the site. Based upon the sample results, the New York State Department of Health (NYSDOH) recommended that public water be extended to the residents downgradient from the site to eliminate exposure to contaminants in the groundwater. Public water was extended to this area in 1985 as part of anticipated industrial and commercial development in the area.

Basis for Taking Action

In June 1986, the site was nominated for inclusion on the National Priorities List. In June 1987, a Consent Order was signed between the Town of Conklin and NYSDEC, which covered the

performance of a remedial investigation and feasibility study (RI/FS) and the remedial design (RD)/remedial action (RA).

The RI, which was completed in December 1988, indicated limited groundwater contamination in the immediate vicinity of the Upper Landfill. Confirmatory sampling, performed in June 1990, confirmed the RI findings and provided additional validated data.

In 1990, NYSDOH learned that some residences near the site had not connected to the public water supply. These wells were sampled; no site-related contamination was detected in these wells.

An FS report was completed in January 1991.

IV. Remedial Actions

Remedy Selection

The Environmental Protection Agency (EPA), in consultation with NYSDEC, issued a Proposed Plan on February 3, 1991. A public comment period began on February 4, 1991 and extended until March 6, 1991. A public meeting was held at the Conklin Town Hall on February 25, 1991. A Record of Decision (ROD), which was signed by the EPA Regional Administrator on March 29, 1991, called for capping of the Upper Landfill and the Lower Landfill in-place, leachate collection, either on- or off-site treatment of the leachate, and long-term monitoring. The ROD also called for the imposition of a property deed restriction, if necessary, to prevent the installation of drinking water wells at the site and restrict activities which could affect the integrity of the cap.

During preliminary design activities associated with the selected remedy, it was determined that the construction of a leachate collection trench and cap at the Lower Landfill would present significant engineering difficulties due to the proximity of an adjacent wetland and railroad tracks. In order to eliminate the leachate seeps at the Lower Landfill, it would be necessary to install a leachate collection system below the water table. A leachate collection system installed below the water table, however, would collect vast amounts of uncontaminated groundwater and could adversely impact the adjacent wetland by dewatering a portion of it, unless hydraulic barriers were installed (which in itself could adversely impact the wetland). In addition, installing a cap on the Lower Landfill could negatively impact the adjacent wetland in that it would encroach on the wetland. Due to these technical feasibility and environmental concerns, the selected remedy was modified by an Explanation of Significant Differences (ESD) in September 1992. The modified remedy consists of the excavation of the Lower Landfill, consolidation of the excavated Lower Landfill contents onto the Upper Landfill, capping of the Upper Landfill, construction of a leachate collection system, and either on- or off-site treatment of the leachate.

Remedy Implementation

Lower Landfill

The RD associated with the excavation of the Lower Landfill and consolidation of the excavated wastes onto the Upper Landfill commenced in April 1991 and was completed in September 1992.

A contract was awarded to Masciarelli Construction Company to provide construction services related to the excavation of the Lower Landfill in January 1993. The composition of the wastes that were encountered during the excavation was primarily soil and decomposed organic matter intermixed with scrap metal, bottles and fabric from a local tent manufacturer. Although four 55-gallon drums were encountered, they were found to be empty or contained nonhazardous debris, and were crushed and disposed of in the Upper Landfill.

An air monitoring program was implemented during the excavation activities. This program entailed sampling for volatile organic compounds (VOCs) and particulates both in the work area and on the site perimeter. Real-time monitoring was performed using an HNu photoionization detector for detection of VOCs and a mini-Ram for detection of particulates. Perimeter monitoring was performed using EPA Method TO-14, with sampling stations being placed on the northern and southern portions of the landfill and two being placed along the railroad right-of-way to the east. This alignment allowed for monitoring of any airborne contaminants that could be migrating off-site to populated areas. Samples were analyzed by Performance Analytical, Inc. of Canoga Park, California. All results showed non-detectable levels of VOCs and particulates were below the levels set by the Occupational Safety and Health Administration.

Samples were collected from the waste at a frequency of one sample per 5,000 cubic yards of waste. These samples were analyzed in accordance with the Toxicity Characteristic Leaching Procedure (TCLP) to determine whether it constituted a Resource Conservation and Recovery Act hazardous waste. Analytical results showed all samples to be nonhazardous. Samples were also collected from the bottom of the excavation and analyzed using TCLP; these results were also nonhazardous.

The waste that was excavated from the Lower Landfill (47,615 cubic yards) was deposited on the Upper Landfill in approximately one-foot lifts. This effort, which was performed by the Town of Conklin, was completed in July 1993. Backfilling of the Lower Landfill, which also was performed by the Town, was completed in September 1993.

Upper Landfill

The RD associated with the capping of the consolidated wastes on the Upper Landfill and the construction of a leachate collection, storage, and pre-treatment system commenced in April 1991 and was completed in July 1993.

The installation of a leachate recovery system consisting of three leachate recovery wells located within the landfill waste mass near the northeastern corner of the landfill, a 940 linear foot collection trench along the northern and eastern sides of the landfill, and PVC piping to a precast concrete

pump station, installation of a 30,000-gallon leachate storage tank, compaction and regrading of the excavated waste mass, construction of a final cover system for the Upper Landfill, and the installation of an eight- foot high chain-linked fence around the Upper Landfill to restrict access**,** was performed from October 1993 to November 1994 by Lafarge Brothers Construction Company, Inc.

Leachate Storage and Pre-Treatment System

In June 1995, the Binghamton-Johnson City Joint Sewer Board approved the Town of Conklin's application for discharge of the leachate from the Upper Landfill into the sanitary sewer system for treatment at the Binghamton-Johnson City Joint Sewage Treatment Plant in Vestal, New York. This approval required that the Town obtain an industrial wastewater discharge permit and temporarily store the leachate in an on-site storage tank while it is sampled and analyzed to determine if it meets the discharge requirements of the permit.

The construction of a leachate storage, pre-treatment system, and pipeline to the sewer interceptor, which began in November 1995, included the installation of a 30,000-gallon horizontal steel storage tank with a secondary containment dike, installation of a leachate pre-treatment system, consisting of a series of bag filters to remove solids, and installation of a pipe to discharge the leachate from the storage and pre-treatment system to the sanitary sewer system. The work, which was performed by JEM Smith Construction Company, Inc., was completed in January 1996. A final inspection was conducted after the snow melt in June 1996.

Institutional Controls Implementation

The ROD called for the imposition of a property deed restriction, if necessary, to prevent the installation of drinking water wells at the site and restrict activities which could affect the integrity of the cap. Since the site property is municipally-owned, NYSDEC has not required the Town to obtain a property deed restriction. Instead, NYSDEC has advised the Town that in the event that there is to be a change in the ownership/operation of the property, the Town should prepare appropriate language for restrictions to be incorporated into the deed. Nonetheless, institutional controls need to be implemented at the present time.

System Operations/Operation and Maintenance

Quarterly site inspections are conducted to identify irregular settlement, cracking, erosion, or other disturbances which might affect the integrity of the cap. The leachate collection trench and leachate recovery wells are inspected monthly. Maintenance is performed as necessary.

The estimated annual operation and maintenance costs are $35,000; these costs are broken down in Table 2 (attached).

To date, approximately 120,000 gallons of leachate have been sent for treatment at the Binghamton-Johnson City sewage treatment plant. Analysis of the leachate has shown that there were no detectable levels of chloroethane, 1,2-dichloropropane, and xylene, the principal contaminants of concern at the site. In addition, all Conventional Analytical Parameters (wet chemical analysis) were

within specifications required for transfer to the sewage treatment plant.

V. Progress Since Last Five-Year Review

The second five-year review for this site made three recommendations and identified several followup actions. The recommendations and followup actions, as well as their implementation status, are summarized in Table 3 (attached). As can be seen by Table 3, all of the recommendations and follow-up actions were contingent upon the future development of the site. Since there are currently no plans to develop the site, no follow-up actions were necessary.

VI. Five-Year Review Process

Administrative Components

On October 18, 2007, a five-year review-related site inspection was conducted at the site.

The five-year review team consisted of George Jacob (Remedial Project Manager [RPM]), Grant Anderson (hydrogeologist), Chloe Metz (human health risk assessor), and Michael Clemetson (ecological risk assessor, Biological Technical Assistance Group).

Community Involvement

The EPA Community Involvement Coordinator (CIC) for the Conklin Dumps site, Cecilia Echols, published a notice in the *Binghamton Press and Sun Bulletin,* a local newspaper, on November 15, 2007, 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 site to ensure that the site is protective of public health and the environment and that the implemented components of the remedy are functioning as designed. It was also indicated that once the five-year review is completed, the results will be made available in the local site repository. In addition, the notice included the addresses and telephone numbers for the RPM and CIC for questions related to the five-year review process or the Conklin Dumps site.

Document Review

The documents, data, and information which were reviewed in completing the five-year review are summarized in Table 4 (attached).

Data Review

On a quarterly basis, six monitoring wells and Carlin Creek are sampled.

Currently, the chemicals of concern at the site (chloroethane, xylene, and 1,2-dichloropropane) are not being detected in the groundwater. Several inorganic compounds (lead, arsenic, iron and

manganese) exceed state and federal drinking water standards, however. The results of a statistical analysis performed by C&S Engineers for the Town of Conklin (Application for Monitoring Variance, C&S Engineers, 2005) noted that arsenic, iron, bromide, chloride, barium, calcium, cobalt, magnesium, sodium, and manganese concentrations in deep, downgradient monitoring well MW-38D were above the background values observed in upgradient monitoring well MW-1. In addition, it appears that the concentration of manganese in several shallow downgradient wells is increasing.

Surface water samples collected from Carlin Creek were free of any site-related contaminants.

It is also apparent that the laboratory detection limits for a number of compounds are too high relative to their respective groundwater standard. For example, the detection limit currently being used by the laboratory for benzene is 5 micrograms per liter (µg/l) while the State standard is 1 µg/l.

Site Inspection

On October 18, 2007, a five-year review-related site inspection was conducted by George Jacob, Grant Anderson, Chloe Metz, and Michael Clemetson of EPA, Payson Long from NYSDEC, and Debbie Preston, Tom Delamarter, and Chris Henderson from the Town of Conklin.

The results of the inspection indicated that:

- There were no visible signs of trespassing or vandalism.
- The site fencing was damaged by a falling tree.
- At least one of the monitoring wells was visibly bent. Broken wells have the potential to transmit water downward.
- Based on the appearance of the monitoring and leachate extraction wells installed through the landfill cap, it appears that considerable differential compaction (settling) has occurred. As a result of the settling, the PVC casings of several of the monitoring wells were sticking out of the protective casing by 6 inches or more, preventing these wells from being properly secured.

The fencing and the wells were repaired following the inspection.

Interviews

Interviews for this review were conducted on October 18, 2007 with Debbie Preston, Tom Delamarter, and Chris Henderson of the Town of Conklin.

Institutional Controls Verification

It does not appear likely that a restrictive covenant or an environmental easement to protect the

integrity of the cap and to prohibit the installation of groundwater wells is currently necessary since the site property is municipally-owned, there are no current plans to develop it, and it is fenced. Nonetheless, a notification should be added to the deed indicating that activities that would disturb the cap should not be performed and that drinking water wells should not be installed.

Other Comments on Operation, Maintenance, Monitoring, and Institutional Controls

Table 5 (attached) summarizes several observations and offers suggestions to resolve the issues.

VII. Technical Assessment

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

The Upper Landfill has been capped and leachate is being collected and treated off-site, removing direct contact (*i.e.*, ingestion or dermal contact with contaminated soil and leachate) exposures to the public as well as ecological receptors. A fence is in place to further prevent trespassers from exposure by entering the site and disturbing the cap. Exposure protection to the Lower Landfill is provided by consolidation of the excavated contents onto the Upper Landfill. Potential exposure to contaminated groundwater has also been eliminated since most of the surrounding businesses and homes receive water from a public supply. For those residences with private drinking water wells, sampling during the RI did not indicate that these wells had been impacted by site-related contaminants.

Based upon an inspection of the site, there have been changes in the physical condition of the landfill cap which may be affecting the remedy. Based on the appearance of the monitoring and pumping wells installed through the landfill cap, it appears that considerable differential compaction has occurred. One of the principal remedies at this site is a flexible, impermeable cap installed over the top of the refuse. Differential compaction has the ability to rupture this impermeable lining, thus allowing precipitation to enter the refuse, which then would allow the generation of greater quantities of leachate.

Currently, the chemicals of concern at the site (chloroethane, xylene, and 1,2-dichloropropane) are not being detected in the groundwater. Several inorganic compounds (lead, arsenic, iron and manganese) exceed state and federal drinking water standards, however. The results of a statistical analysis noted that arsenic, iron, bromide, chloride, barium, calcium, cobalt, magnesium, sodium, and manganese concentrations in deep, downgradient monitoring well MW-38D were above the background values observed in upgradient monitoring well MW-1. In addition, it appears that the concentration of manganese in several shallow downgradient wells is increasing. The increasing concentrations of inorganic compounds could be an indication that the leachate collection system is not functioning properly. Therefore, continued monitoring of groundwater at the site is necessary. Data reporting and organization consistent with the protocol outlined in the Application for Monitoring Variance is recommended for the next five-year review so that thorough analysis of the concentration trends can be evaluated for the inorganic compounds.

While it appears that the remedy may not be functioning as intended by the decision documents, the cap is still intact and contaminated material is not available for contact.

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

The exposure assumptions and the toxicity values that were used to estimate the potential risk and hazards to human health followed the general risk assessment practice at the time the risk assessment was performed (1988). Although the risk assessment process has been updated since 1988 and specific parameters and toxicity values may have changed, the risk assessment process that was used is still consistent with current practice and the need to implement a remedial action remains valid.

The exposure pathways considered in the human health risk assessment were ingestion of groundwater and dermal contact with leachate. The risk was determined to be in the acceptable risk range. However, groundwater concentrations exceeding state and federal Applicable or Relevant and Appropriate Requirements warrant a response action. Currently, the chemicals of concern at the site (chloroethane, xylene, and 1,2-dichloropropane) are not being detected in the groundwater. While several inorganic compounds (lead, arsenic, iron and manganese) in on-site groundwater exceed state and federal drinking water standards, these contaminants do not threaten drinking water wells.

The ecological exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the selection of the remedy are still valid.

The remedial action objectives used at the time of the selection of the remedy are still valid.

Although vapor intrusion was not considered in the original risk assessment, it is not a complete pathway since there are no occupied buildings directly downgradient of the landfill and volatile organic compounds are not currently present in groundwater.

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

No.

Technical Assessment Summary

Based upon the results of the five-year review, it has been concluded that:

- Although there have been changes in the physical conditions of the site, these changes do not affect the protectiveness of the selected remedy under current site usage. The site does not pose a risk to human health since drinking water wells are not threatened and contaminated material is not available for contact. Nevertheless, the possibility exists that some contamination may be escaping the leachate collection system.

- The leachate filtration (there is pretreatment of the leachate), storage, and transfer system is operating properly.
- The soil and vegetative covers are intact and in good condition.
- The fence around the site is intact and in good repair.
- Although surface water monitoring did not indicate elevated site-related contaminants, monitoring should continue.
- Considerable differential compaction of the cap has occurred, which may affect the integrity of the impermeable lining.
- The results of a statistical analysis noted that inorganic concentrations in a deep, downgradient monitoring well were above the background values observed in an upgradient monitoring well.
- It appears that the concentration of manganese in several shallow downgradient wells is increasing.
- There is no evidence of trespassing or vandalism.
- There has been no detection of volatile organic compounds in the leachate, monitoring wells, or surface waters.
- At least one monitoring well is damaged[1].

Although differential compaction is taking place and further investigations may result in the need for corrective actions, the cap is still intact and contaminated material is not available for contact. In addition, since ingestion of drinking water is not occurring, nor is it expected to occur in the next five years, this pathway is currently incomplete.

VIII. Issues, Recommendations, and Follow-Up Actions

While the landfill is municipally-owned, the institutional controls deemed necessary to prevent the withdrawal and use of groundwater in the vicinity of the landfill and to restrict activities which could affect the integrity of the cap have not been put into place.

This site has ongoing operation, maintenance, and monitoring activities as part of the remedy. The integrity of the impermeable layer and the effectiveness of the leachate collection system needs to

[1] Damaged wells have the potential to transmit water downward. The damaged wells need to be repaired.

be investigated. There are no other suggestions or recommendations for improving, modifying and/or adjusting these activities.

Table 6 (attached) summarizes the recommendations and follow-up actions stemming from this five-year review.

IX. Protectiveness Statement

Based on the current and reasonably anticipated site and groundwater uses, EPA has determined that the site-wide remedy protects human health and the environment in the short-term. There are no current risks present at the site in either groundwater or soils and none are expected, as long as the site use does not change and the engineered and access controls are properly operated, monitored, and maintained. The five-year review indicated, however, that there are potential problems with the operation and maintenance of the remedy. In order to ensure the continued protectiveness of the remedy, additional investigation of the efficacy of the implemented actions is necessary and institutional controls need to be implemented.

X. Next Review

Since hazardous substances, pollutants or contaminants remain at the Conklin Dumps site which do not allow for unlimited use or unrestricted exposure, in accordance with 40 CFR 300.430 (f) (4) (ii), the RA for the site shall be reviewed no less often than every five years. EPA will conduct another five-year review on or before January 2013.

Approved:

John S. Tuscco — 1/30/08

for George Pavlou, Director — Date
Emergency and Remedial Response Division

Table 1: Chronology of Site Events	
Event	**Date(s)**
Hydrogeologic investigations detect contamination	1983-1985
Public water extended	1985
Site placed on National Priorities List	1986
NYSDEC signs a consent order with Town of Conklin to conduct RI/FS	1987
Record of Decision	1991
Explanation of Significant Differences	1992
Remedial design started	1991
Remedial design completed	1992
Lower Landfill RA (excavation) started	1992
Lower Landfill RA completed	1993
Upper Landfill RA (capping and leachate collection system) started	1993
Upper Landfill RA completed	1996
Superfund Site Close-Out Report	1996
Site Deleted from National Priorities List	1997
First Five-Year Review	1998
Second Five-Year Review	2003

Table 2: Annual Operating Costs	
Estimated Costs for Contract Performance	**Cost per Year**
Leachate treatment at a sewage treatment plant	$12,000
Leachate collection system maintenance	$3,000
Sampling and analysis	$3,200
Grass mowing	$6,500
Site inspection	$2,300
Miscellaneous site work	$6,000
Site work materials	$2,000
Total estimated cost	$35,000

Table 3: Recommendations and Follow-up Actions from the 2003 Five-Year Review		
Issue	**Recommendations and Follow-Up Actions**	**Status**
Protection of downgradient private wells.	Continue to review groundwater monitoring data to determine whether downgradient private wells need to be sampled.	Groundwater monitoring data continues to be reviewed. The drinking water pathway is currently incomplete and no private wells were sampled. This concern appears to be adequately addressed under the current monitoring program and no specific changes appear to be necessary unless significant changes occur in concentrations or public water use.
If the site is developed	Since the site property is municipally-owned, NYSDEC is not presently requiring the Town to obtain a restrictive covenant or an environmental easement to prevent the installation of drinking water wells at the site and restrict activities which could affect the integrity of the cap. In the event that there is to be a change in the ownership/operation of the property, the Town should prepare appropriate language for restrictions to be incorporated into the deed.	There are no current plans to develop the site. NYSDEC should send a letter to the Town requesting that notification provisions be added to the deed about the use of the site property as a landfill, that it is a National Priorities List site, and that the site should not be used for the extraction of groundwater or for activities that would disturb the cap.
If the site is developed	Water use should be evaluated to ensure that drinking water wells do not draw residual contamination from the site. Also, construction activities should not adversely affect drainage at the site or the implemented remedial measures.	There are no current plans to develop the site.

Table 4: Documents, Data, and Information Reviewed in Completing the Five-Year Review
• Feasibility Study Report, O'Brien & Gere, January 1991
• Record of Decision, EPA, March 1991
• Explanation of Significant Differences, EPA, September 1992
• Lower Landfill Remedial Action Report–Conklin Dumps Site, Dunn Engineering Company, September 1993
• Remedial Action Report Upper and Lower Landfill Remediation, Rust Environment and Infrastructure, May 1996
• Superfund Site Close-Out Report, EPA, September 1996
• Operation, Maintenance, and Monitoring Plan, Rust Environment and Infrastructure, June 1996
• Historical and Analytical Data
• Residential Well Sampling Data
• Site Review and Update, Conklin Dumps, Broome County, Conklin, New York, NYSDOH, March 1994
• Quarterly Monitoring Reports, Eastern Laboratory Services, 2002 to 2007
• Application for Monitoring Variance, C&S Engineers, 2005
• 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

Table 5: Other Comments on Operation, Maintenance, Monitoring, and Institutional Controls	
Comment	**Suggestion**
As a result of the settling noted above, the PVC casing of several of the monitoring wells were sticking out of the protective casing by 6 inches or more, preventing these wells from being properly secured. Some of the wells may have been affected by the differential compaction. Others have been "repaired" recently. Accurate elevations are critical for contouring the water table.	Survey the monitoring wells to establish casing elevations.
The monitoring reports contain raw data from the laboratory which are impossible to interpret without considerable data reduction.	The Town needs to perform data reduction and analysis.
Measuring and contouring the water table is an important component of the analysis of the effectiveness of the remedy. There has not been, however, a recent potentiometric map of the water table.	For each future sampling event, the water levels should be measured and potentiometric maps should be created. Contouring the water table to establish actual flow directions will require taking water level measurements from old wells that have not been included in the past. Since landfill compaction has the potential to damage the inner casing, the older wells will require an evaluation.
The detection limits used by the laboratory should be at least as low as the relevant groundwater standard.	Alternative analytical methods for several contaminants need to be employed for all subsequent sample analyses.
Monitoring well MW-3, where contaminant levels have been increasing, has only been sampled sporadically in recent years.	Monitoring well MW-3 should be sampled on a quarterly basis.
The Application for Monitoring Variance lists six items under “Reporting” (comparison of groundwater and surface water results with applicable standards, historical groundwater elevations, historical parameter concentrations, groundwater contours, statistical evaluation of the data, and comparison of upgradient and down gradient sample results).	The items recommended under “Reporting” should be implemented. This information should be utilized to assess system performance.

Table 5: Other Comments on Operation, Maintenance, Monitoring, and Institutional Controls	
Comment	**Suggestion**
Manganese may not be a perfect surrogate for the trends in the other contaminants.	Perform time series analysis on the other analytes detected in the downgradient wells.
The increasing manganese levels in the shallow downgradient wells suggests that an engineering evaluation should be performed. Broken wells have the potential to transmit water downward, and the casing of at least one of the wells during the site visit was found to be bent over.	A physical examination of the cap and the wells installed through it should be performed. Repairs should be made if necessary. This includes obvious breaches in the cap, broken or malfunctioning wells, and the leachate collection system. After minor repairs are made, the landfill should be monitored quarterly for 5 years to see if increasing contamination trends are reversed, or at least stabilized. If not, then a more thorough investigation and remedy may have to be developed.
Although the surface water monitoring of Carlin Creek did not indicate any elevated site contaminants, it is possible that the elevated inorganic contaminants in the groundwater could migrate to the surface water.	Surface water monitoring should continue.
Reuse opportunities may exist for the site.	The Town should ascertain if there are any reuse opportunities for this site. If such opportunities exist, then a reuse plan should be developed. This plan would need to be a collaborative effort between the interested parties. A reuse plan should be developed to address future property ownership, institutional controls, and the final status of the existing structures and foundations on the site.

Table 5: Other Comments on Operation, Maintenance, Monitoring, and Institutional Controls	
Comment	**Suggestion**
New York State now requires annual certifications that institutional controls that are required by RODs are in place and that remedy-related operation and maintenance (O&M) is being performed.	On an annual basis, the site will need to be inspected to verify that no groundwater extraction wells have been installed at the site. The annual O&M report should indicate the results of this inspection and should include a certification that remedy-related O&M is being performed. Once the institutional controls are put into place, the annual O&M report should include a certification that the institutional controls are in place, as well.

Table 6: Recommendations and Follow-Up Actions

Issue	Recommendations and Follow-Up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
Institutional controls prohibiting the installation of groundwater wells and to protect the integrity of the cap are not in place.	NYSDEC should send a letter to the Town requesting that a notification be added to the deed indicating that activities that would disturb the cap should not be performed and that drinking water wells should not be installed.	NYSDEC	NYSDEC	3/08	N	Y
Based on the appearance of the monitoring and leachate extraction wells installed through the landfill cap, it appears that considerable differential compaction has occurred.	Investigation of the cap needs to be performed. If this investigation indicates that the integrity of the cap has been compromised, corrective measures may need to be implemented.	PRP	NYSDEC	1/09	N	Y
Based upon sampling results which show increasing concentrations of contaminants, the possibility exists that some contamination may be escaping the leachate collection system. It is also possible that the leachate collection system is not operating as designed or at full efficiency.	A maintenance assessment and an investigation of the leachate collection system should be performed and, if necessary, corrective actions should be performed.	PRP	NYSDEC	1/09	N	Y

Table 7: Acronyms Used in this Document	
CIC	Community Involvement Coordinator
EPA	Environmental Protection Agency
ESD	Explanation of Significant Differences
µg/l	Micrograms per Liter
NYSDEC	New York State Department of Environmental Protection
NYSDOH	New York State Department of Health
O&M	Operation and Maintenance
RA	Remedial Action
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
TCLP	Toxicity Characteristic Leaching Procedure
VOCs	Volatile Organic Compounds