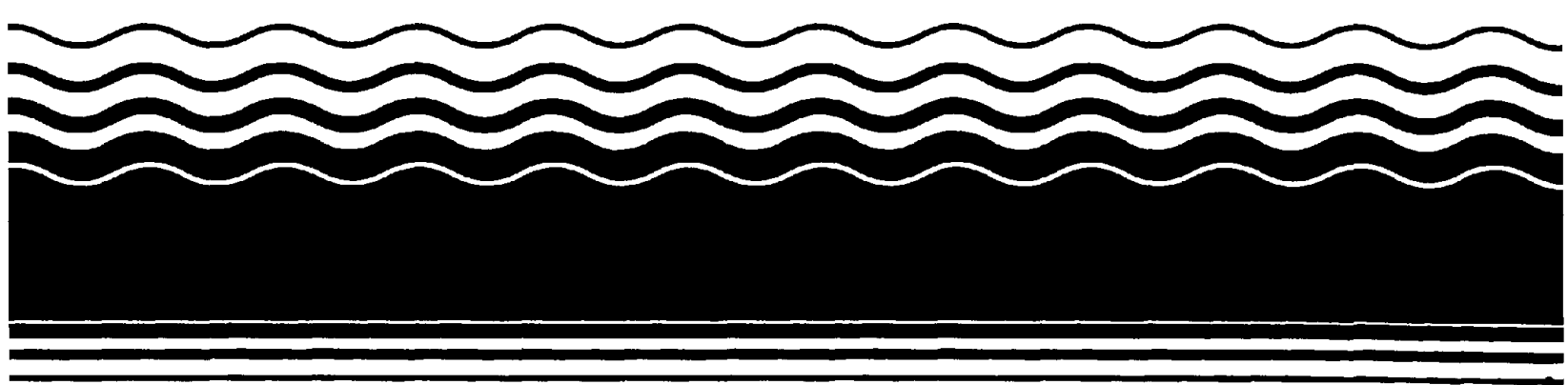


**PB98-963110
EPA 541-R98-042
September 1998**

**EPA Superfund
Explanation of Significant Difference
for the Record of Decision:**

**Osborne Landfill (ROD #1)
Grove City, PA
8/24/1998**



**EXPLANATION OF SIGNIFICANT DIFFERENCES
OSBORNE LANDFILL SUPERFUND SITE**

I. INTRODUCTION

SITE NAME: Osborne Landfill Superfund Site

SITE LOCATION: Pine Township, Mercer County Pennsylvania

LEAD AGENCY: U.S. Environmental Protection Agency,
Region III ("EPA" or the "Agency")

SUPPORT AGENCY: Pennsylvania Department of Environmental
Protection ("PADEP")

Statement of Purpose

This explanation of Significant Differences ("ESD") is issued in accordance with Section 117 (c) of the Comprehensive Environmental Response, Compensation and Liability Act, as amended ("CERCLA"), and is now a part of the Administrative Record for the Osborne Landfill Superfund Site ("Site"). This document explains significant differences to the remedy selected in the Record of Decision ("ROD") for the Site signed by the Regional Administrator on September 28, 1990. This ESD makes changes to the ROD previously issued, which is attached as Exhibit 1.

**II. SUMMARY OF THE SITE HISTORY, SITE CONDITIONS, AND SELECTED
REMEDY**

The Osborne Landfill Site is located in Pine Township, Mercer County, Pennsylvania. Located less than one mile east of Grove City, Pennsylvania, the Site encompasses approximately 15 acres along the East Pine Street extension. Strip mining was conducted at the Site during the 1940s prior to disposal of wastes in the strip mine pit. To the north of the Site are woodlands. Farmland is present to the east and southeast across the East Pine Street Extension. A large shallow pond is located just west of the Site and considered to be a federally protected wetland. Another wetland is situated south of the Site on both sides of the East Pine Street Extension. The immediate Site area is sparsely populated. Most of the residential homes near the Site, are located along Enterprise Road, which is approximately 1/4 mile north of the Site, and to the east on Diamond Road. Homes along Enterprise Avenue and Diamond Road previously used ground water, but Cooper Industries extended the municipal water line around the eastern

perimeter of the Site and connected any resident, near the water line, who was willing to accept the connection.

Fill material was deposited into the strip pool at the base of the highwall from the late 1950s to 1978, when the Site was closed by the Pennsylvania Department of Environmental Resources (PADER) now known as the Pennsylvania Department of Environmental Protection (PADEP) for not having a permit to accept wastes. A wide array of wastes were disposed which contained metals, volatile organic hydrocarbons, semi-volatiles and PCBs. The primary waste by volume was foundry sand.

Several Remedial Investigations have been conducted at the site. The investigations have focused on the fill area, the wetlands to the southwest of the site, the Clarion Aquifer/Mine Void system, the Homewood Aquifer System and the deeper Connoquenessing and Burgoon Aquifers. These investigations documented contamination in the fill above EPA's action levels. These investigations also documented contamination of ground water in the Clarion Formation with vinyl chloride above Maximum Contaminant Levels ("MCLs") allowed by the Safe Drinking Water Act. The wetlands to the southwest did not contain contaminants at levels of concern.

The first ROD (ROD#1) which was issued in September of 1990 selected installation of a slurry wall around the perimeter of the site, and a clay cap to prevent infiltration into the fill. To prevent leachate from leaving the fill, extraction wells were installed in the fill to remove leachate and to produce an inward hydraulic containment. The collected leachate is treated by a iron and manganese removal system, air stripping and carbon adsorption. The treated leachate is injected into the mine pool to the east of the site.

ROD#1 also selected pump and treatment as the remedy for contaminated ground water in the Clarion Aquifer. ROD#1 contained several institutional controls which EPA will modify or clarify in this ESD. Page 48 of ROD#1 states: "Institutional controls such as deed restrictions and local ordinances would be used to help reduce exposure to the site. These restrictions, for the most part, would not allow the site to be used for any purpose. The State of Pennsylvania requires a restriction on mining or mineral removal within one half mile of the site. A prohibition on new wells located within one half mile of the site would prevent exposure to high levels of vinyl chloride present in the Clarion Formation. A fence will restrict access to the site and additional warning signs near the entrance gate would also be posted. Post-closure use of the property [the capped area] must be restricted indefinitely."

During the design phase, field work showed that it was not possible to remediate the Clarion Aquifer as described in ROD#1. Aquifer response tests performed during the Remedial Design indicated that reasonable ground water capture zones could not be created by extraction wells placed in the Clarion Aquifer. Instead, very narrow columns of water would be drawn from the more contaminated mine pool into the Clarion sandstone aquifer. At that time, EPA was also conducting an investigation of the deeper aquifers at the site, which are in communication with

the shallow aquifer. Therefore, EPA decided to wait until the investigations were completed, so that an implementable ROD for all site ground water could be issued. The second ROD (ROD#2) issued on December 30, 1997 addressed all site ground water and the wetlands to the southwest of the site. The wetlands had not been impacted by site contaminants and EPA selected "No Action" for the southwest wetlands. EPA selected "Natural Attenuation with Monitoring" for the contaminated Clarion aquifer and three years of ground water monitoring for the deeper uncontaminated aquifers at the site.

All construction at the site has been completed. The leachate treatment system has operated since January 1996 and has drawn the water level down inside the slurry wall containment producing an inward pressure gradient for the Clarion Aquifer, as measured by the performance wells. The lowered water level in the containment has generally produced an inward gradient between the Homewood Aquifer and the fill, however two wells have not responded as expected. The performance wells H3 and H4 indicate that there is not an inward gradient at the southern end of the site along the Pine Street extension. There were several possibilities that could have produced this problem: 1) Remedial Design studies indicated that the clay confining layer was missing at the southern end of the site. The strip mine pit did not extend to the southern end of the site, and the extraction well farthest to the south is in natural geological materials of much lower permeability. This lack of clay could reduce the pressure gradient due to pumping. 2) A limited section of the slurry wall near the Pine Street extension was produced in two phases. The slurry wall was constructed to the required depth, and the area above the slurry wall was backfilled and compacted to the final elevation. The shallow section of the slurry wall was then constructed and keyed into the deeper segment. If this was not done properly, water could flow into the containment through "windows" in the slurry wall reducing the gradient across the wall. 3) The yield from the extraction wells at the southern end of the site are relatively low. EPA considered that additional extraction wells in this area might be needed.

EPA asked Cooper Industries to analyze the available information and to try to determine the cause for the lower gradient. This analysis was included in a report titled: "Performance of OUI Remedial Action, Osborne Landfill, March 17, 1998". The report shows that the problem is not related primarily to leakage into the containment. The gradient between the fill and the Clarion Aquifer is adequate. The water levels in the fill have dropped, but the pressure in the Homewood Aquifer has dropped faster. When Cooper industries shut down one of the extraction wells at the Site (EX-8), within one and one half hours, the Homewood Aquifer water level recovered more than three feet. The report from Cooper Industries suggests that these extraction wells are preferentially drawing water from the Homewood Aquifer rather than the "fill" due to the lack of the clay layer in this area.

III. DESCRIPTION OF SIGNIFICANT DIFFERENCES

Subsequent to the issuance of the past ROD for the fill area, EPA has determined that minor changes should be made to the remedy set forth in the ROD. These changes are identified

as Significant Differences and do not constitute a ROD amendment, as that term is used in 40 C.F.R. Section 300.435(c)(2)(ii), to the ROD. The Significant Difference between the remedy presented in the ROD and the change to the ROD that will be implemented is explained below. Except to extent changed by the sections below, all of the terms of the ROD remain in effect.

Institutional Controls

This ROD states: "Institutional controls such as deed restrictions and local ordinances would be used to help reduce exposure to the site. These restrictions, for the most part, would not allow the site to be used for any purpose. The State of Pennsylvania requires a restriction on mining or mineral removal within one half mile of the site. A prohibition on new wells located within one half mile of the site would prevent exposure to high levels of vinyl chloride present in the Clarion Formation. A fence will restrict access to the site and additional warning signs near the entrance gate would also be posted. Post-closure use of the property [the capped area] must be restricted indefinitely."

EPA no longer considers the institutional control on any new wells within one half mile of the site to be necessary. The extent of contamination is understood and except for the Eickmann residence the plume is limited to the lot (203 on local tax map) which contains the landfill. The Eickmann residence has been connected to the public water line and EPA believes that contaminant levels in the aquifer will decline to below MCLS within five years. Homes near the plume have access to public water and EPA will continue to monitor selected wells to make sure that contaminant levels continue to decline and that the public is protected. Additionally, placement of numerous deed restrictions on the properties of innocent landowners around the site would be administratively difficult if not impossible. It is, however, appropriate to prevent installation of new wells on Lot 203 which contains the plume. This action is also administratively possible because the operator of the property is the respondent to a Unilateral Order which requires implementation of the remedy. Installation of a deed restriction on Lot 203 is part of the remedial action required by the ROD and this ESD.

EPA also is taking this opportunity to clarify the scope of the very general description of institutional controls listed above. 1) The area subject to the use restriction is the capped area which may not be used because damage to the cap could occur. The ancillary aspects of the cap such as the drainage collection structures may also not be disturbed. Areas that are outside the actual remedy, but inside the fenced area may be used after all performance standards are met. 2) The institutional control on mining and mineral removal was required by the Commonwealth of Pennsylvania and would be enforced by the Commonwealth. Anyone contemplating mining or mineral removal would have to apply for a state permit, and the PADEP has the ability to refuse the permit. EPA has no direct authority over mining and mineral removal and would need to seek state assistance. Therefore, EPA believes that the enforcement of this ARAR is more properly performed by the Commonwealth of Pennsylvania.

Method Detection Limits versus Practical Quantitation Levels (PQLs)

At the time that the Record of Decision for Operable Unit 1 was issued, the Commonwealth of Pennsylvania required cleanup levels for ground water to be set at background levels. At that time, many if not most RODs were using the method detection levels ("MDLs") listed in EPA's Central Regional Laboratory for method 524.2. These MDLs were used as cleanup levels in the Operable Unit 1 ROD. For example, the cleanup level for vinyl chloride in leachate was set at 0.2 ppb. This level of detection is not commercially available and the best that current labs can obtain is 1 ppb. EPA is not changing the performance standard for the cleanup of leachate, but wishes to document that actual cleanup levels (ie. Not Detected) will be based on commercially available Practical Quantitation Levels ("PQLs") not MDLs.

Performance Standard - Measurement of Water Levels

The Operable Unit 1 Record of Decision performance standard section required establishment of an inward gradient of one foot of pressure head between both the Clarion Aquifer and the fill area, and between the Homewood Aquifer and the fill.

The aquifer of primary concern to EPA is the Clarion Aquifer because contaminants had been shown to migrate from the fill to the Clarion Aquifer. Although EPA was concerned about the Homewood Aquifer, significant contamination was not found in any of the past remedial investigation sampling events. Some sporadic detections of low levels of volatile organics occurred during the Remedial Investigation conducted by NUS during the late 1980's. Those wells were resampled during the most recent investigation and significant contamination was not found. In summary, even when contamination in the leachate associated with the fill was high, the Homewood Aquifer was not experiencing significant contamination. More recently, contamination in the leachate within the slurry wall containment has decreased dramatically. Currently, only two compounds (vinyl chloride and DCE) are above MCLs. EPA concludes that there is not currently a significant risk to the Homewood Aquifer from the leachate in the fill. EPA established the inward gradient requirement for the Homewood Aquifer as a precautionary measure.

Two wells near the southern end of the Site have not shown an inward gradient. This may be simply due to the method of measuring the gradient as explained above, or there could be an area of the landfill where an inward gradient has not been achieved with respect to the Homewood Aquifer. The leachate inside the containment is approaching MCLs. Even when the leachate associated with the fill was grossly contaminated, the Homewood Aquifer was not significantly contaminated. This suggests minimal risk to the Homewood Aquifer from the leachate. The aquifer of concern was the Clarion Aquifer and an inward gradient has been accomplished across the landfill with respect to this aquifer. EPA considers the current Remedial Action to be adequate and will not require an inward gradient for Homewood Aquifer performance wells 3 and 4. Cooper Industries is required to maintain an inward pressure gradient of one foot of water with respect to the Clarion Aquifer. Cooper Industries is also

required to maintain the given extraction rates unless hydrological conditions occur which prevent this. In that instance, Cooper Industries must demonstrate to EPA's satisfaction that the system is achieving the maximum extraction rate for the existing system and conditions.

Water Treatment Plant

The Record of Decision required treatment of extracted leachate by equalization, pH adjustment/chemical precipitation, clarification, sand filtration and carbon adsorption. The pH/chemical precipitation goal was achieved by the use of a green sand filter and permanganate addition, so that iron and manganese would be removed. Simple pH adjustment would have been inadequate to remove the iron and manganese to acceptable levels. The effluent is meeting MCLs for metals as required by the ROD. An addition to the treatment train was a low profile air stripper to remove VOCs. This was necessary because vinyl chloride was found in the influent and carbon adsorption is ineffective for the removal of this contaminant. At the time the ROD was issued, the PADEP identified an ARAR for air emissions which was applicable to the air stripper. The ARAR (Chapter 127 of the Commonwealth of Pennsylvania's Air Quality Regulations) requires the use of Best Available Technology for air emissions control. Because air emissions were so low, Cooper Industries petitioned the PADEP to allow them to discharge the air from the stripper without treatment. The PADEP granted Cooper Industries' request and EPA has placed the documentation of PADEP's review and approval in the Administrative Record.

IV. PUBLIC PARTICIPATION

This ESD and the information upon which it is based have been included in the Administrative Record file for this site. The Administrative Record also includes both RODs for the site and all documents that formed the basis for EPA's selection of the Remedial Actions for the Site. The Administrative Record is available for public review at the locations listed below:

U.S. EPA, Region III
1650 Arch Street
Philadelphia, PA 19103-2029

and

Grove City Community Library
125 West Main Street
Grove City, PA 16127

Questions and comments on EPA's action and requests to review the Administrative Record can be directed to:

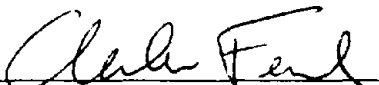
Frank Vavra
Remedial Project Manager
Mail Code: 3HS22
U.S. EPA, Region III
1650 Arch Street
Philadelphia, PA 19103-2029
(215) 814-3221

VI. SUPPORT AGENCY REVIEW

The Pennsylvania Department of Environmental Protection has concurred with the proposed changes to the remedial action in the proposed Explanation of Significant Differences in a letter dated July 29, 1998.

VII. AFFIRMATION OF STATUTORY DETERMINATION

Considering the new information that has been developed and the changes that have been made to the scope of the selected remedy, the EPA and PADEP believe that the revised remedy remains protective of human health and the environment, complies with the Federal and State requirements that are applicable or relevant and appropriate to this remedial action, is cost effective. In addition, the revised remedy utilizes treatment technologies that permanently and significantly reduce the toxicity, mobility, or volume of the hazardous substances to the maximum extent practicable for this site.


Abraham Ferdas, Director
Hazardous Sites Cleanup Division

8/24/98
Date