

Five-Year Review Report

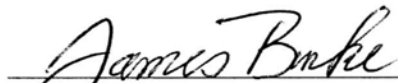
Third Five-Year Review Report for Wildcat Landfill Superfund Site Operable Units 1 and 2 Kent County, Delaware

June, 2007

PREPARED BY:

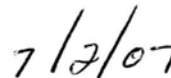
U.S. Environmental Protection Agency
Region III
Philadelphia, Pennsylvania

Approved by:



James Burke
Director
Hazardous Site Cleanup Division

Date:



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List of Acronyms

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DNREC	Delaware Department of Natural Resources and Environmental Control
EPA	United States Environmental Protection Agency
GMZ	Ground Water Management Zone
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
NCP	National Contingency Plan (the "National Oil and Hazardous Substances Pollution Contingency Plan")
NPL	National Priorities List
O&M	Operation and Maintenance
PRP	Potentially Responsible Party
RAP	Remedial Action Plan
RAO	Remedial Action Objective
RCRA	Resource, Conservation and Recovery Act
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SDWA	Safe Drinking Water Act

Executive Summary

The remedy for the Wildcat Landfill Superfund site in Dover, Delaware included stabilization and capping of contaminated soils on site, removal of drums, institutional controls, and ground water monitoring. The site achieved construction completion with the signing of the Preliminary Close Out Report on September 30, 1992. The trigger for this five-year review is the date of the second five-year review, as shown in EPA's WasteLAN database: October 25, 2001.

The assessment of this five-year review found that the remedy was constructed in accordance with the requirements of the Record of Decision (ROD). The remedies for all OUs are functioning as designed. Because the remedial actions at all OUs are protective, the site is protective of human health and the environment.

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Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name (from WasteLAN): Wildcat Landfill Superfund Site		
EPA ID (from WasteLAN): DED980704951		
Region: 3	State: DE	City/County: Dover/Kent County
SITE STATUS		
NPL status: <input type="checkbox"/> Final <input checked="" type="checkbox"/> Deleted <input type="checkbox"/> Other (specify)		
Remediation status (choose all that apply): <input type="checkbox"/> Under Construction <input type="checkbox"/> Operating <input checked="" type="checkbox"/> Complete		
Multiple OUs?* <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Construction completion date: 9/30/1992	
Has site been put into reuse? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
REVIEW STATUS		
Lead agency: <input checked="" type="checkbox"/> EPA <input type="checkbox"/> State <input type="checkbox"/> Tribe <input type="checkbox"/> Other Federal Agency _____		
Author name: Hilary Thornton		
Author title: Remedial Project Manager	Author affiliation: U.S. EPA Reg. 3, HSCD	
Review period:** 4/6/2006 to 06/30/2007		
Date(s) of site inspection: 8/28/2006		
Type of review:		
<input checked="" type="checkbox"/> Post-SARA <input type="checkbox"/> Pre-SARA <input type="checkbox"/> NPL-Removal only <input type="checkbox"/> Non-NPL Remedial Action Site <input type="checkbox"/> NPL State/Tribe-lead <input type="checkbox"/> Regional Discretion		
Review number: <input type="checkbox"/> 1 (first) <input type="checkbox"/> 2 (second) <input checked="" type="checkbox"/> 3 (third) <input type="checkbox"/> Other (specify) _____		
Triggering action:		
<input type="checkbox"/> Actual RA Onsite Construction at OU # _____ <input type="checkbox"/> Actual RA Start at OU# _____ <input type="checkbox"/> Construction Completion <input checked="" type="checkbox"/> Previous Five-Year Review Report <input type="checkbox"/> Other (specify)		
Triggering action date (from WasteLAN): 10/25/2001		
Due date (five years after triggering action date): 10/25/2006		

* ["OU" refers to operable unit.]

** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

Five-Year Review Summary Form, cont'd.

Issues:

None

Recommendations and Follow-up Actions:

None

Protectiveness Statement(s):

Because the remedial actions at all OUs are protective, the site is protective of human health and the environment.

Other Comments:

Since the last five-year review, the Site was purchased by Kent County, Delaware for use as a conservation area and greenway. EPA supports this reuse, which is consistent with the remedies selected in the RODs for the Site.

Five-Year Review Report

I. Introduction

The United States Environmental Protection Agency (EPA) has conducted a five-year review of the remedial action implemented at the Wildcat Landfill Superfund Site (“Site”) in Kent County, Delaware. The primary purpose of the review is to determine whether the remedy is protective of human health and the environment. Five-year review reports identify deficiencies, if any, and recommendations to address them. Five-year review reports document the evaluation of the implementation of the remedy and operation and maintenance, as well as the continued appropriateness of the remedial action objectives, including cleanup levels at a site.

This review is required by statute. Section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and Section 300.430 (f) (4) (ii) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), require that periodic (no less often than once every five years) reviews be conducted for sites where hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure following completion of all remedial actions.

This is the third five-year review for the Site. The two previous reviews were completed and signed: the first on August 26, 1996 and the second on October 25, 2001. The triggering action for this review is the date of the second five-year review, as shown in EPA’s WasteLAN database: October 25, 2001. The five-year reviews at this Site were specifically activated because hazardous substances, pollutants, or contaminants currently remain on-site above levels that allow for unlimited use and unrestricted exposure.

II. Site Chronology

The table below summarizes important events and relevant dates in the chronology of the Wildcat Landfill Site.

Table 1 – Chronology of Site Events

Event	Date
Mr. Alan Hunn operated the Wildcat Landfill as a permitted sanitary landfill, during which time the operators routinely violated operating permits issued by the regulatory agencies	1962-1973
Initial discovery of problem or contamination	11/01/1979
NPL listing	12/30/1982 Proposed 09/08/1983 Final

Event	Date
Remedial Investigation/Feasibility Study complete	06/29/1988 OU1 11/30/1988 OU2
Record of Decision (ROD)	06/29/1988 OU1 11/28/1988 OU2
Remedial Investigation/Feasibility Study complete	06/29/1988 OU1 11/30/1988 OU2
Consent Decree — Agreement to Implement RODs	08/07/1989 OU1 and OU2
Remedial Design complete	02/15/1991 OU1 and OU2
Actual PRP Remedial Action start	02/15/1991
Construction dates (start, finish)	OU1 and OU2 07/10/1991 Start 06/18/1999 Finish
Construction completion date	09/30/1992
Preliminary Close Out Report	09/30/1992 OU1 and OU2
Final Close Out Report	12/31/2001 OU1 and OU2
Ready-for-Reuse Evaluation	03/24/2004
Previous five-year reviews	08/26/1996 (First) 10/25/2001 (Second)
Final Close Out Report	12/31/2001 OU1 and OU2
IC documents recorded in county land records	04/26/2002
Ready-for-Reuse Evaluation	03/24/2004
Previous five-year reviews	08/26/1996 (First), 10/25/2001 (Second)
NPL Site Deletion	03/14/2003
Site property sold to Kent County, DE, by Mrs. Shirley Hunn, widow of the former owner/operator	01/11/2005

III. Background

Physical Characteristics

The Site is a 44-acre landfill situated on the northern portion of a 172.6-acre grouping of parcels of land along the west bank of the St. Jones River in Kent County (see Attachment 1). The Site is in a gradually developing suburban area, with a mixture of housing developments, commercial properties, farmland and marsh. This process of development is projected to continue. The city of Dover and the United States Dover Air Force Base are to the north and within a three mile radius of the Site. Some homes and businesses surrounding the landfill use groundwater drawn from their own private wells and others are on public water.

Land and Resource Use

The Wildcat Landfill operated as a permitted sanitary landfill between 1962 and 1973, accepting both municipal and industrial wastes. The State Board of Health permitted the landfill

in 1962. Throughout its operation the Site's owner, Mr. Hunn, routinely violated operating permits issued by the regulatory agencies. Reportedly, liquid and solid wastes were mixed together and emptied on-site and the empty drums recycled. Industrial wastes disposed of included latex waste and paint sludge. There are no known records of quantities or disposal histories of any of the wastes.

History of Contamination

Sample results from an initial investigation showed off-site migration of phthalates and heavy metals. Leachate samples showed contamination by benzene, ethylbenzene, toluene, PCB 1248, naphthalene, bis(2-ethylhexyl)phthalate and metals. Sediment samples showed contamination by benzo (a) anthracene, anthracene, fluoranthene, fluorene, pyrene, bis(2-ethylhexyl)phthalate, butylbenzylphthalate and metals. No ground water contamination was detected during the initial investigation.

Initial Response

The State and EPA proposed the Site to the National Priorities List (NPL) on December 30, 1982. The EPA added the Site to the NPL on September 8, 1983. The State of Delaware, Department of Natural Resources and Environmental Control (DNREC) began the Remedial Investigation (RI) in September 1985 and the Feasibility Study (FS) in November 1987. DNREC and EPA issued the Remedial Investigation/Feasibility Study (RI/FS) report for public comment in May 1988.

Basis for Taking Action

During the course of its operation as a sanitary landfill, hazardous substances were released from the Wildcat Landfill Site into the environment. The contamination associated with the landfill wastes remaining onsite may be transported by various mechanisms to human and biotic receptors. The following exposure pathways were evaluated by EPA and together form the basis for taking action at the Site.

Future residents and occasional site users may have been subject to exposure to contaminants in soil. Terrestrial biota were also subject to dermal exposure and ingestion of contaminated soils.

Groundwater has also been impacted at the Site by infiltration/percolation of contaminants from the landfill wastes and contaminated soils into the aquifer. The most significant potential groundwater exposure scenarios evaluated included current and future offsite residents' exposure to groundwater via ingestion and future onsite residents' exposure to groundwater via ingestion.

Occasional site users' potential ingestion exposures to both surface water and fish were also evaluated.

IV. Remedial Actions

Remedy Selection

The State and EPA issued the Record of Decision (ROD) for Operable Unit 1 (OU1) on June 29, 1988, and the ROD for Operable Unit 2 (OU2) on November 28, 1988. The selected remedies eliminated the principal threat posed by Site conditions by reducing public contact with the landfill, biota and human contact with the Northwest Pond, and by limiting the erosion of landfill contents into the St. Jones River. In addition, the remedies called for monitoring to ensure that future releases of site-related contaminants do not result in unacceptable risks to human or ecological receptors.

Record of Decision for Operable Unit 1 (OU1)

The ROD for OU1 includes:

- institutional controls (e.g. a Ground Water Management Zone (GMZ) and land use restrictions in the landfill area),
- replacement of two shallow water supply wells adjacent to the Site,
- covering exposed wastes on the landfill while attempting to minimize impact on rare and seldom seen plants; off-site disposal of drums,
- installing one additional ground water monitoring well, and
- monitoring of the shallow aquifer.

Record of Decision for Operable Unit 2 (OU2)

The ROD for OU2 includes:

- draining and filling an existing Northwest pond,
- creating a replacement pond (Racetrack Pond) to be joined with the existing Deepwater Pond located southeast of the landfill,
- installing one monitoring well¹,
- monitoring shallow ground water between the Racetrack Pond and the landfill², and
- institutional controls (land use restrictions in the Northwest Pond and Racetrack Pond areas).

¹ MW-17 was installed to meet this requirement.

² Requirement met by monitoring MW-17.

Remedy Implementation

Remedial Design Phase

The Settling Defendants first submitted the Remedial Design (RD) Plans and Specifications for regulatory review in December 1989. EPA approved the RD in February 1991.

Prior to completing the RD, and in an effort to eliminate immediate threats to the public, the following work was completed.

- A Ground Water Management Zone (GMZ) on and around the landfill was instituted by the State on July 20, 1989.
- Signs were installed around the perimeter of the landfill warning of the location of the landfill. Sign installation was completed in November 1989.
- Existing water supply wells located on the Liberto, Inc., and Barden, Inc. properties (adjacent to the landfill) were replaced with new wells in December 1989. The new wells were placed in operation by January 1990.

Remedial Action Plan (“RAP”) Implementation

The Settling Defendants began construction of the remedy as detailed in the RAP for both OU1 and OU2 in July 1991. Onsite physical construction of both operable units was completed in November 1992, but the remedial action phase was not completed until June of 1999 due to issues surrounding long-term responsibility for Operations and Maintenance.

System Operation / Operation and Maintenance (O&M)

The Settling Defendants submitted the draft Maintenance and Monitoring Manual (MMM) for review and approval in January 1992. The Agencies (EPA, State, National Oceanic and Atmospheric Administration (NOAA), Department of the Interior (DOI), and US Fish and Wildlife Service (USFWS)) reviewed the MMM and provided comments. The Settling Defendants incorporated some of the Agencies' comments and submitted these changes as Revision 1 of the MMM dated November 1992. The Settling Defendants began implementing the MMM Revision 1 immediately thereafter and conducted regular field inspections of the landfill cover areas, access areas, haul roads, the monitoring wells, the filled Northwest Pond Area, and the Racetrack Pond Area.

In addition, for a period of two years (October 1, 1992 to September 30, 1994) the Settling Defendants conducted quarterly sampling of selected groundwater wells to monitor the major hydrogeological conditions in the shallow ground water upgradient of the landfill and to detect any potential discharges to the Saint Jones River, Tidbury Creek and the Racetrack Pond. The purpose of the two year groundwater sampling program, as defined in the 1989 Consent Decree, was to determine whether there had been any, “material and adverse change in the groundwater from the conditions existing prior to the commencement of the Work.” EPA has

evaluated the results of the groundwater sampling program and has determined that there was no material and adverse change in the groundwater. The Settling Defendants contend that they have completed all the sampling that is required of them under the 1989 Consent Decree.

EPA sampled selected onsite monitoring wells in May 1999 and again in February 2001. EPA also sampled selected offsite private wells in February 2001. EPA and the Settling Defendants reached an agreement in February 2002 under which they would perform O&M responsibilities at the Site until July 2004, which they did. Among the activities performed by the Settling Defendants was the abandonment of all monitoring wells not needed by EPA for future monitoring. EPA retained one upgradient well (MW-1B) and two downgradient wells (MW-4 and MW-17) (See Attachment 2). Currently, O&M is being performed in a cooperative manner by the regulatory agencies and the current land owner, Kent County. Kent County is maintaining physical security, access controls, and performing periodic physical inspections of the site. The regulatory agencies are performing chemical sampling and analysis to monitor the continued protectiveness of the remedies. The agencies are also providing the County with technical advice and assistance regarding operation and maintenance of the remedies. EPA collected and analyzed soil, sediment, and groundwater samples in August 2006 in preparation for this third five-year review (See Attachments 3 and 4).

V. Progress Since the Last Review

The table below summarizes the issues noted in the most recent previous five-year review and how and when they were resolved.

Table 2 – Actions Taken Since the Last Five-Year Review

Issue	Recommendations/ Follow-up Actions	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Action
<p><i>There were two issues from previous FYR:</i></p> <p>1. Institutional Controls were not in place.</p>	EPA recommended that the negotiations with the site owner regarding institutional controls be finalized.	EPA/site owners	Spring 2002	Negotiations completed and IC documents recorded in land records.	04/26/2002
<p>2. No plan for long-term O&M was in place.</p>	EPA recommended that the negotiations with the Settling Defendants regarding O&M be finalized.	EPA/Settling Defendants	Spring 2002	EPA and the Settling Defendants completed their negotiations and agreed that Settling defendants would take certain immediate actions and perform O&M through July 2004.	02/12/2002

Since the last five-year review, EPA resolved the remaining issues that had been holding up site deletion. EPA deleted the Site on March 14, 2003. Although the Site is now deleted,

EPA's involvement with the Site has not ceased. EPA interacted with prospective purchasers of the property and in January 2005 Kent County Delaware purchased the property for use as the Hunn Conservation Area. A greenway path will cross the property and there is interest in restoring the manor house on the property and using it as a museum. Additionally, there are areas of archaeological interest on the property that are being studied.

Sampling of soil, sediment, and ground water was conducted in August 2006 by an EPA contractor to support this Five-Year Review Report. These samples were taken to compare to the ongoing monitoring results provided in the past by the potentially responsible parties (PRPs) and to evaluate the protectiveness of the remedy as the land is used in new ways by the County. An EPA toxicologist has reviewed and evaluated the results of the lab analyses, and has concluded that the soil, sediment, and groundwater onsite contain contaminants at sufficiently low levels that they should not be of concern to potential recreational users of the property.

VI. Five-Year Review Process

Administrative Components

The Wildcat Landfill Five-Year Review Team was led by Hilary Thornton (EPA Remedial Project Manager (RPM)), with EPA technical support staff Dawn Ioven (Human Health Toxicologist), Bruce Pluta (Biological Technical Assistance Group (BTAG)), and Vance Evans (Community Involvement Coordinator (CIC)). Stephen Johnson, DNREC Project Officer, assisted in the review as the representative of the support agency. Tetra Tech EM Inc. (Boothwyn, PA) was contracted for technical support for this Five-Year Review.

Community Involvement

A notice announcing that EPA was conducting a five-year review for the Site was published in *The Delaware State News*, a widely-distributed local newspaper, on September 21, 2006. In December, 2006, EPA and DNREC interacted with a neighbor of the Site regarding soil disturbing activities observed to have been occurring. EPA also regularly corresponds with Kent County officials regarding the County's ongoing efforts to prepare the property for use as a conservation area and greenway.

Document Review

Documents reviewed in the process of conducting this five-year review included the previous five-year reviews, the RODs for OU1 and OU2, the two PRP annual reports submitted since the last five-year review, and several other documents (See Attachment 5). Also reviewed were the Applicable or Relevant and Appropriate Requirements (ARARs) listed in the two 1988 RODs (See Attachment 6).

Data Review

The past five years' worth of monitoring and operations and maintenance data were reviewed. In addition, EPA contractors collected new samples for analysis. The data collected show that low levels of site-related contaminants remain in ground water, but not at levels that pose unacceptable risks to human health or the environment under current land use or proposed use as a conservation area.

Site Inspection

A Site visit and inspection was conducted on August 28, 2006, by EPA Remedial Project Manager (RPM) Hilary Thornton and contractors from Tetra Tech EM Inc. as documented in the document entitled "Final Trip Report for Wildcat Landfill Site" dated October 31, 2006. The purpose of this visit was to observe the condition of the Site and to select sampling locations for ground water, surface water, soil, and sediment sampling. Over the next several days the Site's three remaining ground water wells were sampled, as were surface water, soil, and sediment from a variety of locations (See Attachment 3). The Final Trip Report includes maps of all the sampling locations and the validated data from each sample.

Over the fall and winter of 2006/2007 the County has done a considerable amount of work at the Site to prepare it for use as a conservation area. The County removed visible surface trash, which had been evident in many of the uncapped areas of the Site, although often obscured by vegetation. Much of that vegetation was removed by the County, including many small trees. Those trees, many of which had been growing since the landfill ceased operations in 1973, were reaching a size at which the very thin cover soil over the waste could not support them and they were blowing over in even moderate wind storms and exposing large areas of trash. The County has developed and begun to implement plans for further soil capping and ecological restoration of the landfill to enable it to be safely used as a conservation area with a greenway path across it. The County has consulted all key stakeholders regarding its plans, and RPM Thornton returned to the Site on February 5, 2007, to conduct a second Site Inspection and to continue consultations with the County and other stakeholders regarding the County's plans for further ecological restoration work at the Site. By February 2007 the County had applied over 6,000 cubic yards of clean topsoil to improve the soil cap at the site, greatly reducing the possibility of trash exposure.

The replacement pond, which had suffered significant erosion on the steep banks surrounding it during the years following its construction, has now stabilized and appears to be functioning as a large tidal stilling basin. At low tide the pond area is primarily mudflats, while at high tide there are two or more feet of water over the mud. The site experienced a 100-year rainfall event (Hurricane Floyd) on September 16, 1999. Subsequent site visits have not identified any significant damage to the cap, riverbank erosion, or erosion in the replacement pond area as a result of Hurricane Floyd.

Interviews

Interviews were conducted with the County officials responsible for the security and access control portion of the operation and maintenance of the landfill, as well as with the State project manager and with the owner of a business adjacent to the landfill. The County had initially expressed some concern over the condition of the landfill as it related to their planned use, but after consultations with EPA, the State, and other stakeholders the County has a clearer understanding of the current conditions at the site and is making great strides toward reuse of the landfill as a conservation area and greenway.

VII. Technical Assessment

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

Yes, the remedy is functioning as intended by the 1988 RODs. The recent earthwork by Kent County has improved the appearance and function of the soil cover on the landfill, and will aid in preventing direct public contact with landfill wastes.

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

Changes in Exposure Pathways

Has land use or expected land use on or near the Site changed? Have human health or ecological routes of exposure or receptors been newly identified or changed in a way that could affect the protectiveness of the remedy? Are there newly identified contaminants or contaminant sources? Are there unanticipated toxic byproducts of the remedy not previously addressed by the decision documents? Have physical site conditions or the understanding of these conditions changed in a way that could affect the protectiveness of the remedy?

Land use surrounding the site has continued a gradual transition from rural to suburban, with construction of several new residential and commercial buildings within a mile of the site over the past five years. Kent County purchased the Site within the period of this five-year review and plans to use it as a greenway and conservation area, uses that are compatible with the remedies, but which are different from the land use anticipated at the time of the RODs, which had presumed the land would not be used.

The MCL requirement in ground water at the facility boundary has been waived because of the special conditions present at the site (See ARARs listed in Attachment 6). These special conditions include the very limited area of the shallow aquifer beneath the site, lack of receptors, close proximity to the surface discharge, and low yield and quality of the section of aquifer in question. EPA's hydrogeologic analysis of the shallow

aquifer indicates it discharges directly to the adjacent St. Jones River and therefore does not impact the deeper aquifers that are used for potable water.

The potential for vapor intrusion was evaluated as part of this five-year review and found to be unlikely. Vapor intrusion is considered unlikely to be occurring at this Site because the remaining contaminants of concern are largely semivolatile chemicals and metals, and the cap on the landfill is compacted soil.

Changes in Toxicity Factors and Other Contaminant Characteristics

Have toxicity factors or other contaminant characteristics for contaminants of concern at the site changed in a way that could affect the protectiveness of the remedy?

Toxicity factors or other contaminant characteristics have changed for several chemicals evaluated in the risk assessment for the Site. These changes, however, do not affect the protectiveness of the remedy.

Expected Progress Towards Meeting RAOs

Is the remedy progressing as expected?

Yes. The Remedial Action Objectives identified in the RODs were either met by construction of the remedies or are being met by ongoing monitoring of the landfill.

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

No new information has been found that calls into question the protectiveness of the remedy.

Technical Assessment Summary

According to the data reviewed, the site inspection, and the interviews, the remedy is functioning as intended by the RODs. The changes in site ownership and physical conditions at the Site since the previous five-year review are expected to improve the protectiveness of the remedy. There have been no changes in the toxicity factors for the contaminants of concern that affect the protectiveness of the remedy. The changes to the standardized risk assessment methodology that have occurred since the time of the baseline risk assessment do not affect the protectiveness of the remedy. There is no other information that calls into question the protectiveness of the remedy.

VIII. Issues

There are no deficiencies that currently affect the protectiveness of the remedy.

IX. Recommendations and Follow-up Actions

EPA has no specific recommendations beyond continued coordination with the owners of the landfill property and routine performance of operations and maintenance.

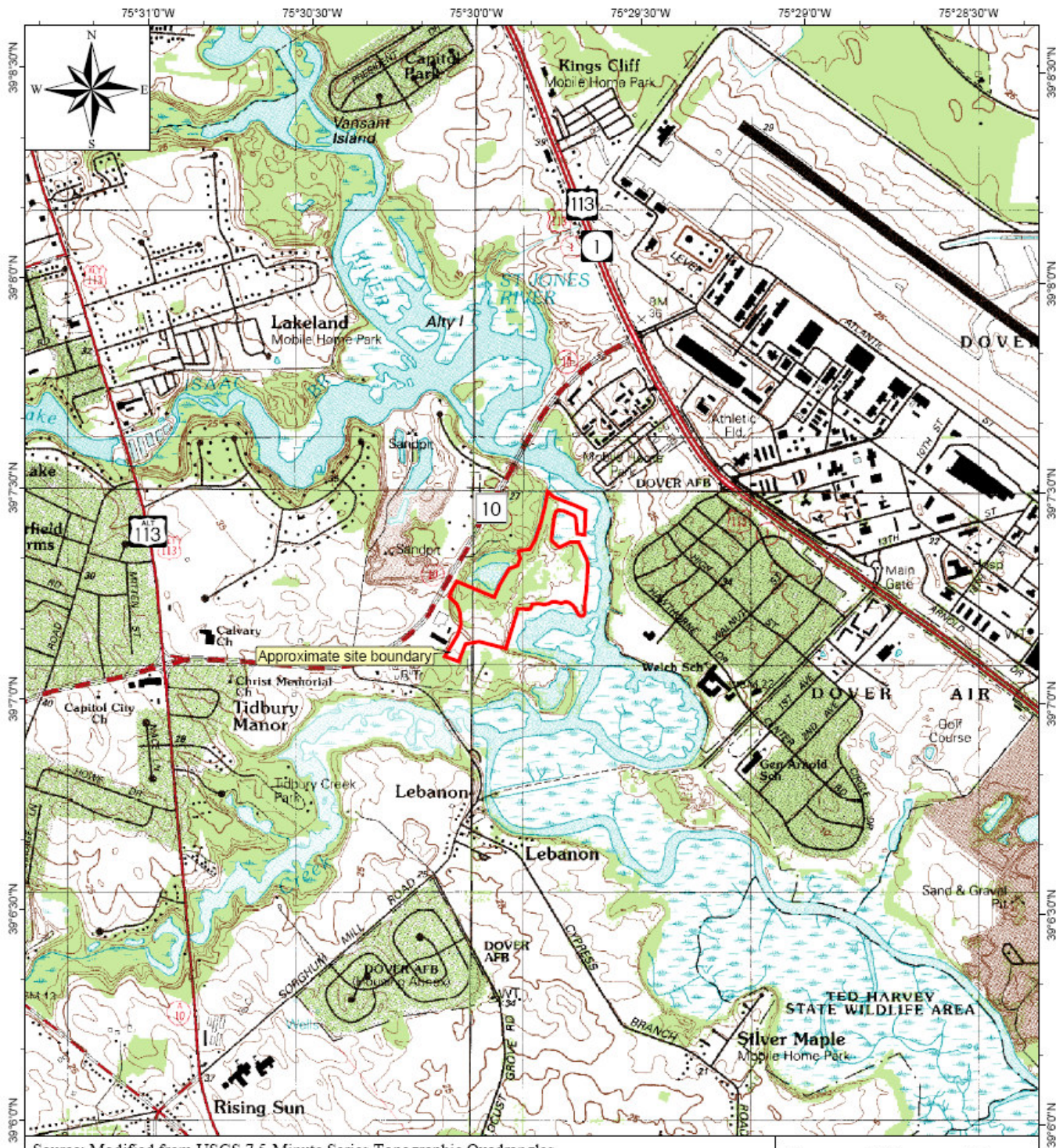
X. Protectiveness Statement

Because the remedial actions at all OUs are protective, the site is protective of human health and the environment.

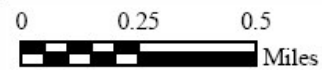
XI. Next Review

EPA will conduct another five-year review within five years of the completion of this five-year review report. The completion date is the date of the signature on the front of this report.

Attachments



Source: Modified from USGS 7.5-Minute Series Topographic Quadrangles, Dover, Delaware, 1993, Frederica, Delaware, 1993, Little Creek, Delaware, 1993, Wyoming, Delaware, 1993



Quadrangle Location = ■



Delaware




Wildcat Landfill Site
Dover, Kent County, Delaware

Attachment 1 - Site Location Map

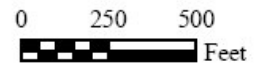
75°30'0"W




Legend

-  Monitoring well
-  Abandoned race track
-  Approximate landfill boundary

Source: Modified from Google Earth, 2006.



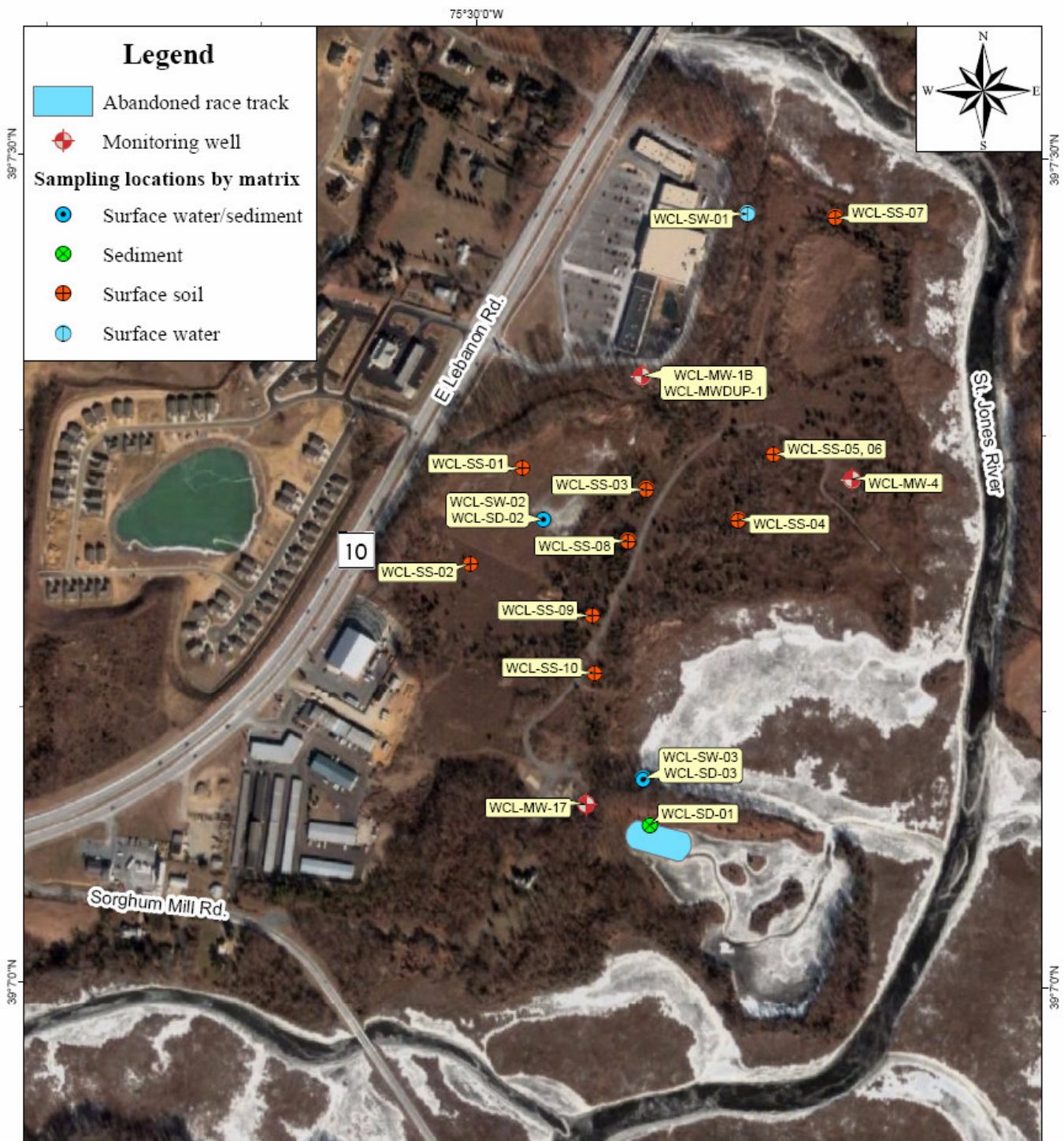
Approximate Site Location = 



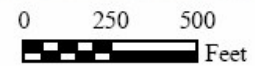
Delaware

Wildcat Landfill Site
Dover, Kent County, Delaware

Attachment 2 - Site Plan



Source: Modified from Google Earth, 2006.



Approximate Site Location = ■



Delaware

Wildcat Landfill Site
Dover, Kent County, Delaware

Attachment 3 - Sampling Location Map

Attachment 4: Five-Year Review Sampling Results

Table 1 – Sampling Summary, August 28-29, 2006

Table 2 – Analytical Results for Metals and Cyanide Detected in Soil and Sediment Samples

Table 3 – Analytical Results for Metals and Cyanide Detected in Surface Water and Groundwater Samples

Table 4 – Analytical Results for Organic Compounds Detected in Soil and Sediment Samples

Table 5 – Analytical Results for Organic Compounds Detected in Surface Water and Groundwater Samples

Table 1
Sampling Summary, August 28-29, 2006

Sample Identifier	Sampling Date	Sampling Time	Sample Type	Approximate Location
WCL-SS-01	08/28/2006	1220	Composite	Main Seep
WCL-SS-02	08/28/2006	1210	Composite	Small Seep
WCL-SS-03	08/28/2006	1140	Grab	Uncapped area; central part of site; west of access road
WCL-SS-04	08/28/2006	1110	Grab	Uncapped area; wooded central part of site; east of access road
WCL-SS-05	08/28/2006	1030	Grab	Uncapped area; central part of site; south of access road
WCL-SS-06	08/28/2006	1035	Grab	Duplicate of WCL-SS-05
WCL-SS-07	08/28/2006	1045	Grab	Uncapped area; wooded northern part of site
WCL-SS-08	08/28/2006	1150	Grab	Uncapped area; central part of site; west of access road
WCL-SS-09	08/28/2006	1155	Grab	Uncapped area; central part of site; west of access road
WCL-SS-10	08/28/2006	1200	Grab	Uncapped area; central part of site; east of access road
WCL-SD-01	08/28/2006	1500	Composite	Western edge of racetrack pond
WCL-SD-02	08/28/2006	1350	Composite	Former pond at western part of site
WCL-SD-03	08/28/2006	1440	Composite	Toe of slope area west of mud flat
WCL-SW-01	08/28/2006	1330	Grab	Central part of creek that is southeast of shopping center
WCL-SW-02	08/28/2006	1350	Grab	Former pond at western part of site
WCL-SW-03	08/28/2006	1440	Grab	Toe of slope area west of mud flat
WCL-MW1B-01	08/29/2006	1020	Grab	South of shopping center loading dock; northwest corner of site
WCL-MWDUP-01	08/29/2006	1025	Grab	Duplicate of WCL-MW1B-01
WCL-MW-04-01	08/29/2006	1200	Grab	Northeast part of site; near end of access road
WCL-MW17-01	08/29/2006	1420	Grab	Southern part of site; near site access gate
WCL-FB-01	08/29/2006	1530	QA/QC	NA
WCL-TB-01	08/29/2006	1500	QA/QC	NA

Notes:

FB	Field blank	SD	Sediment
NA	Not applicable	SS	Surface soil
MW	Monitoring well	SW	Surface Water
QA/QC	Quality assurance/quality control	TB	Trip blank
		WCL	Wildcat Landfill

Table 2
Analytical Results for Metals and Cyanide Detected in Soil and Sediment Samples

Sample Number :	MC0083	MC0084	MC0085	MC0086	MC0087	MC0088	MC0089	MC0090	MC0091	MC0092	MC00A2													
Sampling Location :	WCL-SS-01	WCL-SS-02	WCL-SS-03	WCL-SS-04	WCL-SS-05	WCL-SS-06	WCL-SS-07	WCL-SS-08	WCL-SS-09	WCL-SS-10	WCL-SD-03													
Field QC:					Field Dup. of MC0088	Field Dup. of MC0087																		
Matrix :	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil													
Units :	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg													
Date Sampled :	8/28/2006	8/28/2006	8/21/2006	8/28/2006	8/21/2006	8/28/2006	8/28/2006	8/28/2006	8/28/2006	8/21/2006	8/28/2006													
Time Sampled :	12:20	12:10	11:40	11:10	10:30	10:35	10:45	11:50	11:55	12:00	14:40													
%Solids :	92.9	47.5	98.5	97.2	97.6	97.2	94.5	95.9	96.8	98.2	40.2													
Dilution Factor :	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0													
ANALYTE	CRDL	RBC	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag				
ALUMINUM	20	NL	8110	J	8,180	J	1,820	J	3,330	J	2,440	J	2,150	J	3,290	J	2,290	J	3,300	J	1,760	J	6,730	J
ANTIMONY	6	3.1		UL		UL		UL	2.0	J		UL	0.40	J	1.9	J		UL		UL	0.39	J		UL
ARSENIC	1	0.43	3.3	B	5.1	B	2.8	B	2.1	B	1.4	B	1.7	B	2.0	B	2.6	B	2.0	B	2.1	B	5.7	B
BARIIUM	20	1,600	72.6	J	87.6	J	9.2	J	11.1	J	5.4	J	5.1	J	18.7	J	9.7	J	20.5	J	3.9	J	40.2	J
BERYLLIUM	0.5	160	0.79	J	0.82	J	0.29	J	0.16	B	0.11	B	0.13	B	0.19	B	0.23	B	0.17	B	0.26	B	0.59	B
CADMIUM	0.5	3.9		J	0.23	J		J	0.75	J		J		J	0.26	J		J	0.16	J		J	0.29	J
CALCIUM	500	NA	736		1,250		305	J	175	J	77.7	J	84.4	J	176	J	208	J	533	J	80.9	J	1,730	J
CHROMIUM	1	12,500	8.0	J	9.5	J	4.8	J	12.6	J	5.3	J	8.7	J	9.1	J	6.3	J	5.5	J	4.1	J	12.8	J
COBALT	5	NL	3.3	J	2.8	J	1.9	J	4.0	J	0.97	J	1.1	J	2.3	J	1.8	J	1.3	J	1.2	J	4.0	J
COPPER	2.5	310	9.2	J	12.6	J	4.8	J	40.1	J	4.4	J	4.8	J	16.2	J	8.7	J	5.6	J	4.9	J	17.2	J
IRON	10	2,300	7,300	J	20,400	J	7,170	J	40,100	J	5,850	J	8,590	J	23,800	J	6,100	J	6,040	J	5,830	J	9,550	J
LEAD	1	NL	7.3	J	15.3	J	8.5	J	50.4	J	9.0	J	48.7	J	238	J	29.9	J	18.3	J	3.7	J	28.7	J
MAGNESIUM	500	NL	909	J	916	J	143	J	216	J	171	J	149	J	301	J	187	J	288	J	104	J	2,120	J
MANGANESE	1.5	160	220	J	69.3	J	57.0	J	160	J	18.5	J	17.4	J	236	J	486	J	63.7	J	37.1	J	137	J
MERCURY	0.1	2.3											0.072	J	0.085	J	0.31	J					0.87	J
NICKEL	4	160	5.6	J	8.5	J	2.8	J	15.2	J	2.5	J	2.7	J	7.5	J	3.1	J	3.7	J	2.6	J	7.3	J
POTASSIUM	500	NL	298	J	466	J	129	J	133	J	105	J	88.3	J	149	J	135	J	163	J	92.7	J	859	J
SELENIUM	3.5	18		UL		UL		UL		UL		UL		UL		UL		UL		UL		UL		UL
SILVER	1	18	0.19	J	0.92	J	0.43	J	2.4	J	0.34	J	0.50	J	1.1	J	0.36	J	0.27	J	0.33	J	0.45	J
SODIUM	500	NL	233	B	333	B	126	B	426	J	96.3	B	150	B	306	B	524	B	189	B	109	B	2,900	J
THALLIUM	2.5	0.55																						
VANADIUM	5	7.8	12.6	J	16.2	J	7.9	J	8.4	J	9.1	J	9.0	J	9.5	J	9.9	J	10.9	J	7.6	J	20.1	J
ZINC	6	2,300	21.0	J	37.1	J	12.0	J	90.1	J	11.0	J	10.2	J	59.1	J	203	J	41.3	J	7.9	J	79.7	J
CYANIDE	2.5	160	0.073	J	0.33	J	0.079	J	0.18	J	0.15	J	0.14	J	0.24	J	0.14	J	0.35	J	0.13	J	0.30	J

- Notes:**
 Results in bold are above the RBC values for that analyte
 mg/Kg - Milligrams per kilogram
 B - Compound detected at less than five times the associated blank concentration
 CRDL - Contract required detection limit
 J - Compound detected, result is inaccurate or imprecise
 NL - Not listed
 RBC - Risked based concentration
 QC - Quality control
 UL - Not detected. Detection limit is biased low

Table 3
Analytical Results for Metals and Cyanide Detected in Surface Water and Groundwater Samples

Sample Number :	MC00A3	MC00A4	MC00A5	MC0094	MC0096	MC0097	MC0098	MC0099										
Sampling Location :	WCL-SW-01	WCL-SW-02	WCL-SW-03	WCL-FB-01	WCL-MW1B-01	WCL-MWDUP-01	WCL-MW04-01	WCL-MW17-01										
Field QC:				Field Blank	Field Dup. of MC0097	Field Dup. of MC0096												
Matrix :	Water	Water	Water	Water	Water	Water	Water	Water										
Units :	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L										
Date Sampled :	8/28/2006	8/28/2006	8/28/2006	8/29/2006	8/29/2006	8/29/2006	8/22/2006	8/29/2006										
Time Sampled :	13:30	13:50	14:40	15:30	10:20	10:25	14:20	14:20										
Dilution Factor :	1.0	1.0	1.0/5.0	1.0	1.0	1.0	1.0	1.0										
ANALYTE	CRDL	MCL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag		
ALUMINUM	200	50	877	B	10,200.00		13,800		423		446	B	444	B	407	B	590	B
ANTIMONY	60	6															3.7	J
ARSENIC	10	10	8.1	B	18.2	B	11.6	B	8.0	J	9.5	B	7.5	B	8.7	B	17.6	B
BARIUM	200	2,000	238		156	J	309				150	J	157	J	73.2	J	195	J
BERYLLIUM	5	4	0.43	B	0.89	B	0.84	B			0.43	B	0.41	B			0.37	B
CADMIUM	5	5																
CALCIUM	5000	NA	17,100		13500		121,000		123	B	3860	J	3,870	J	51,200		24,100	
CHROMIUM	10	100	5.4	J	13.2		33.4				0.76	J			2.1	J	1.7	J
COBALT	50	NL	1.8	J	6.2	J	9.1	J					0.69	J	3.3	J	7.4	J
COPPER	25	1,300*	17.3	J	25.7		34.0								2.0	J	3.9	J
IRON	100	300**	25,700		27,800		21,200				91.9	J	86.0	J	33,000		65,600	
LEAD	10	15*		UL	9.0	J	32.6		UL		UL		UL		5.6	J		UL
MAGNESIUM	5000	NL	25,100		4200	J	367,000				3,340	J	3,400	J	27,800		24,300	
MANGANESE	15	50**	565		801		926				26.8		27.7		83.9		3,920	
MERCURY	0.2	2					0.17	J										
NICKEL	40	NL	8.9	J	21.5	J	26.2	J							34.7	J		UL
POTASSIUM	5000	NL	10,500		15,200		144,000				2,400	J	2,860	J	58,300		33,400	
SELENIUM	35	50																
SILVER	10	100**															2.3	J
SODIUM	5000	NL	177,000		18,700		2,120,000+		611	J	13,900		422,000		127,000		13,900	
THALLIUM	25	2																
VANADIUM	50	NL	2.2	J	21.0	J	35.1	J							0.79	J	2.2	J
ZINC	60	5,000**	16.9	J	37.9	J	115		1.9	B	6.1	B	5.5	B	9.5	B	3.4	B
CYANIDE	10	200			3.9	J	2.9	J			1.9	J	2.1	J	4.6	J	3.3	J

Notes:

Results in bold are above the MCL values for that analyte

* = Action level

** = Secondary MCL

ug/L = Micrograms per liter

B = Compound detected at less than five times the associated blank concentration

CRDL = Contract required detection limit

J = Compound detected, result is inaccurate or imprecise

MCL = Maximum contaminant level

NL = Not listed

QC = Quality control

UL = Not detected. Detection limit is biased low

Table 4
Analytical Results for Organic Compounds Detected in Soil and Sediment Samples

Sample Number :	C0093 C0084 C0085 C0086 C0087 C0088 C0089 C0090 C0091 C0092 C00A0 C00A1 C00A2																											
Sampling Location :	WCL-SS-01 WCL-SS-02 WCL-SS-03 WCL-SS-04 WCL-SS-05 WCL-SS-06 WCL-SS-07 WCL-SS-08 WCL-SS-09 WCL-SS-10 WCL-SD-01 WCL-SD-02 WCL-SD-03																											
Units :	ug/Kg ug/Kg																											
Date Sampled :	8/28/2006 8/28/2006 8/21/2006 8/28/2006 8/21/2006 8/28/2006 8/28/2006 8/28/2006 8/28/2006 8/21/2006 8/28/2006 8/28/2006 8/28/2006																											
Time Sampled :	12:20 12:10 11:40 11:10 10:30 10:35 10:45 11:50 11:55 12:00 15:00 13:50 14:40																											
%Moisture :	5 31 1 5 2 25 5 2 3 2 38 46 53																											
Volatle Compound	CRQL	RBC	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag				
Acetone	10	7.0E+06	9.9	J	3200	J	36	J	23	J					11	J												
2-Butanone	10	4.7E+00			44	J																						
Toluene	5.0	8.3E+05			0.79	J																						
m,p-Xylene	5.0	2.3E+06	1.5	B													0.60	B										
Semivolatle Compound	CRQL	RBC	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag				
Benzaldehyde	170	7.8E+05																					59	J				
Acetophenone	170	7.8E+05													28	J												
Carbazole	170	3.2E+04															100	J										
Di-n-butylphthalate	170	7.8E+05	52	B	160	B	95	B	46	B				52	B	24	B	24	B	99	B		61	B				
Fluoranthene	170	3.1E+05															26	J					40	J				
Pyrene	171	2.3E+02																					49	J				
Bis(2-ethylhexyl)phthalate	170	4.5E+02			81	B	120	B	38	B	75	B	27	B	140	B	38	B	85	B	20	B	37	B	160	B	44	B
Di-n-octylphthalate	170	NL					73	J			50	J																
Benzo(b)fluoranthene	170	8.7E+02															28	J						49	J			
Pesticide Compound	CRQL	RBC	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag				
beta-BHC	1.7	3.5E+02	0.19	J					2.6	J	0.36	J	0.34	J	1.4	J	52	J	0.38	J			0.33	J	0.64	J		
delta-BHC	1.7	3.5E+02			0.55	J								0.96	J					0.28	J							
gamma-BHC (lindane)	1.7	4.9E+02												0.23	J	180	J											
Heptachlor	1.7	1.4E+02	0.26	J					0.31	J	0.18	J		0.68	J	770	+		0.53	J								
Aldrin	1.7	3.8E+01	0.22	J	0.51	J			0.77	J			0.18	J	2.3	J	8.9	J										
Heptachlor epoxide	1.7	7.0E+01	0.56	J	0.83	J	0.35	J	1.6	J	0.93	J	3.2	J	3.5	J	21	+	1.1	J	1.7	J	0.81	J	1.3	J		
Endosulfan I	1.7	4.7E+05			0.30	J			1.3	J	0.39	J	0.85	J	3.8	J	40	J	0.18	J					0.44	J		
Dieldrin	3.3	2.2E+03	0.30	J				0.70	J	5.3	J	0.74	J	0.80	J	0.28	J	16	J	1.4	J	0.19	J		0.35	J		
4,4'-DDE	3.3	2.7E+03	83	+	21	J	0.78	J	5.3	J	2.7	J	0.99	J	2.5	J	430	J	0.66	J	0.22	J	0.36	J	11	J		
Endrin	3.3	2.3E+03	0.26	J	0.43	J	0.50	J	2.0	J	1.2	J	1.5	J	5.7	J	21	J	0.40	J	0.37	J			0.77	J		
Endosulfan II	3.3	NL	0.70	J	0.55	J	0.18	J	0.36	J	0.27	J	0.17	J	0.44	J	10	J	0.69	J					0.39	J		
4,4'-DDD	3.3	1.9E+03	7.6	J	2.7	J			1.0	J	0.59	J	0.52	J	5.5	J	33	J					1.2	J	4.3	J		
Endosulfan sulfate	3.3	NL	2.5	J	0.33	J							0.30	J	0.21	J			0.41	J								
4,4'-DDT	3.3	1.9E+03	18	J	6.4	J	3.6	J	5.0	J	4.5	J	2.7	J	6.1	J	17	J			0.46	J		1.6	J	4.4	J	
Methoxychlor	17	3.9E+04	0.98	B	0.32	B	0.43	B	0.85	B	2.6	B	0.75	B	1.3	B					0.26	B						
Endrin ketone	3.3	NL							0.75	J	0.63	J			0.70	J			0.35	J	0.35	J						
Endrin aldehyde	3.3	NL	0.62	J	1.4	J	0.45	J	0.40	J	1.3	J			0.99	J	2.2	J	0.91	J	0.28	J	0.43	J		0.56	J	
alpha-Chlordane	1.7	1.8E+03	0.79	J	0.99	J	1.0	J	4.7	J	1.5	J	1.2	J	1.5	J	3.1	J	2.9	J	0.21	J			0.34	J	1.1	J
gamma-Chlordane	1.7	1.8E+03	0.37	B	0.94	B			1.2	B	0.63	B	0.21	B	0.40	B	60	J	3.9	J					0.36	B		

Notes:
 % = Percent
 + = Results reported from the dilution analysis
 ug/Kg = Microgram per kilogram
 B = Compound detected at less than five times the associated blank concentration

CRQL = Contract required quantitation limit
 J = Compound detected, result is inaccurate or imprecise
 NL = Not listed
 RBC = Risked based concentration
 QC = Quality control

Table 5
Analytical Results for Organic Compounds detected in Surface Water and Groundwater Samples

Sample Number :		C0094		C0096		C0097		C0098		C0099		C00A3		C00A4		C00A5			
Sampling Location :		WCL-F5-01		WCL-MW1B-01		WCL-MWDUP-01		WCL-MW04-01		WCL-MW17-01		WCL-SW-01		WCL-SW-02		WCL-SW-03			
Units :		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L			
Date Sampled :		8/29/2006		8/29/2006		8/29/2006		8/22/2006		8/29/2006		8/28/2006		8/28/2006		8/28/2006			
Time Sampled :		15:30		10:20		10:25		14:20		14:20		13:30		13:50		14:40			
Volatile Compound	CRQL	MCL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	
Chloromethane	5.0	NL													2.5	J			
Chloroethane	5.0	NL							1800+	K	1.6	J			1.5	J			
Acetone	10	NL	8.0	B			1.0	J	6.1	J			4.1	J			7.5	J	
Methylene chloride	5.0	NL	1.5	J					0.54	B									
cis-1,2-Dichloroethene	5.0	70									2.9	J							
2-Butanone	10	NL	14																
Benzene	5.0	5	0.51	J	0.52	B	0.51	B	31		1.9	B			0.59	J			
1,4-Dioxane	100	NL							180	B									
Toluene	5.0	1,000							1.5	J					0.53	J			
trans-1,3-Dichloropropene	5.0	NL															0.70	J	
Chlorobenzene	5.0	100							30		6.2								
Ethylbenzene	5.0	100							22										
o-Xylene	5.0	10,000							6.1										
m,p-Xylene	5.0	10,000	0.63	J					150										
Isopropylbenzene	5.0	NL							26										
1,4-Dichlorobenzene	5.0	75							5.5		1.8	J							
1,2-Dichlorobenzene	5.0	600							1.8	J									
Semivolatile Compound	CRQL	MCL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	
Benzaldehyde	5.0	NL							1.1	J					1.1	J			
Phenol	5.0	NL	1.9	B	1.5	B	1.5	B	3.5	B	1.5	B	1.9	B	2.2	B	1.9	B	
2,4-Dimethylphenol	5.0	NL							1.5	J									
Naphthalene	5.0	NL							5.7										
2-Methylnaphthalene	5.0	NL							0.78	J									
Acenaphthene	5.0	NL									0.62	J							
Diethylphthalate	5.0	NL							0.78	J									
Di-n-butylphthalate	5.0	NL	1.3	B	0.51	B	1.0	B	1.4	B	1.1	B	0.52	B	0.56	B	0.66	B	
Bis(2-ethylhexyl)phthalate	5.0	6							1.7	B									
Pesticide Compound	CRQL	MCL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	
alpha-BHC	0.050	NL							0.0088	J									
beta-BHC	0.050	NL	0.014	B	0.020	B	0.018	B	0.021	B			0.016	B	0.013	B		UJ	
delta-BHC	0.050	NL													0.0075	J		UJ	
gamma-BHC (Lindane)	0.050	0.2													0.0054	J		UJ	
Heptachlor epoxide	0.050	0.2							0.018	J								UJ	
Endosulfan I	0.050	NL							0.013	J								UJ	
4,4'-DDE	0.10	NL	0.0055	J	0.0058	B			0.015	B					0.021	B		UJ	
Endrin	0.10	2							0.0054	J					0.0086	J		UJ	
Endosulfan II	0.10	NL	0.013	J					0.0097	B									
4,4'-DDD	0.10	NL							0.0063	J									
4,4'-DDT	0.10	NL	0.011	J	0.013	B	0.021	B			R	0.015	B	0.0075	B	0.018	B	0.017	B
Methoxychlor	0.50	40	0.012	B			0.0095	B	0.012	B									
Endrin ketone	0.10	NL							0.0058	J									
Endrin aldehyde	0.10	NL	0.016	B			0.0054	B			R	0.0067	B		0.0084	B		UJ	
alpha-Chlordane	0.050	2												0.0051	J	0.0072	J	0.014	J
gamma-Chlordane	0.050	2	0.49	J			0.0056	B	0.018	B	0.0066	B					UJ	0.0073	B

Notes:

- | | |
|--|---|
| * = Action level | K = Reported value is biased high |
| ** = Secondary MCL | MCL = Maximum contaminant level |
| ug/L = Microgram per liter | = Not listed |
| B = Compound detected at less than five times the associated blank concentration | NL = Quality control |
| CRDL = Contract required detection limit | UJ = Not detected. Detection limit is inaccurate or imprecise |
| J = Compound detected, result is inaccurate or imprecise | |

Attachment 5: List of Documents Reviewed

- Wildcat Landfill Superfund Site Record of Decision #1. U.S. EPA Region III; June 23, 1988.
- Wildcat Landfill Superfund Site Record of Decision #2. U.S. EPA Region III; November 28, 1988.
- Consent Decree in the matter of U.S. v. Shirley Hunn et al., Civil Action No. 89-270-JJF (D. Del), entered on August 7, 1989.
- Monitoring and Maintenance Manual for the Wildcat Landfill NPL Site, Revision 1. B&V Waste Science and Technology Corp. on behalf of the Wildcat PRP Group, November 1992.
- Addendum to the Monitoring and Maintenance Manual for the Wildcat Landfill Site. U.S. EPA Region III; February 12, 2002.
- Memorandum to File dated May 23, 2002, documenting PRPs' completion of Immediate Maintenance Needs as identified in the Addendum to the Monitoring and Maintenance Manual.
- Comprehensive Five-Year Review Guidance. U.S. EPA OERR, OSWER No. 9355.7-03B-P, June 2001.
- Site Inspection Checklist completed during Wildcat Landfill Site Inspection. U.S. EPA Region III; August 28, 2006.
- Memorandum from Alvaro Alvarado (EPA Toxicologist) to Hilary Thornton (EPA RPM) dated March 20, 2003, on the topic of whether the site was compatible with recreational use.
- Email from Dawn Ioven (Toxicologist, EPA Region III) to Hilary Thornton (RPM, Wildcat Landfill) dated August 23, 2006, identifying sampling that would be appropriate to evaluate Kent County's potential use of the site as a recreation area..
- Email from Dawn Ioven (Toxicologist, EPA Region III) to Hilary Thornton (RPM, Wildcat Landfill) dated January 22, 2007, commenting on the results of the sampling performed during the Five Year Review sampling performed in August 2006 and documented in the Final Trip Report dated October 31, 2006.
- Newspaper Advertisement of EPA's Five-Year Review for the Wildcat Landfill Superfund Site, Published in the Downstate Daily dated September 21, 2006.
- Final Trip Report for Wildcat Landfill Site. Prepared for U.S. EPA Region III by Tetra Tech EM Inc. October 31, 2006.
- Executed Environmental Protection Easement and Declaration of Restrictive Covenant, Large Hunn Parcel (Tax Parcel No. NM-00-086.00-01-37.00-000), recorded in Deed Book D, Volume 471, Pages 335-359.

Executed Environmental Protection Easement and Declaration of Restrictive Covenant, Small Hunn Parcel (Tax Parcel No. NM-00-086.00-01-37.05-000), recorded in Deed Book D, Volume 472, Pages 1-20

Executed Environmental Protection Easement and Declaration of Restrictive Covenant, Barr Parcel (Tax Parcel No. NM-00-086.00-01-37.01-000), recorded in Deed Book D, Volume 472, Pages 21-35.

Five-Year Review Report #1, Wildcat Landfill Superfund Site, Kent County, Delaware. U.S. EPA Region III; August 26, 1996.

Five-Year Review Report #2, Wildcat Landfill Superfund Site, Kent County, Delaware. U.S. EPA Region III; October 25, 2001.

2003 Annual Report for the Wildcat Landfill Superfund Site in Kent County, Delaware, March 23, 2004. Black & Veatch Special Projects Corp. on behalf of the Wildcat PRP Group.

2004 Annual Report for the Wildcat Landfill Superfund Site in Kent County, Delaware, July 30, 2004. Black & Veatch Special Projects Corp. on behalf of the Wildcat PRP Group.

Memorandum on the subject of "Use of Alternate Concentration Limits (ACLs) on Superfund Cleanups" from Michael B. Cook, Director, Office of Superfund Remediation and Technology Innovation to Superfund National Policy Managers, Regions 1-10, (OSWER 9200.4-39), Dated July 19, 2005.

Attachment 6: Applicable or Relevant and Appropriate Requirements (ARARs)

[Wildcat Landfill OU1 ROD, June 1988, pp. 37-39]

Attainment of the Applicable or Relevant and Appropriate Requirements

The selected remedy for addressing the problems posed by the Wildcat Landfill Site meets the intent of the applicable or relevant and appropriate requirements of both Federal and any more stringent State environmental and public health requirements. A number of Federal and State to be considered (TBCs) have also been identified and are included in this discussion. The MCL requirement in ground water at the facility boundary has been waived because of the special conditions present at the site. These special conditions include the very limited aquifer area, lack of receptors, close proximity to the surface discharge, and low yield and quality of the section of aquifer in question. The intent of the Delaware solid waste disposal regulations will be met by meeting the state closure requirements found in the Delaware Sanitary Code, Part 38, under which the Site was originally to be closed.

The complete listing of state and federal ARARs and TBCs are found in the Feasibility Study report and Technical Memorandum #1, both found in the administrative record.

The chemical-specific requirements are:

1. 40 CFR 122 (Clean Water Act) - This is a relevant and appropriate requirement which includes the acute and chronic ambient water quality criteria (WQC) for protection of freshwater aquatic life. At the Wildcat Landfill Site these requirements are to be met at the ground water discharge point along Tidbury Creek.
2. 40 CFR 122 (Clean Water Act) - the Federal Pollution Discharge Elimination Standards are applicable for the discharge from the landfill during landfill capping activities.
3. The State of Delaware Regulations Governing the Control of Water Pollution - The applicable requirements involve the discharge of waters to surface water and this applies to the onsite landfill capping action during construction. A permit would be required since water would be discharged offsite.
4. The State of Delaware Water Quality Standards for Streams - This is an applicable state requirement for discharges to surface waters from point sources. These requirements are enforced under the Delaware Regulations Governing the Control of Water Pollution.

The location-specific requirements are:

1. State of Delaware Regulations Governing the Construction of Water Wells - This is an action-specific requirement concerning the construction and siting of water wells. These requirements

are applicable to remedial actions for both monitor well construction and replacement of domestic wells.

2. State of Delaware Wetland Regulations and the Wetlands Act (Chapter 66) - These location-specific requirements are applicable to all remedial actions which impact the existing tidal wetlands. The capping actions at the Wildcat Landfill Site will impact both onsite and offsite wetlands and measures must be taken to minimize these impacts. A permit is required.
3. Delaware River Basin Commission (DRBC) Rules of Practice and Procedure - This applicable requirement applies to actions where 2.5 or more acres of wetlands are drained, filled, or otherwise altered. An environmental impact analysis is required.
4. 40 CFR 264.18(b) - Actions within the 100-year floodplain must be designed, constructed, operated, and maintained to avoid washout.
5. Executive Order 11988, Protection of Floodplains (40 CFR 6, appendix A) - This applicable requirement requires actions to avoid adverse effects, minimize potential harm, and restore and preserve natural and beneficial values.
6. Executive Order 11990, Protection of Wetlands (40 CFR 6, appendix A) - Measures must be taken to minimize the destruction, loss, or degradation of wetlands.
7. Clean Water Act, Section 404 (40 CFR Parts 230, 231) - Action must be taken to prohibit discharge of dredged or fill material into wetlands without a permit.

The action-specific requirements are:

1. State of Delaware Solid Waste Disposal Regulations (1974) and the State Sanitary Code Part 38 - Section 6.03(g)(1) of the solid waste regulations requires a final slope of at least 2 per cent which precludes erosion. A minimum of two feet of compacted cover is also required in Section 6.03(g)(4)(b). The actual cover requirements will be a two foot soil cover but the compaction requirements will be modified as described previously with 1.5 feet of compacted and 0.5 feet of uncompacted topsoil.
2. 40 CFR 264.310 - the RCRA closure requirements will be met under the EPA alternate landfill closure policy allowing the site to be suitably covered. This is a relevant and appropriate requirement.
3. 40 CFR 264 - The RCRA hazardous waste requirements will also be applicable to the transportation and disposal of any hazardous wastes found in drums either on the landfill surface or during the grading actions.

The to be considered (TBCs) are:

1. Delaware Natural Heritage Inventory - This is a draft list of rare or seldom seen plants which have been found on the site. These plants will be considered during the onsite grading and capping activities.
2. Integrated Risk Information System data base - This information is used in determining the concentration of carcinogenic compounds at the 10^{-6} risk level and the concentration of non-carcinogens for the reference dose level.
3. 45 FR 79318-79379 (November 28, 1980) - These are levels for contaminants in water for the protection of human health.

[Wildcat Landfill OU2 ROD, November 1988]

Attainment of the Applicable or Relevant and Appropriate Requirements

The selected remedy for the pond meets the intent of the applicable or relevant and appropriate Federal and State environmental and public health requirements. One State to-be-considered is included in this discussion. The complete listing of ARARs and TBCs (with the exception of the Delaware Criteria and Guidelines for Creating Waterfowl Impoundments in Regulated Delaware Wetlands) are found in the Feasibility Study Report (May 1988) and Technical Memorandum #1 (May 1988).

The chemical-specific requirements are:

1. 40 CFR 122 (Clean Water Act) - This is a relevant and appropriate requirement which includes the acute and chronic ambient water quality criteria (WQC) for the protection of freshwater aquatic life. These requirements are to be met at the ground water discharge point along the new pond. These requirements would also apply to the draining of the existing pond prior to the filling of the pond.
2. State of Delaware Water Quality Standards for Streams (December 23, 1985) - this is a relevant and appropriate requirement for discharges to surface waters from point sources. These requirements are enforced under the Delaware Regulations Governing the Control of Water Pollution.
3. State of Delaware Regulations Governing the Control of Water Pollution (June 23, 1983) – The applicable requirements concern the discharge of waters to surface water and this would apply to the discharge of waters from the pond. The requirements would have to be met although a permit would not be required as this activity is an integral part of the remedy and is in the immediate area of the landfill and the pond.

The location-specific requirements are:

1. 40 CFR 264.18(b) - Actions within the 100-year floodplain must be designed, constructed, operated, and maintained to avoid washout.

2. Executive Order 11988, Protection of Floodplains (40 CFR 6, appendix A) - This applicable requirement requires actions to avoid adverse effects, minimize potential harm, and restore and preserve natural and beneficial values.

3. Executive Order 11990, Protection of Wetlands (40 CFR 6, appendix A) - Measures must be taken to minimize the destruction, loss, or degradation of wetlands.

The action-specific requirements are:

1. State of Delaware Regulations Governing the Construction of Water Wells (January 20, 1987)
– These regulations detail the construction and permitting requirements for water well construction within the state.

The to-be-considered (TBCs) are:

1. Delaware Criteria and Guidelines for Creating Waterfowl Impoundments in Regulated Delaware Wetlands - This TBC is not an ARAR as it applies solely to creation of these impoundments in existing wetlands and the new pond is to be constructed in an upland area. The general criteria and construction guidelines are to be used.