

Fourth Five-Year Review Report

for

**Taylor Borough Dump
Superfund Site**

**Taylor
Lackawanna County, PA**

September 2008

**Prepared By:
Environmental Protection Agency
Region III
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Date:

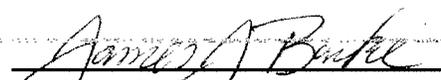

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Taylor Borough Dump Superfund Site

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List of Acronyms

ARARs	Applicable or relevant and appropriate requirements
ATSDR	Agency for Toxic Substances and Disease Registry
CERCLA	Comprehensive Environ. Response, Compensation, & Liability Act
CIC	Community Involvement Coordinator
COC	Contaminant of Concern
COR	Close Out Report
DCE	Dichloroethene
EPA	Environmental Protection Agency
ESD	Explanation of Significant Differences
GMUC	Groundwater Migration Under Control
GPRA	Government Performance Results Act
HEUC	Current Human Exposure Controlled
HRS	Hazard Ranking System
IC	Institutional Control
LEL	Lower Explosive Limit
LFG	Landfill Gas
MCL	Maximum Contaminant Level
NCP	National Oil & Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	Operations and Maintenance
OU	Operable Unit
PADEP	Pennsylvania Department of Environmental Protection
PADER	Pennsylvania Department of Environmental Resources
PAHs	Polynuclear Aromatic Hydrocarbons
PCB	Polynuclear Chlorinated Biphenyl
PRP	Potentially Responsible Party
RA	Remedial Action
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
SARA	Superfund Amendments and Reauthorization Act
SVOCs	Semi-volatile Organic Compounds
SWRAU	Site-Wide Ready for Anticipated Use
TAL	Target Analyte List
TCE	Trichloroethene
PCE	Perchloroethene
TCL	Target Compound List
VOCs	Volatile Organic Compounds

Executive Summary

The remedy for the Taylor Borough Superfund Site in Taylor, Pennsylvania included the removal and off-site disposal of approximately 10 intact and scattered surface drum remnants and 5,000 cubic yards of excavated soil; the collection and off-site disposal of contaminated surface water in two ponds; solidification of sediments on-site from these two ponds; excavation of contaminated soils and waste from three former drum storage areas; backfilling and placement of a soil cover over these three areas; installation of a chain-link fence around the perimeter of the covered areas; and groundwater monitoring for five years. The site achieved construction completion with the issuing of the Close Out Report (COR) dated December 31, 1988. The trigger for this Five-Year Review was the completion date of the third Five-Year Review.

The assessment of this Five-Year Review found that the remedy was constructed in accordance with the requirements of the Record of Decisions (RODs) for the two operable units (OU1 and OU2), dated September 28, 1985 and March 17, 1986, respectively. An Explanation of Significant Differences (ESD), dated September 28, 2007, more clearly defines, articulates, and amplifies the appropriate restrictions and institutional controls (ICs) for the Site.

Protectiveness Statement

The remedy for the site is protective of human health and the environment in the short-term because there is no evidence that there is current unacceptable exposure to site contaminants. Contaminated soil, drums and drum shards were removed, and a soil cover was placed over the remediated areas. A fence is in place to protect the soil cover, and signs are posted to prevent trespass.

Groundwater in the area is not used for drinking water because extensive mining operations have affected the yield and quality of the aquifer. Long term protectiveness is expected to be achieved once the institutional controls for the site are put in place.

GPRA Measure Review

As part of this Five-Year Review, the GPRA Measures have also been reviewed. The GPRA Measures and their status are provided as follows:

Environmental Indicators

Human Health: HEUC, Current Human Exposure Controlled

Groundwater Migration: GMUC, Groundwater Migration Under Control

Site-Wide RAU: The Site is expected to achieve Site-Wide Ready for Anticipated Use (SWRAU) status on September 25, 2010.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name: Taylor Borough		
EPA ID: PAD00980693907		
Region: 3	State: PA	City/County: Taylor, Lackawanna
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: December 31, 1988	
Has site been put into reuse? <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> NA		
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: Rombel G. Arquines		
Author title: Remedial Project Manager	Author Affiliation: U.S. EPA - Region 3	
Review period: June, 2008 - September 2008		
Date(s) of site inspection: 06/25/2008 & 08/12/2008		
Type of review: <input type="checkbox"/> Post-SARA <input checked="" 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 type="checkbox"/> 3 (third) <input checked="" type="checkbox"/> Other(specify) <u>4 (fourth)</u>		
Triggering action: <input type="checkbox"/> Actual RA Onsite Construction at OU #1 <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: September 30, 2003		
Due date (five years after triggering action date): September 30, 2008		

* ("OU" refers to operable unit.)

FIVE-YEAR REVIEW SUMMARY FORM, CONT'D**Recommendations and Follow-up Actions**

- ◆ Collaborate with City of Scranton to implement ICs
- ◆ Replace faded and illegible signs
- ◆ Design protective measures to improve drainage
- ◆ Address the excess vegetation within the fenced area, drainage culvert, and access road

Protectiveness Statements

The remedy for the site is protective of human health and the environment in the short-term because there is no evidence that there is current unacceptable exposure to site contaminants. Contaminated soil, drums and drum shards were removed, and a soil cover was placed over the remediated areas. A fence is in place to protect the soil cover, and signs are posted to prevent trespass.

Groundwater in the area is not used for drinking water because extensive mining operations have affected the yield and quality of the aquifer. Long term protectiveness is expected to be achieved once the institutional controls for the site are put in place.

**U.S. Environmental Protection Agency Region III
Five-Year Review Report
Taylor Borough
Superfund Site
Borough of Taylor,
Lackawanna County, Pennsylvania**

I. Introduction

The purpose of the Five-Year Review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and recommendations to address them.

The Environmental Protection Agency (EPA) is preparing this Five-Year Review report pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) § 121 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA §121states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgement of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

The Agency interpreted this requirement further in the NCP; 40 CFR §300.430(f)(4)(ii) states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

EPA Region III, has conducted a Five-Year Review of the remedial action implemented at the Taylor Borough Dump Superfund site in the Borough of Taylor, Pennsylvania. This review was conducted for the entire site by the Remedial Project Manager (RPM) from June 2008 through September 2008. This report documents the results of the review.

This is the fourth Five-Year Review for the Taylor Borough site. The triggering action for this review is the third Five-Year Review report which was completed on September 30, 2003. The Five-Year Review is required, as a matter of policy, due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure.

II. Site Chronology

Table 1 lists the chronology of events for the Taylor Borough site.

Table 1: Chronology of Site Events

Event	Date
EPA and PADEP conducted the first field inspections of the site.	June 1981
Air sampling close to drums, and analysis of drum and drum spill samples conducted by EPA and PADEP	May 1982
Site proposed for NPL; score was too low for inclusion	July 1982
Fire occurred on surface of landfill. Drums became partially buried due to mine spoil pushed over burning areas to extinguish fire. EPA instituted an Immediate Removal Action. 1,141 drums removed from the site. Based on additional information gathered by PADEP, a new HRS score was determined and the site was placed on the NPL	September - November 1983
Authorization to proceed with RI/FS approved	November 1983
RI/FS was funded and field investigation began. Air surveys, test pitting, surface water, sediment, groundwater, and surface soil sampling were conducted by NUS.	March 1984
RI/FS completed	May 1985
ROD signed for remediation of surface water, sediment, and soils.	June 28, 1985

Event	Date
ROD signed for groundwater (no-action remedial alternative selected).	March 17, 1986
Consent decree signed between the United States and five settling defendants to design and implement required remedial actions. Construction activities began.	July 1987
Construction activities concluded	May 1988
Closeout Report signed	December 31, 1988
Maintenance activities began	June 1991
First round of groundwater monitoring conducted	October 1991
Landfill gas monitoring conducted	October 1991-February 1993
Residential air sampling	December 1992-May 1993
First Five-Year Review conducted	March 1993
Addendum to the first 5-Year Review	February 1997
Second Five-Year Review	September 30, 1998
Deletion from the NPL	September 30, 1999
Third Five-Year Review	September 30, 2003
ESD documenting Institutional Controls (ICs) and no further GW Monitoring necessary for the Site	September 28, 2007
Consent decree entered between the United States and City of Scranton; for City of Scranton to take over O&M, ICs	March 5, 2008

III. Background

a. Physical Characteristics

The Taylor Borough site is a former municipal landfill located in Taylor Borough, Lackawanna County, Pennsylvania. The entire site encompasses approximately 125 acres of land south of Bald Mountain. However, the remediated area is approximately 20 acres, which is enclosed by a chain link fence. The site is bordered by a recreational area and county maintenance property on the northeast and by the northeast extension of the Pennsylvania Turnpike on the

northwest. A residential development and the inactive Bichler municipal landfill border the site on the southwest. (see Figure 1)

b. Land and Resource Use

The Lackawanna Valley has historically been extensively mined for anthracite coal. A series of underground mines underlie the Taylor Borough site. Following the mining operations at the site, the City of Scranton used the un-reclaimed strip mine pits as a municipal landfill from approximately 1967 through 1968 reclaiming the site and grading it to an approximate 5% grade. Mine spoil material was used as cover. Records from the Pennsylvania Department of Environmental Protection (PADEP) also document the disposal of industrial wastes. After the landfill operations ceased, drummed industrial wastes were found on the surface of the site.

Due to the extensive mining that occurred in the Lackawanna Valley, the groundwater aquifers closest to the surface have been significantly affected both in quality and yield. There is no reported use of groundwater for drinking purposes within 1-mile of the site. St. John's Creek is an intermittent stream that flows through the site and eventually discharges into the Lackawanna River. The creek bed was relocated within the site onto strip mine spoil fill during strip mining operations. Thus, the stream often flows into the creek bed and is hidden under mine spoils at certain points, and reappears at other points during low flow periods.

c. History of Contamination

Beginning in 1981, EPA Region III and PADEP conducted field inspections of the site. The majority of the surface drums were concentrated in six areas of the site. Most drums were open and the contents may have spilled during the dumping. Many had also been punctured by bullet holes. Air sampling close to the drums identified the presence of volatile organic compounds (VOCs). Drum and drum spill samples were analyzed in 1982 and found to contain benzene, toluene, and other substituted benzene, phthalate acid esters, polynuclear aromatic hydrocarbons (PAHs), trichloroethene (TCE), chloroform, and other organic chemicals. The Hazard Ranking System (HRS) score for this site was determined in July 1982 but the score was not high enough and did not make it eligible for inclusion on the National Priorities List (NPL). After additional documentation from PADEP indicating that larger quantities of potentially hazardous substances had been dumped at the site, the HRS score was revised. The incorporation of this additional information resulted in a revised score making the site eligible for the NPL.

d. Initial Response

In 1983, a fire occurred on the surface of the landfill. It is believed that mine spoil was pushed over burning areas to extinguish the fire. As a result, some drums were partially buried. Because the fire had engulfed several drums, EPA initiated an Immediate Removal Action under Section 104 of CERCLA. From September through November of 1983, one thousand one hundred forty one (1,141) drums were removed from the site.

e. Basis for Taking Action

In 1983 the site was placed on the NPL. An authorization to proceed with a Remedial Investigation/Feasibility Study (RI/FS) was approved that same year. EPA's contractor conducted the RI field activities which began in March 1984 and were completed in May 1985. Air, subsurface soil, surface soil, surface water, sediment, and groundwater samples were collected during the RI/FS. The objectives of the RI were to determine the presence of buried contaminated waste, the groundwater and geologic conditions, the extent of contamination within the surface soils, the remedial action criteria, and the areas for remedial action.

The results of the RI were as follows:

- A magnetometer survey performed at the site indicated significant amounts of buried ferromagnetic material. No drums were encountered, only typical municipal landfill metal objects.
- Naturally existing fractures and fracturing due to the mining operations have had a substantial impact on the groundwater hydrology. Major aquifers that may have existed prior to mining have been dewatered. No continuous groundwater level is present across the site. Three rounds of groundwater sampling were conducted. All of the wells could not be sampled in all of the rounds because they did not always have enough water. Some wells had never produced any water since they were constructed. Two of these wells were installed to delineate an up-gradient and possible background flow. Thus, no background sample was collected.
- Groundwater sampling showed that none of the primary drinking water levels were exceeded for inorganic contaminants. Organic contamination was minimal in terms of the number of wells affected, the contaminants detected, and their concentrations. Contaminants that were detected included bis (2-ethylhexyl) phthalate; methylene chloride; 1,4-dichlorobenzene; 2,4-dinitrotoluene; and N-nitrosodi-n-propylamine.
- Surface soil samples showed minimal organic chemical contamination in terms of prevalence and concentration. High molecular weight organics (phthalates and/or polynuclear aromatic hydrocarbons) were detected in five surface soil samples with no particular pattern of contamination. However, the occurrence of these compounds is not unexpected in a region where anthracite coal was extensively mined and where mine spoil was used as backfill for the landfill operations. The occurrence of inorganic contaminants was widespread both in terms of prevalence and concentrations. There was a pattern of occurrence with lead and arsenic in the surface soils.
- Test pits were dug adjacent to Ponds 1 and 2 and soil samples at different depths were collected. Analysis showed methylene chloride in all samples. One test pit contained ethylbenzene, toluene, xylene, 4-methyl 1-2-pentanone, bis(2-ethyl hexyl)phthalate, and PCB-1254.

- A comparison of test pit inorganic results with background surface soil samples showed one test pit to have elevated levels of chromium, copper, lead, mercury, tin, and zinc.
- A total of 17 surface water and sediment samples from St John's Creek and both onsite and offsite ponds showed that inorganic contaminants in surface water were within EPA Primary Drinking Standards and that sediment samples were similar to background levels. Organic contamination of surface water and sediment samples was found to be localized in Pond 1 and 2. Samples in these two ponds showed similar organic constituents when compared to pit samples from the adjacent, former drum storage area.
- The decision whether remedial action was necessary for groundwater contamination was initially deferred pending further investigation.

Based on the information collected in the RI, the major threat from contamination at the site was direct contact with or ingestion of contaminated soils, sediments, and the pond's surface water.

IV. Remedial Actions

a. Remedy Selection

A Record of Decision (ROD) for soil was signed in 1985. The selected remedial action included the following activities:

- Removal and off-site disposal at a qualifying facility of approximately 125 crushed and intact drums and remnants remaining on the site surface or partially buried.
- Collection and treatment of contaminated surface water in on-site Ponds 1 and 2, which were located adjacent to Drum Storage Areas 1 and 2.
- Excavation of contaminated soils and waste from former Drum Storage Areas 1 and 2 and sediments in Ponds 1 and 2 for off-site disposal to a qualified Resource Conservation and Recovery Act (RCRA) facility.
- Proper backfilling and placement of a 24-inch soil cover over the former Drum Storage Areas 3 and 6, all of the area between them, and the former Drum Storage Area 4.
- Installation of a chain-link fence around the perimeter of both the soil-covered areas.

The selection of remedial activities for groundwater was deferred in the June 1985 ROD until groundwater was further assessed. In March 1986, the EPA issued a ROD concerning

groundwater. It selected no remedial action for groundwater, but required groundwater monitoring for at least five years.

b. Remedy Implementation

On July 20, 1987 a Consent Decree was filed which embodied an agreement between the United States and five settling potentially responsible parties (PRP) to conduct the remedial design/remedial actions at the site. In addition, the settling PRPs agreed to fund and establish an account for the sum of \$410,039.00 for the purpose of paying for the O&M activities.

Construction activities were initiated in July 1987 and they are described below:

- Surface water of Ponds 1 and 2 was sampled and the results concluded that treatment of the water was required. Therefore, the pond water was taken offsite to a RCRA-approved treatment facility.
- Sediment from Ponds 1 and 2 were found to be not contaminated; therefore, these sediments were mixed with kiln dust for solidification. The solidified sediments from these ponds were compacted in place. Final design contours were achieved by the placement of clean fill over this solidified material.
- Approximately 10 intact drums containing solvents were uncovered during the excavation of contaminated soils and wastes from former Drum Storage Areas 1 and 2. Those 10 drums along with scattered surface drum remnants and approximately 5,000 cubic yards of excavated soil and waste material were removed and disposed of offsite at a RCRA qualifying facility.
- A minimum two-foot soil cover was placed in former Drum Storage Areas 3 and 6 and the entire area in between. In addition, a two-foot soil cover was placed in former Drum Storage Area 4.
- A six-foot chain link fence (1 mile in length) was installed with two locking gates prior to the excavation in Drum Storage Areas 1 and 2. The fence completely encompassed the remediated areas. Thereby, restricting access to the Site and preventing damage to the soil cover.

As documented in the December 31, 1988 Closeout Report, the implemented remedy achieved the remedial objectives specified in the RODs: to prevent direct contact with contaminated soil and sediment; source control; and to prevent migration.

c. System Operation/Operation and Maintenance (O&M)

Post-remediation activities were required by the June 1985 ROD. These included inspection and maintenance of the soil cover over former drum storage areas 3, 4, and 6 and the

area between 3 and 6; annual sampling of surface water and sediments from St. Johns's Creek; and semi-annual groundwater sampling for at least five years.

The 1986 ROD selected no remedial action for groundwater, but required groundwater monitoring. This monitoring was required in 9 of the 25 existing monitoring wells at the site to track the water quality in the coal seams underlying the site and to verify that no release was occurring over time. Monitoring was to be performed for a minimum of 5 years following the completion of surface remedial action. Following five years of groundwater sampling, EPA determined that no further groundwater monitoring was necessary; citing a single onsite detection of low level VOCs in ten rounds of sampling and concluding that there was no risk to residents from groundwater. It was also noted that the metals detected during the five years of sampling were those commonly associated with local mining operations, and not attributable to the site.

In addition to the post remediation activities outlined in the RODs, other post-remediation activities were performed at the site in response to concerns from the Agency for Toxic Substances and Disease Registry (ATSDR). In a 1989 Health Assessment for the site, ATSDR recommended further investigation of two offsite ponds (pond 7 and 8), evaluation of any exposure to contaminants via inhalation of ambient air on-site and off-site at nearby residences, lateral migration of gases (i.e. methane) to nearby residences, offsite migration of contaminants via storm water run-off.

Two delays occurred in the implementation of the O&M activities. The first delay was regarding the commencement of the O&M activities. The remedial action was completed in 1988 but O&M activities did not begin until 1991. Also, there was a delay in the continuation of maintenance activities at the site between the second and third Five-Year Reviews. EPA is in the process of completing a round of O&M activities. See issues and schedule for completion in Sections VIII and IX below. EPA is working with the City of Scranton to transition the responsibility for O&M over to the City of Scranton, as described in Section V.

V. Progress Since Last Five-Year Review

a. First Five-Year Review

At the time the first Five-Year Review was conducted the site was fenced, signs were posted, and appropriate maintenance activities had been conducted. Also, during that period only one round of surface water and sediment sampling, as well as, three rounds of groundwater sampling were conducted. In addition, during this period, the post-remediation activities recommended by ATSDR were conducted. Below is a summary of the results of sampling conducted in St John's Creek, as well as, the activities recommended by ATSDR. The groundwater sampling results are discussed below under the Second Five-Year Review.

Surface water, sediment and biota sampling of Ponds 7 and 8

There are two ponds (Ponds 7 & 8) approximately 100 feet from the fence surrounding the site. The ponds are located on private properties. ATSDR expressed concern that these ponds were not sampled during the RI. Therefore, surface water, sediment and biota were sampled in June 1992. Because of the topography of the site, surface water runoff from the site does not appear to be a pathway of contaminant transport. The ponds appear to be recharged by rainfall and surface runoff.

Surface sampling was conducted in Pond 8 only. Results showed no organic or inorganic compounds exceeding federal or state criteria. Two sediment samples were collected in each pond. One Polynuclear Chlorinated Biphenyl (PCB) compound (Aroclor-1254) was detected in one sample in Pond 8, however, it was not detected in the other sample. In the same way another PCB compound (Aroclor-1260) was detected in one sediment sample but not in the other.

Seventeen metals were detected in both ponds sediment samples. Some of these included lead, arsenic, barium, chromium, iron, manganese, and aluminum. Pond 8 contained goldfish and Pond 7 contained mostly catfish. Samples were taken from the catfish because they are commonly eaten by humans and catfish are bottom feeding fish. Aroclor-1254 was detected in the fish but the concentrations were less than the Federal Drug Administration action levels in edible portions of commercially sold fish. Lead was detected at low levels. Other inorganics detected included calcium, copper, iron, magnesium, manganese, potassium, sodium, and zinc. The owner of the property where Pond 7 is located stated that the fish in this pond are not eaten and were obtained from an outside source.

Landfill Gas Monitoring

ATSDR expressed concerns that a Landfill Gas (LFG) venting system was never installed at the site. During remedial design activities, it was determined that a LFG venting system was not needed based on the age of the landfill. Depending upon the landfill design, methane is normally generated for a long period, but peaks within the first ten years. Beyond this period, generation rates continue to decrease until the volume is negligible. At the time of the remediation, the landfill had been inactive for 18 years, therefore, it was assumed that the methane potential was declining. An evaluation of the landfill determined that 95% of the gas that the landfill could produce had already been generated. Also, the cap covering the landfill was designed such that methane gas would not collect under the cap.

To respond to this concern ten (10) LFG monitoring wells were installed along the perimeter of the site. Six monthly rounds of LFG monitoring were conducted from September 1992 through February 1993. Measurable concentrations of combustible gas were detected in 9 of the wells. However, gas concentrations exceeded the lower explosive limit (LEL) in only 4 of the wells located east of the site. The LFG monitoring wells in direct line with the residences nearest to the site had concentrations less than the LEL. Because the primary direction of gas migration is toward the east, while nearby residences are south of the site, there was no imminent hazard to the

residences. Although only low levels of gas were detected in the wells close to the residences, EPA evaluated the potential for methane migration into the basements of nearby residences. Ambient air monitoring for methane was conducted in December 1992 in the basements of the residences located closest to the site. These residences were on Rinaldi Drive, with backyards facing the south end of the site. Of the ten residences, only five had basements, and only two of the homeowners agreed to allow air monitoring to be conducted. Air monitoring results concluded that there was no migration of methane into these residences.

Ambient Air Monitoring

ATSDR recommended ambient air monitoring since air monitoring on site and in the vicinity of a nearby residence during pre-remediation activities showed ambient air at levels of potential concern. However, ambient air sampling was not conducted after the remediation was completed. Therefore, on site air monitoring was conducted in September 1992. A background sample was also taken upwind from the site. Low concentrations of some VOCs were detected, however, the concentrations detected onsite were similar to the concentrations detected in the upwind sample.

Storm water sampling

During remediation, measures such as grading, swales, and an infiltration basin were implemented to control surface water runoff from the site onto adjacent properties during storm events. It was originally recommended that storm water run-off to Ponds 7 and 8 be collected and analyzed. However, runoff was never observed going from the site to the ponds. Therefore, to evaluate whether storm water runoff off-site was a contaminant pathway of concern, storm water sampling was attempted from the culvert that exits to the northeast of the site. Numerous attempts were made but there was insufficient water. Instead it was decided to collect sediment samples. Sampling results showed the SVOC, bis(2-ethyl hexyl)phthalate, but it was also detected in the equipment blank. Three pesticides which have been banned in the United States were also detected but it may be due to past insect control efforts rather than site activities. Seventeen metals were detected including lead, arsenic, barium, chromium, and nickel. The concentrations detected were similar to the concentrations detected in the sediment samples from Ponds 7 and 8, and the sediment samples collected from St. John's Creek.

b. Second Five-Year Review

When the second Five-Year Review was conducted, all of the sampling required by the RODs had been conducted. Below is a summary of all the sampling results:

Surface water and sediment

The 1985 ROD specified that surface water and sediment samples would be collected annually from St. John's Creek and both Ponds 1 and 2 for at least five years. However, Ponds 1 and 2 were remediated and no longer exist as areas recognizable as ponds. Surface water and

sediment sampling and analysis at the site, as required by the 1985 ROD, have since been limited to St. John's Creek. Five rounds of post remediation surface water and sediment sampling were conducted from two locations on St. John's Creek for five years. Results of surface water sampling showed only 1,1-DCE and iron were recorded above the federal and state water quality criteria. However, the presence of 1,1-DCE appeared to be due to laboratory or field contamination. Sediment sampling showed some VOCs in upstream and downstream samples. The higher concentrations were detected in the upstream sample. Several semi-volatiles (mostly PAHs) were detected in the sediment samples. However, concentrations in upstream and downstream samples were similar. PAHs are typically detected where mining operations took place.

Seventeen metals were detected in the sediments samples and fifteen metals were detected in the surface water samples. However, the SVOCs and metals detected in the sediment samples are typically detected in areas where mining operations took place.

Groundwater

As required in the 1986 ROD, 5 years of semi-annual sampling was conducted in the site monitoring wells (ten rounds). The ROD required sampling of nine wells but some of these wells could not be sampled because they were damaged or had insufficient water. Therefore, only seven wells were part of the monitoring program.

Only one VOC was detected above federal and state standards, but in only one sampling event. Several metals were detected in the monitoring wells in both filtered and unfiltered samples. Metals detected in filtered samples above federal and state standards included arsenic, beryllium, lead, nickel, and thallium. The wells that contained the highest concentrations had a low pH and the low pH in these wells may have resulted in metals in the sediments dissolving into the groundwater. Also, low pH and elevated metals levels (especially lead and nickel) are likely related to natural geochemical processes associated with strip mines or anthracite coal environments.

c. Third Five-Year Review

When the third Five-Year Review was conducted, all of the sampling required by the RODs had been conducted. On September 28, 2007, an Explanation of Significant Differences (ESD) was issued by EPA to more clearly define the Institutional Controls (IC) established in the 1985 ROD and to document EPA's decision that no more monitoring of the groundwater was required at the Site. A Consent Decree was filed on March 5, 2008, wherein the City of Scranton agreed to take over responsibility for implementation of ICs and O&M of the Site.

Groundwater

The 1986 ROD selected no action with monitoring of the groundwater, for a minimum of five years. The remedy selection was no action with monitoring since no release of site contaminants to the groundwater had been documented. EPA conducted sampling at the Site for five years and determined that no more sampling was required. This is documented in the 2007

ESD. Strip mining, deep mining, and landfilling have altered the natural flow and impacted the quality of the groundwater. One monitoring well tested positive for low levels of a volatile organic compound, but that only occurred once during ten rounds of sampling. The other chemicals detected were metals that are commonly associated with mining operations.

Consent Decree/Operations & Maintenance

Pursuant to a Consent Decree filed March 5, 2008, the City of Scranton has agreed to resolve the United States' outstanding judgment for the reimbursement of past costs related to the Taylor Borough Dump Superfund Site through payment of \$250,000 plus interest and agreement to take over responsibility for implementation of Institutional Controls and any Operations and Maintenance at the Site. The Institutional Controls are not yet in place. The EPA and the City of Scranton are currently working together to transition those responsibilities.

VI. Five-Year Review Process

a. Administrative Components

The Five-Year Review of the Taylor Borough Site was led by Rombel G. Arquines, EPA RPM for the Site. The State RPM, John Mellow, was notified of the initiation of the Five-Year Review and both RPMs conducted a Site inspection on August 12, 2008.

b. Community Involvement

An advertisement appeared in the Scranton Times/Tribune on July 7, 2008, indicating that EPA was conducting a Five-Year Review for the Site. The newspaper misprinted the site name in one location of the July 7 advertisement so a retraction/correction was made. The advertisement ran again on July 12, 2007 with all of the correct information. The advertisement provided point of contact information, and identified the location of the information repositories for the site. Another notice will be sent to the same newspaper to announce that the Five-Year Review report for the Taylor Borough site has been completed. Information on the results of the review and the report availability will be part of the announcement.

c. Document Review

The Five-Year Review consisted of a review of relevant documents including the RI and FS reports, RODs, the Final Closure Plan, the Closeout Report, the ESD, the Consent Decree, and previous Five-Year Review reports and data.

d. Data Review

There was no new monitoring data collected since the last Five-Year Review. The last review indicated that additional groundwater sampling was suggested to confirm the results from

the previous sampling. As documented in the September 28, 2007 ESD, EPA later determined that no additional groundwater monitoring was necessary for the Site.

e. Site Inspection

Two site inspections were conducted. A comprehensive site inspection was conducted on June 25, 2008 by Rombel Arquines, EPA's RPM for the Site, with EPA's contractor, who has been conducting the O&M activities at the Site. The State RPM, John Mellow was notified of the initiation of the Five-Year Review and both RPMs conducted a Site inspection on August 12, 2008.

The following observations were noted at the inspections:

Site Signs

All the signs were in place, but the majority of the information was illegible due to the letters being faded. Replacement of all the signs is scheduled to be performed during the Summer/Fall O&M.

Fence

The fence itself and the locks were in good condition. However, the pins of the hinges on the side gate were removed and left near the open gate. The pins were replaced and the gate integrity was re-established that day. Periodic vandalism occurs at the Site and the implementation of the revised Institutional Controls may curb this practice.

Landfill cover

There are bushes and excess vegetation that have grown inside the fenced area. The main internal access road is also overgrown. However, planned O&M activities include routine clearing of excess vegetation. There were some areas of the cover that showed some erosion. A geotechnical engineer has evaluated the cap and protective measures are being designed to improve drainage as part of the Summer/Fall O&M.

Drainage areas and culverts

Some excess vegetation has grown in some of the drainage areas. This could impact the effectiveness of these structures. However, planned Summer/Fall O&M activities include routine clearing of excess vegetation.

f. Interviews

The Site RPM, Rombel G. Arquines, called the Taylor Borough Manager and asked if there were any logged concerns regarding issues in the community with respect to the Taylor Borough Superfund Site. There were no concerns raised by the Borough Manager or area residents.

VII. Technical Assessment

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

Yes. The removal of contaminated wastes has eliminated the risk to direct exposure from contaminated material. Data collected during the monitoring events detected some contaminants; however, these contaminants were typical of areas where mining activities have taken place. In other instances, contaminants detected were similar to the levels detected at background locations. EPA has concluded that no additional groundwater monitoring is necessary at this Site.

A fence is in place to secure the remediated areas and signs are posted indicating that this is a no-trespassing area. EPA refined the limitations that need to be placed on the property in the September 28, 2007 ESD but those institutional controls have yet to be implemented. EPA will continue to work with the City of Scranton to ensure that these controls are put in place.

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

Although some changes in exposure assumptions and toxicity data have occurred since the original ROD was issued, none of those changes affects the protectiveness of the remedy at this site. Further, there have been no major changes in the physical conditions of the site that would affect the protectiveness of the remedy. There is a minor issue of subsidence resulting from erosion in one area of the site, but EPA is currently working with EPA contractors, the State, and the City of Scranton to address the issue.

Changes in Standards and To Be Considered

There are no changes to note. The standards applicable to the remedial actions were met when the remedial action was conducted.

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

Yes. The institutional controls called for in the September 28, 2007 ESD have yet to be implemented.

VIII. Issues

Table 2 lists issues for the Taylor Borough site.

Table 2: Issues List

Issue	Currently Affects Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
Implement Institutional Controls	N	Y
Site signs are faded and illegible	N	N
Subsidence due to erosion was noted in one area of the cap which has led to drainage issues	N	Y
Excess vegetation has covered the interior access road and has overgrown inside the fenced area and drainage structures	N	N

IX. Recommendations and Follow-Up Actions

Table 3 lists the recommendations and follow-up actions for the Taylor Borough site.

Table 3: Recommendations and Follow-Up Actions List

Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Y/N)	
					Current	Future
Institutional Controls	Place Institutional Controls on affected parcels	City of Scranton	EPA	09/2010	N	Y
Site signs are faded and illegible	Replace signs	EPA		12/2008	N	N
Subsidence due to erosion was noted in one area of the cap which has led to drainage issues	A geotechnical engineer has evaluated the cap and protective measures are being designed to improve drainage	EPA		12/2008	N	Y

Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Y/N)	
					Current	Future
Excess vegetation has covered the interior access road and has overgrown inside the fenced area and drainage structures	Cut the excess vegetation within the fenced area and drainage structures and resurface the access road after removing excess vegetation	EPA		12/2008	N	N

X. Protectiveness Statement

The remedy for the site is protective of human health and the environment in the short-term because there is no evidence that there is current unacceptable exposure to site contaminants. Contaminated soil, drums and drum shards were removed, and a soil cover was placed over the remediated areas. A fence is in place to protect the soil cover, and signs are posted to prevent trespass.

Groundwater in the area is not used for drinking water because extensive mining operations have affected the yield and quality of the aquifer. Long term protectiveness is expected to be achieved once the institutional controls for the site are put in place.

XI. Next Review

The next Five-Year Review for the Taylor Borough Superfund Site is required by September 2013, five years from the date of this review.

Table 4
Applicable or Relevant and Appropriate Requirements to be considered for the Taylor Borough Dump Superfund Site

<i>Soil</i>	<i>Comments</i>
25 PA Code Chapter 260. Establishes criteria in determining whether soils and treatment residuals are subject to RCRA hazardous waste regulations.	ARAR met when remedial action was completed.
25 PA Code Chapter 262 Subpart A. Establishes criteria to determine whether soils and treatment residuals are subject to RCRA hazardous waste regulations.	ARAR met when remedial action was completed.
25 PA Code Chapter 262 Subparts B and C. Establishes requirements for a generator who treats, stores, or disposes of hazardous waste, including packaging, labeling, manifesting, and record keeping requirements.	ARAR met when remedial action was completed.
<i>Groundwater</i>	<i>Comments</i>
40 C.F.R. Part 264 Subpart F. Requires groundwater monitoring after closure of a hazardous waste facility.	Conditions at the site do not ideally fit the RCRA regulations because the complex natural geology, strip mining, deep mining and landfilling have altered natural flows and dewatered natural aquifers such that it is technically impracticable to satisfy the details of the RCRA groundwater monitoring regulations. The groundwater monitoring program established in the ROD satisfies this requirement given the conditions of the site. The five years of monitoring specified in the ROD have been completed and EPA concluded that no further groundwater monitoring was necessary for the Site.

