US Army Corps of Engineers ®
Louisville District

EPA United States Environmental Protection Agency | waste management division | Region 4 serving the southeast

Superfund 3rd Five-Year Review Report
Smith's Farm Landfill
Brooks, Bullitt County, Kentucky

Leachate Treatment Plant

View Across OU1 Landfill Cap

Granulated Activated Carbon Vessel-Polishing

Effluent Release Point

Prepared For:
U.S. Environmental Protection Agency, Region IV

Prepared By:
U.S. Army Corps of Engineers, Louisville District

September 2006

Third Five-Year Review Report

Final

Smith's Farm Landfill

Brooks, Bullitt County, Kentucky

September 2006

Prepared by

US Army Corps of Engineers, Louisville District

for

United States Environmental Protection Agency

Region IV

Atlanta, Georgia

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site name: Smith's Farm Landfill	EPA ID: **KYD097267413**	
Region: **04**	State: **Kentucky**	City/County: **Brooks, Bullitt**
SITE STATUS		
LTRA* (highlight): Y **N**	Construction completion date: **9/98**	
Fund/PRP Lead: **PRP**	NPL status: **since 06/10/86**	
Multiple OUs? **Y** N (but combined influent flows to treatment plant for single remedy)	Recycling, reuse, redevelopment site (highlight): Y **N**	
Remedy Status: **Implementation Complete and treatment plant is operational. There are some recommendations made to issues identified during this review.**		
REVIEW STATUS		
Lead agency: **EPA, Region 4**		
Who conducted the review (EPA Region, state, Federal agencies or contractor): **Kari Meier, Chemist and Richard Kennard, Geologist, of the US Army Corps of Engineers, Louisville District**		
Dates review conducted: From: **3/01/06** To: **7/30/06**	Date(s) of site visit: **3/16/06**	
Whether first or successive review: **Third 5-year Review, 2006**		
Circle: **Statutory** Policy	Due date: **28 Sept 2006**	
Trigger for this review (name and date): **Five years from the 2001 5-year review.**		

Issues:

Some issues were identified. See attached report Section VIII: Current Issues and Recommendations.

Recommendations:

Recommendations are listed in the attached report, Section IX: Recommendations.

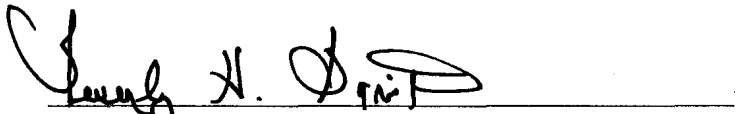
Protectiveness Statement(s):

The remedy at the Site currently protects human health and the environment because the landfill cap is in tact, the leachate treatment system is effective and all residents in the vicinity obtain water from the city, thus eliminating the exposure pathways relative to surface soils, surface water and leachate water. However, in order for the remedy to be protective in the long-term, groundwater monitoring data must be reported and evaluated to ensure that the remedy prevents migration of hazardous substances offsite within groundwater.

Other Comments:

The deficiencies noted during this review are not immediate threats to the protectiveness of the remedy. Once these items are investigated and corrected, long-term protectiveness, operation, and site safety will be improved.

Signature of EPA Regional Administrator or Division Director, and Date



Beverly H. Banister, Acting Director for the Waste Management Division

9/20/06
Date

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ARARs	Applicable or Relevant and Appropriate Requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
GPM	Gallons Per Minute
HASP	Health and Safety Plan
KDEP	Kentucky Department of Environmental Protection
KDWM	Kentucky Department of Waste Management
MCL	Maximum Contaminant Level
MSL	Mean Sea Level
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
RAL	Risk Action Level
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
USACE	U.S. Army Corps of Engineers

EXECUTIVE SUMMARY

The third five-year review of the Smith's Farm Landfill, a Superfund Site in Brooks, Bullitt County, Kentucky State, was initiated 16 March 2006 with a joint site visit by representatives from the U.S. Army Corps of Engineers, Kentucky Department of Natural Resources, MACTEC Engineering and Consulting, Inc., Ford Motor Company, and the U.S.Environmental Protection Agency. The site visit and the results of the combined annual reviews since the 2001 five-year review indicate that the remedy is currently protective of human health and the environment.

There are two operable units (OU1 and OU2) at Smith's Farm. The wastes from the leachate from these two units are channeled to a single leachate treatment system. All elements of the remedy for the site have been completed; the only on-going actions at the site are operations and maintenance activities intended to maintain the integrity of the remedy, and long-term monitoring to evaluate the effectiveness of the remedy. Review of these operable units and facilities revealed the leachate treatment system and landfill cap remedial actions were functioning as designed, and are maintained in an appropriate manner. Deficiencies noted in the previous 5-year review and subsequent annual reviews have been or are currently being adequately addressed. No major issues are currently identified in the treatment system. Minor, low cost issues include vandalism and trespassing on the site by the local community.

The protection of human health and the environment by the remedial actions at the site are discussed below. Both the Health and Safety Plan and the Operation and Maintenance Plan are in place, sufficient to control risks, and are properly implemented.

SMITH'S FARM LANDFILL
EPA ID: KYD097267413
THIRD FIVE-YEAR REVIEW REPORT

I. INTRODUCTION AND PURPOSE

A. General

The present document delivers findings from the third Five-Year Review for the Smith's Farm Landfill, conducted March 2006, and is successive to the first Five-Year Review conducted in 2001. During March and April, 2006, the U.S. Army Corps of Engineers, Louisville District (USACE), on behalf of the U.S. Environmental Protection Agency, Region 4 (EPA), conducted a review of the remedy implemented at Smith's Farm Landfill in Brooks, Bullitt County, Kentucky. This report documents the results of that review. The purpose of Five-Year Reviews is to determine whether the remedial action is or will be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, any deficiencies identified during the review will be presented, along with recommendations to address them. This five-year review follows guidance issued by EPA 540-R-01-007, June 2001.

B. Authority

This review is required by statute. Section 300.430(f)(4)(ii) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300, implements Section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. 9601 et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA)). The statute requires five-year reviews "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 five-year review requirement in the NCP applies only to Records of Decision (RODs) adopted after SARA (i.e. after October 16,1986). Such reviews are referred to as "statutory reviews". Statutory reviews must continue at least every five years until contaminant levels allow for unlimited use and unrestricted exposure.

II. SITE CHRONOLOGY

Table 1 lists the chronology of events for the Smith's Farm Landfill site.

III. BACKGROUND

A. Site Location

The Smith's Farm Landfill is located in Brooks, Bullitt County, Kentucky, approximately 12 miles south of Louisville, Kentucky (Figure 1). The site is located within the Brooks, Kentucky USGS 7.5 Minute Topographic Quadrangle; its approximate coordinates are 38.0375˚ Latitude and 85.733331˚ Longitude.

B. Site Description

The 460-acre Smith's Farm Superfund Site is a former hazardous waste disposal area located in Brooks, Bullitt County, Kentucky. Land use in the area is predominantly rural residential, with areas of deciduous forest around the entire site. The site borders forested hills to the north, east, and west and a residential area to the south. In addition, intermittent streams flow along the north-central portion of the site and drain into the Unnamed Tributary of Bluelick Creek (Figure 2) and, subsequently, into Floyd's Fork. The site includes an 80-acre area that was used for un-permitted disposal of drums containing hazardous waste for a period of approximately 30 years. It also includes a 37.5-acre landfill that was permitted by the State for the disposal of inert industrial waste from 1973 to 1989; however, the landfill had been used for disposal of industrial waste since the 1950s. The disposal activities in both areas of the site have resulted in contamination of onsite environmental media.

C. Site History

The Smith's Farm property is very hilly and not suitable for farming or forestry; the hills have steep-sloped sides with little flat area between. The proximity of industries in and around Louisville, and the need of those industries to dispose of their wastes cost-effectively, resulted in the un-permitted and permitted disposal of industrial and commercial wastes in two (2) major areas and several smaller areas at the Site. Some of the Site's ravines served as disposal "ditches" for construction debris, old household appliances, auto bodies, unsalvageable metallic industrial equipment, used tires, used drums, drummed wastes, and un-containerized liquid and solid wastes. The 37.5-acre landfill area, which was composed of a hilly ridge with a ravine on each side, was permitted by the Commonwealth of Kentucky to accept inert industrial wastes from November 1973 to May 1989, although the landfill area had industrial waste placed in it since the 1950. The permit was not in effect continuously and several violations had occurred. The landfill was operated by the property owner, Mr. Leonard O. Smith, Sr., until his death in 1969, and by his son, Harlan Smith, until his death in 1978. The current landfill and property owner is Mrs. Mary Ruth Smith, whose nephew, Buddy Mobley, has operated the landfill.

In 1984, following several inspections by USEPA and Commonwealth regulatory personnel, an immediate removal of surface drums, which contained hazardous waste, from the un-permitted disposal area was conducted by USEPA. The Smith's Farm Site was added to the National Priorities List in June 1986.

During the 1980' s, the landfill owner contracted for the installation of a small leachate collection and recirculation system at the landfill at the insistence of the Commonwealth. Leachate lines of perforated plastic pipe were installed in ditches at the overburden/bedrock interface on the southeastern and southern sides of the landfill. The collected leachate went to a surge/collection tank and then to a large pump from which it was pumped up to the central part of the landfill where it was sprayed onto the surface of the landfill from several vertical plastic pipes. The system was used only intermittently and then, reportedly, was shutdown before the 1990 Remedial Investigation because of air emissions problems and complaints from residents of the mobile home park to the south of the landfill.

Reportedly, also during the 1980's, the landfill operator, in an attempt to dispose of large volumes of scrap wood, set piles of wood debris on fire in the northeast and northwest quadrants of the landfill. Later the operator buried the smoldering wood debris in an attempt to smother the fires. The attempt to smother the fires was not completely successful and over the next few years the operator made subsequent attempts to smother the subsurface combustion by bulldozing the areas. During the 1990 PRP Remedial Investigation, infrared aerial photography indicated thermal anomalies (surface soil temperatures of 75-80 degrees Fahrenheit on a cool morning) existed; one in the northeast and one in the northwest quadrant of the landfill.

In 1988, field activities for the RI/FS were conducted. The RI for the site determined that leachate seeping from the permitted landfill contained several volatile organic compounds (i.e., chlorinated aliphatics, ketones, and monocyclic aromatics) and heavy metals. The unnamed tributary stream sediments were contaminated by extractable organic compounds (i.e., polycyclic aromatic hydrocarbons) and heavy metals attributed to releases from the permitted landfill, as well as the un-permitted drum disposal area. Soil samples collected from a location next to the landfill were also contaminated with extractable organic compounds. The primary contaminants of concern affecting the soil, sediment, ground water, and surface water are: a) VOCs, including benzene, TCE, toluene; b) other organics including PAHs, pesticides, and phenols; and c) metals, including arsenic, chromium, and lead.

The permit for the landfill expired on May 10,1989. The Commonwealth of Kentucky determined that the permit should not be renewed because (1) a completed permit application had not been received (Kentucky Revised Statutes Section 224.855); (2) hazardous substances had been released from the permitted landfill and therefore remedial action to control the release(s) was required (Kentucky Revised Statutes 224.877); and (3) information required in order for the Commonwealth to re evaluate the permit's renewal would be available only through a Site Study comparable to a Superfund Remedial Investigation (401 Kentucky Administrative Regulations 47:020 Section 5).

For remediation purposes, the site has been divided into two Operable Units (OU)s, Figures 2 and 3.

D. Enforcement History

Although OU2 and OU1 were initially treated as a separate phases of the investigation and remediation of the Smith's Farm Site, the enforcement activities for both Operable Units have since been combined. During the summer of 1984 general notice letters and information request letters were issued and the search for potentially responsible parties (PRPS) was initiated. During the spring of 1987, RI/FS special notice letters were issued to the PRPS. A 1984 removal, which was conducted at the area addressed by OU1 by USEPA Region IV Emergency Response authorities, is the subject of an ongoing CERCLA Section 107 cost recovery suit. In March 1990, the Department of Justice (DOJ) on behalf of USEPA filed civil action No. C-90-0232-L(M) against the owner and four (4) other PRPs who sent waste to the Site. On February 7,1992 four (4) of the Defendants filed a CERCLA-based suit against fifty-three (53) other PRPs in U.S. District Court, Western District of Kentucky at Louisville, attempting to recover past, present, and future remediation costs for both Operable Units of the Site. The remediation schedule for the OU1 area

was presented in the Remedial Action (RA) phase under a March 14, 1990 Unilateral Administrative Order (UAO) addressed to thirty-six (36) of fifty-seven (57) PRPs and according to a September 30, 1991 Amendment to the September 29, 1989 OU1 Record of Decision (ROD). The UAO was amended three (3) times to incorporate schedule changes due to the accomplishment of the ROD Amendment.

An Administrative Order by Consent (AOC) for a Remedial Investigation/Feasibility Study (RI/FS) of the OU2 formerly permitted landfill, and proximal Site areas, was signed by only one (1) of fifty-seven (57) PRPs on November 9, 1989. The RI/FS was completed in January 1992. Upon completion of the OU2 ROD, USEPA gave the PRPs an opportunity to perform the remedy. If the PRPs refused to perform the remedy as set forth in the ROD, USEPA had the option to order compliance through a Unilateral Administrative Order (UAO) or to conduct the Remedial Design and Remedial Action utilizing Superfund money and later pursuing the PRPs for cost recovery under CERCLA Section 107. Negotiations were unsuccessful, and the USEPA applied the UAO option. Thereafter, a group of PRPs selected a design and the RD was initiated.

Contaminants identified in these areas include: metals, PAHs, PCBs, and VOCs at OU1 and base neutral acids, metals, nitro-aromatics, PAHs, pesticides, VOCs at OU2.

Table 1 outlines the Smith's Farm Site's remedial history for OU1 and OU2

IV. REMEDIAL ACTIONS

A. Remedy Selection:

The site consists of two operable units that have been combined for remedial action/treatment. Each of them are described below:

1. Operable Unit 1 (OU1), the un-permitted drum disposal area.

A 1989 ROD and a 1991 ROD amendment addressed containment of contaminated soil, sediment, ground water in the surficial aquifer, and drums in the vicinity of the un-permitted drum disposal area, as OU1.

The design of the RCRA Cap and associated components was performed for the 106 Order Respondents in the early 1990' s. Remedial action at Smith's Farm OU1 started in May 1993. A final inspection of the construction was performed on September 12, 1995. This date marks the start of the operation and maintenance phase of the project. On January 17,1996 the final Operation and Maintenance (O&M) Plan was submitted to USEPA Region IV. This plan outlined the ongoing operation and maintenance requirements for the 30-year post-closure period. The operation and maintenance activities for this site include quarterly site inspections, annual site inspections, leachate volume inspections (through October 2000 only), disposal of collected leachate, repairs as required, annual survey of the cap settlement monuments, and annual sampling and analysis of ground water.

2. Operable Unit 2 (OU2), Landfill - used since 1950's, permitted 1973-1989.

The OU2 1993 ROD addressed landfill wastes, leachate, leachate sediment, surface soil, ground water, and surface water associated with the 37.5-acre landfill and other small, outlying areas of contamination onsite. The design of the RCRA Cap and associated components was performed for the 106 Order Respondents in the 1990' s. Remedial action at Smith's Farm OU2 started in July 1996. A final inspection of the construction was performed on January 28,1999. This date marks the start of the operation and maintenance phase of the project. On March 15, 1999 the final O&M Plan was submitted to USEPA Region IV. This plan outlined the ongoing operation and maintenance requirements for the 30-year post-closure period. The operation and maintenance activities for this site include quarterly and annual site inspections, leachate management and treatment, storm event inspections, routine maintenance and repairs, and semi-annual and annual sampling and analysis of groundwater.

The nature and extent of the releases from within the general area of the formerly permitted landfill and the threat to human health and the environment posed by these releases has been determined. The potential for contamination of the deeper ground water by leachate from the OU2 formerly permitted landfill and the OU1 un-permitted drum disposal area has been investigated and has been demonstrated to be insignificant due to the extremely low permeability of the underlying shale geology. Therefore, the deep limestone aquifer is not being addressed by the selected remedy in this Record of Decision.

B. Remedy Operations

As stated above and in the 1993 ROD, OU2 and OU1 were initially treated as separate phases of the investigation and remediation of the Smith's Farm Site, but since then, the enforcement activities for both Operable Units have been combined. The leachate extraction systems for each of these sites pump into a single facility, for combined treatment. Operable Unit One, authorized by the September 29, 1989, Record of Decision, which was amended by the September 29, 1991, Record of Decision Amendment, addressed the contaminated soils, sediments, surficial aquifer, and drums of the eighty (80) acre unpermitted drum disposal area. Operable Unit Two addresses the thirty-seven and one-half (37.5) acre formerly permitted landfill, the aquifers underlying the landfill, and outlying, small areas of contamination. The contaminated media to be addressed by the remedies at both sites are the landfill wastes, the leachate, the leachate sediments, and surface soils.

For both OU1 and OU2, the remedial action objectives are to reduce or prevent the risk associated with direct exposure of humans and fauna to:

- Landfill waste and contaminated on-site surface soils;
- Contaminated, on-site surface waters and groundwaters;
- Contaminated, on-site stream sediments; and
- Contaminated on-site leachate and leachate sediments.

Based on the Remedial Investigations, and Feasibility Study, the selected remedial actions consist of the following components:

- Excavating and consolidating wastes from the small areas of contamination in the landfill;
- Re-contouring and capping the landfill with a RCRA Subtitle C cap with surface drainage controls and a gas control system;
- Excavating and extinguishing the subsurface landfill fire (OU2 only);
- Installing and operating a leachate collection and multi stage treatment system for the shallow ground water;
- Discharging the treated water to the Unnamed Tributary east of the landfill;
- Installing perimeter fencing, lockable gates, and warning signs;
- Monitoring groundwater OU2 wells semi-annually for five (5) years after construction is complete and thereafter annually for a period of twenty-five (25) years; and
- Implementing institutional controls, including deed, ground water, surface water, and land use restrictions.

Cleanup technologies used for these operable units are noted by CERCLIS as follows (http://cfpub.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.ous&id=0402059):

Technologies implemented at OU1 include: Access Restriction, Fencing, Air Monitoring, Alternate Drinking Water, Permanent Replacement, Cap, Consolidate, Decontamination, Deed Restriction, Dehalogenation (BCD), Dehalogenation (Glycolate), Discharge, Disposal, Drainage Ditch, Dust Suppression, Excavation, High Temperature Thermal Desorption, Hot Water or Steam Flushing/ Stripping, Impermeable Barrier, Incineration, Institutional Controls, Land Use Restriction, Leachate Control, Liner, Monitoring, Operations & Maintenance (O&M), Pump And Treat, Residuals Disposal, Revegetation, Slope Stabilization, Solidification/Stabilization, Subsurface Drain, Surface Drainage Control, Waterline Replacement

Technologies implemented at OU2 include: Air Monitoring, Bioremediation Treatment, Cap, Chemical Reduction/Oxidation, Component Separation, Consolidate, Containment, Deed Restriction, Discharge, Disposal, Dust Suppression, Excavation, Filtration, Flocculation, Impermeable Barrier, Institutional Controls, Land Use Restriction, Leachate Control, Liner, Liquid Phase Carbon Adsorption, Monitoring, Nitrate Enhancement, Operations & Maintenance (O&M), Physical/Chemical Treatment, Precipitation, Pump And Treat, Residuals Disposal, Residuals Storage (Temporary), Revegetation, Slope Stabilization, Subsurface Drain, Surface Drainage Control.

C. Remedy Implementation

The remedial design for the site was started by Law Engineering, now MACTEC, in June 1994. The plans called for sediment removal, placement, and consolidation; construction of the landfill cover system, run-on and run-off controls, gas control system, perimeter fence and warning signs; and Gabion wall improvements to the Unnamed Tributary, leachate collection and groundwater interceptor system, and Leachate Treatment Plant. Construction was substantially completed in September 1998.

The remedial actions at the Smith's Farm Landfill were conducted separately for OU1 and OU2.

D. Performance Standards or Goals

The system was designed, and has been operated, to achieve performance standards identified in the ROD. Effluent guidelines and monitoring requirements were established in meetings and correspondence with KDEP. Chemical-specific soil cleanup goals for the excavation of outlying areas of contamination are based on achieving cancer risk levels of 10[- 6], and include PAHs 0.882 mg/kg and pesticides 33.94 mg/kg. Chemical specific cleanup goals for collected leachate and ground water were determined during the remedial design. Discharge limits for treated effluents are to meet the requirements of State and Federal surface water criteria.

Effluent from the system is monitored at the discharge point to the Unnamed Tributary.

E. System Description and Operations

The PRPs have contracted with MACTEC (formerly Law Engineering and Environmental Services, Inc.) to perform overall project management and perform environmental operations and maintenance management activities for the entire site. MACTEC has been the sole O&M contractor for this site to date. The work is being conducted in accordance with the OU2 Site and Treatment Plant O&M Manuals. System description and operations requirements for each component of the site OU2 remedy are described below.

1. Landfill Cover System Description

The landfill cover system at the Site is a composite barrier that was designed and constructed to meet the performance criteria of the ROD. The function of the landfill cover system is to minimize infiltration and maximize clean run-off which will substantially reduce the amount of leachate generated.

Subsequent to placement of waste and contaminated soil within the limits of the landfill, the landfill surface was covered with clean soil fill and terraces formed in preparation for construction of the RCRA-type cap described below.

The ROD required that a RCRA-type cap and cover system be constructed over the limits of the previously permitted landfill. The landfill cover system includes: 1) diversion ditches to divert storm water run-on away from the cap, 2) a groundwater interceptor drain consisting of a geotextile lined, stone filled trench with perforated piping to intercept and divert groundwater away from the landfill, 3) terraces to slow run-off velocities and divert run-off to collection channels, 4) stabilized storm water drainage channels to convey storm water off the cap, and 5) gas vents and gas venting geocomposite to provide controlled gas migration pathways and vent landfill gases.

The purpose of the landfill cover system is to control infiltration of rainwater, to divert surface water from the landfill, and to provide suitable soil in which to develop vegetation. In order to meet these goals, a RCRA-type cover system has been constructed over the former landfill. The system includes mechanisms for surface water management (run-off and

run-on control), groundwater management, landfill gas management, and erosion control. These mechanisms act together to provide a stable and effective means of minimizing the production of leachate within the landfill.

The landfill cover was designed to extend beyond the known edge of waste. However, in several areas, the edge of the RCRA-type cover was advanced to a point past the edge of waste to cover known seeps and to improve constructability. The boundaries of the landfill cover are shown on Figure 2. The landfill airspace has been increased by approximately 100,000 cubic yards to accommodate additional contaminated soil and waste. The increased airspace has been limited to the west side of the landfill.

The RCRA-type cover system which includes the following components was constructed over the landfill (see Figure 4 for typical section through the cover and Type A cover edge):

- Compacted fill - To protect geosynthetic cover materials from irregular surfaces of waste and provide adjustment to existing grades as necessary for positive drainage.

- Geomembrane - To block liquids from reaching waste.

- Geocomposite drainage layer - To remove liquids that percolate from the surface and become trapped above the geomembrane.

- Geosynthetic clay liner- To provide a barrier layer.

- Vegetative soil - To support vegetation and prevent erosion of protective soil layers covering the geosynthetics

Following completion of the cover system, the cap and adjacent areas were seeded and mulched.

a. Landfill Cover Maintenance.

Maintenance of the cover system consists of, but is not limited to, the following tasks: Quarterly inspection of the entire cover system including fences and gates, gas control system, surface water drainage and erosion control systems, leachate collection system, infiltration gallery, and access roads; repair of erosion damage, rebuilding and re-grading of settled areas to include general fill replacement, vegetative layer replacement, settlement monitoring, reseeding, mulching and fertilizing; mowing of cap and adjacent areas.

Results of the inspection, including any maintenance performed or required, are recorded on the Quarterly Inspection and Maintenance Form (Appendix E).

Routine inspections of the cover system and surrounding area provide indications of grass growth thickness and overall health. In areas of limited growth, additional fertilizer is used. As necessary, the cap and adjacent areas are to be fertilized in conformance with the project specification and as required resulting from repairs.

The seed mixture was chosen for its low maintenance characteristics; however, periodic mowing is done by the on site maintenance personnel to maintain a grass cover height of approximately 6 to 24 inches.

The cap and adjacent areas are mowed on a regular basis during the growing season. The grass mowing season usually begins in late April and continues through September. In times of drought and rain, the mowing schedule is adjusted to allow for fewer or additional mowings as the weather dictates.

There are obstacles at the Site which must be avoided during mowing operations. The obstacles include:

- Gas venting system risers, and
- Groundwater monitoring wells

The cap is inspected for burrowing animal dens on a quarterly basis.

The cap is inspected for tree saplings and other vegetation that could damage the integrity of the cover system. The inspections are performed quarterly. Maintenance personnel remove as many of the trees and shrubs as possible, including the root system during inspections and prior to mowing. The site is inspected quarterly for erosion damage. Erosion that occurs on the capped area is repaired according to the specifications detailed in the design documents. Repairs to other areas are evaluated to determine the required repairs.

b. Improvements since Construction

During the first five-year review period following start of construction of OU2, several improvements were made, problems encountered and the corrective actions taken, modifications/additions to the design of the LF cap, leachate collection and transmission, leachate treatment, and disposal system.

As a result of severe rain storms in 1999, a number of erosion repairs were necessary on both OU1 and 2 caps. The more urgent of the repairs were completed in June of that year. Repairs included replacing soil and reseeding in numerous areas on both caps; replacing soil and gravel within the roadway to OU 2 cap; removing soil, gravel and riprap for the roadway ditches and cleaning out the culverts. Primary modifications to the landfill cover system relate to the surface water drainage system. In calendar year 2000, the construction of drainage improvements on the landfill cap and adjacent areas of Operable Unit Two (OU 2) was completed. The work included:

- Installation of textured HDPE geomembrane for lining of downdrains to toe of landfill slope;
- Construction of concrete-filled cellular confinement system for lining of lower section of downdrains 3 and 4;

- Improvements to designated portions of upper section of main drainage way (MDW), including removal of existing riprap and debris, placement of fill in erosion gullies, re-grading of the MDW, installation of turf reinforcement matting (TRM), and seeding;

- Placement of select soil fill and installation of TRM to repair erosion gullies on the surface of the landfill cap and terraces, including terrace entrances to downdrains and ditches as indicated;

- Re-grading of MDW at access road crossing and construction of concrete-filled cellular confinement system;

- Reconstruction and relining of the southern section of the MDW and adjacent ditch including removal of existing riprap ditch lining and rock structures (rock check dam/spillway and Gabion energy dissipater), placement of soil fill, re-grading of the ditches, re-grading of adjacent slopes, and construction of concrete-filled cellular confinement system for lining of MDW and adjacent ditch;

- Reconstruction of drainage ditch on north side of the landfill cap access road;

- Reconstruction of drainage ditch on south side of the landfill cap access road;

- Repair of landfill cap access road from paved road to top of southwest slope, including placement of specified dense graded aggregate mix for filling of erosion gullies and resurfacing of the road (Photos 10, 11), re-grading of the road surface, (including crowning of road), placement of select soil fill and re-grading of areas adjacent to road, and application of asphalt prime and seal coats;

- Reconstruction of southeastern runoff ditch;

- Reconstruction of drainage ditches in the upper northeast section of the landfill cap;

- Reconstruction of the lower northeast perimeter drainage ditch;

- Repair of access road in the northern upper area of the landfill cap;

- Reconstruction of a defined section of the existing Gabion wall on the west bank of the creek and placement of concrete grout in eroded areas beneath the Gabion wall;

- Removal of accumulated sediment from inside the triple and double culverts under the paved road; and

- Excavation and removal of accumulated soil, rock and vegetation from the various drainage channels and drainage structures.

2. Surface Water and Storm Water Controls

The function of the surface water and storm water controls designed for the cap is to regulate surface water run-on and run-off to, and from, the site during all rain events. The proper operation and maintenance requirements of surface water controls are a major part of the Site O&M Plan.

The purpose of surface water management at the site is to reduce the amount of storm water that makes its way to the landfill waste and to provide stable and adequate conveyance for storm water removal from the site. Therefore, surface water control systems for the site have been established to divert storm water from the surface of the RCRA-type cap and direct it to existing drainage ways. Existing drainage patterns have been maintained wherever possible.

Surface water control systems are shown on Figure 5, Surface Water Drainage/Erosion Control Plan. Design flow is based on the 24-hour, 50-year storm event with a 1.5 factor of safety. This standard has been applied to conveyance structures on and adjacent to the cap, but not to previously existing structures and conduits.

Prior to initial grading activities, interceptor ditches were constructed along the west and north perimeters of the landfill (Ditches 9-10 and 18-19). These ditches were lined with turf reinforcement matting to control erosion and will divert run-off from both the cap and areas outside of the cap to the Unnamed Tributary to the east and to an existing drainage way to the southwest. Additional ditches were constructed south of the southern access road to the cap (Ditch 1-2) and along the south side of the cap (Ditches 3-4 and 4-5). These ditches were also lined with turf reinforcement matting. On the cap surface, collector ditches (Ditches 6-7 and 8-7) carry surface water run-off from the west side of the cap south to the south perimeter ditch. The collector ditches were redesigned during construction due to the modified slopes resulting from revised final grading for increased air space. Turf reinforcement matting and energy dissipaters constructed of stone-filled Gabion baskets were also added to protect portions of the channel affected by slope transition until the sod became established.

On the east side of the cap, surface water flows easterly to the 3H:IV side slopes. Terraces on the side slopes direct the flow to sodded letdown ditches. The sodded letdown ditches carry the flow down the slopes and discharge into run-off ditches (Ditches 11-12 and 21-22) or directly to the Unnamed Tributary. The run-off ditches are lined with turf reinforcement matting and re-vegetative matting, respectively.

In addition, a perimeter toe drain collects water from the cover drainage geocomposite. The toe drain is placed along the south and east sides of the landfill and discharges to the surface ditches.

Improvements have been made to the Unnamed Tributary to ensure that it has capacity for the 24-hour, 100-year storm event.

a. Erosion Control.

The establishment of adequate vegetation is the primary means controlling erosion of the completed landfill cover. Appropriate fertilizer, seed, and mulch have been applied to the final cover as necessary to establish vegetation.

Erosion control measures have been established to protect channels and outlets from the long term high velocities expected due to the steepness of the site. Erosion control for these areas include various ditch lining materials, such as turf reinforcement matting, revegetative matting, and sod; outlet control structures (generally riprap); and Gabions to protect the channel bank of the Unnamed Tributary.

b. Groundwater Diversion.

In areas where the ground surface slopes toward the landfill boundary, a groundwater interceptor drain has been established consisting of a perforated HDPE pipe in a gravel trench. These areas occur along the south, west, and extreme north limits of the landfill as shown on Figure 6, Leachate Collection Plan. The groundwater interceptor discharges at the ground surface at two points: the extreme northeast and southeast corners of the landfill. The discharge points are protected by riprap aprons.

During the construction phase, approximately 1,000 feet of the groundwater interceptor was eliminated on the southwest side of the landfill as excavation of road cut for landfill access showed the last 1,000 feet to be unnecessary due to dense shale in the area. The groundwater interceptor now discharges to the perimeter storm water collection ditch at a higher elevation.

Maintenance to the surface water and storm water controls consists of the following tasks:

- Quarterly inspection of drainage channels and berms, repair or replace as necessary. The Quarterly Inspection and Maintenance Form (Appendix E) is used to record the results of the inspection.

- Repairs include, but are not limited to, removal of debris, saplings, trash, and silt build-up from channels, replacement of rip-rap and rebuilding of diversion berms.

3. Passive Gas Venting System

The purpose of the composite cover system is to minimize the movement of liquids into the waste, however, composite cover systems may also trap gases formed under the cover by the

natural decomposition of organic materials or from volatilization or chemical change of other contained wastes.

A passive gas venting system has been designed and constructed in the cover system to prevent damage to the cover. The system consists of vents located in the interior of the landfill to release the majority of the accumulated gases and around the perimeter of the landfill to prevent gases from migrating off-site through the subsurface. In addition, a geocomposite was placed beneath the geosynthetic clay liner along the terraces within the landfill limits and in other areas to aid in the movement of gas towards the vents.

Gases which migrate towards the surface will migrate to the vents and be released to the atmosphere. The vents are spaced at approximately one per acre. Vent spacing has been determined, in part, by locations of proposed terraces. Where possible, vents were constructed on terraces, near the front edge, for ease of access. The approximate location of the gas vents are shown on Figure 7, Gas Control Plan. See also Photo 9 for a typical installation.

Limited maintenance is conducted on the passive gas collection system. Vents are inspected for damage and clogged, exposed piping; ponded surface water or vegetative soils settlement; and conditions of surrounding vegetation, however, MACTEC and the operator indicated that no methane readings have been, or are currently, collected and recorded.

4. Leachate Collection, Extraction, and Transmission System

A perimeter leachate collection trench was constructed during the RA to collect leachate generated within the landfill. In addition, five leachate extraction wells were constructed within the landfill to collect leachate in suspected low points. Both the perimeter leachate collection trench and extraction wells direct the leachate to a lift station constructed for pumping the leachate to the treatment plant. The function of the leachate collection and conveyance system is to collect and convey the leachate from the extraction wells and seep locations along the toe of, and within both the OU1 and OU2 landfills.

Extending from the southwest corner of the landfill to the northeast corner of the landfill is a perforated 6-inch diameter high density polyethylene (HDPE) leachate collection line. The leachate collection line rests in a 2-foot wide trench extending at least 3-feet into shale. The leachate collection line is surrounded by non-calcareous stone which is wrapped with geotextile. Leachate emanating from the landfill is collected by this line and flows by gravity into a 6" x 10" dual-contained HDPE pipe where it flows by gravity to the leachate lift station where it is pumped to the treatment plant through a 3 " x 6" dual-contained HDPE pipe. This dual-contained pipe consists of an inner pipe carrying the leachate enclosed by an outer pipe to contain accidental releases of leachate.

There are also five (5) extraction wells located on the landfill cap. Each extraction well contains an air-driven pump which pumps perched ground water and leachate from the landfill where it flows by gravity (from four (4) extraction wells, and under pressure from one (1) extraction well) to the leachate lift station and continues to the treatment plant

through the 3" x 6" dual-contained pipe. Piping from the extraction wells to the leachate lift station is also dual-contained HDPE. Subsequent to collection, the leachate is pumped to the treatment plant via a double-contained piping system. Figure 6 illustrates the location of the OU2 collection, and conveyance system. Figure 8 shows the leachate collection, pumping, and transmission system from the OU1 landfill to the OU2 Leachate Lift Station.

Accidental releases of leachate within the inner pipe of the dual contained piping flows by gravity along the outer pipe to leachate detection points. The leachate detection points consist of a 3-inch HDPE "Tee", stubbed 90-degrees from the outer portion of the dual-containment pipe. A 3-inch HDPE riser runs from this "Tee" to a flanged cap 6-inches above final grade. These leachate detection points are located between manholes. When the flanged cap is removed, an inspector can look down the 3-inch HDPE riser for visual evidence of leachate leaks within the dual-contained piping system. The Site Operation and Maintenance Manual requires all leachate detection points be inspected quarterly.

The five leachate extraction wells (Photos 12,14), equipped with air-driven extraction well pumps, extract leachate into the perimeter leachate collection line. This perimeter collection line conveys leachate by gravity to the Leachate Lift Station. Leachate collected from OU-1 is pumped through a force main from OU-1 (Photo 19) to the Leachate Lift Station. Submersible pumps in the Lift Station then pump the leachate to the treatment plant.

a. Perimeter Collection Trench.

The perimeter leachate collection trench was constructed along the east and south sides of the landfill cap to intercept leachate flowing along the soil/bedrock interface, as well as from within the landfill waste. Leachate will flow by gravity through the trench before discharging into the lift station. The perimeter leachate collection system was constructed of a single-wall, perforated, HDPE pipe within a stone and geotextile envelope. Cleanouts are provided along leachate collection and transport lines for ease of maintenance. In addition, interceptor trenches have been constructed to connect known leachate seeps with the perimeter leachate collection trench.

b. Extraction Wells.

One extraction well was constructed in each of five areas estimated to be topographic low points, based on estimated pre-landfill topography. Due to elevations estimated from the pre-landfill topography, leachate and/or groundwater accumulating in the low points would not be expected to flow into the perimeter leachate collection system. A combination of gravity lines and force mains were constructed to convey the leachate recovered from the wells to the lift station through double-wall pipes located above the geocomposites and at least three feet below final grade. Note: Recovery Well Number 5 was permanently inactivated with USEPA's concurrence in April, 1999.

c. Lift Station.

A lift station (Photo 6) was constructed immediately adjacent to the southeast corner of the landfill to pump leachate recovered from the collection trench and extraction wells to the leachate treatment plant. The lift station has a retention storage capacity of approximately 1,000 gallons; two 30-gallon per minute (gpm), explosion proof pumps; and the necessary level controls to transfer the leachate to the sequencing batch reactor (SBR) in the treatment plant.

d. Improvements since Construction

During the first five-year review period following start of construction of OU2, several improvements were made, problems encountered and the corrective actions taken, modifications/additions to the design of the LF cap, leachate collection and transmission, leachate treatment, and disposal system.

Subsequent to those modifications made in 2000, an east to west OU1 leachate conveyance system was constructed to eliminate high trucking costs to transport this material to the primary lift station. The improvement consisted of the installation of submersible pumping, level controls, valves, fittings, piping and accessories at the underground leachate storage tanks; installing approximately 2,600 linear feet of dual containment HDPE force main, fittings and appurtenances, and electrical work for routing of leachate from the existing underground leachate storage tanks at Operable Unit One (OU 1) to the existing leachate lift station at Operable Unit Two (OU 2). The plan is shown in Figure 8.

5. Leachate Treatment System

The treatment plant has been constructed at the site as part of the remedial action of the Smith's Farm OU2 Landfill. Leachate recovered from the Smith's Farm OU1 and OU2 Landfills is treated by a combination of chemical and biological processes. This treatment reduces heavy metal and organic constituents so the treated leachate stream can meet the applicable discharge requirements. MACTEC and the operator indicate that no improvements or major repairs have been made since construction. Minor changes (non-specified) in operating procedures are constantly reviewed to enhance LTP performance.

The treatment system contains the following components and unit processes

- Biological Treatment Unit - A packaged Sequencing Batch Reactor (SBR) system biologically degrades the organic constituents in the leachate (Photo 30, 31).

- Metal Removal (MR) Unit - A package system uses caustic and polymer to precipitate metals from the leachate and acid to neutralize the supernatant liquid (Photos 33).

- Sludge Dewatering Unit - A filter press removes water from the sludge generated by the SBR and MR prior to sludge disposal (Photo 36).

- Air Stripping - A low profile air stripper removes the remaining air strippable organics from the leachate stream (Photo 34).

- Bag Filters - A pair of bag filters operating in parallel removes particulate carryover from the air stripper to reduce plugging in the granular activated carbon filters.

- Carbon Polishing - A granular activated carbon filter removes the remaining traces of organics from the leachate stream prior to discharge to the Unnamed Tributary (Photo 35).

a. Sequencing Batch Reactor.

Recovered leachate is treated biologically to remove organic compounds in a sequencing batch reactor (SBR) (Photos 30, 31). Leachate is fed into the reactor where it is held for a specific period of time for biological treatment. The addition of oxygen and other nutrients, and the presence of the organics in the water promotes the growth of bacteria. These bacteria consume (biodegrade) the organics overtime. The SBR process, which is a time/level controlled process, normally follows the basic steps of fill, react, settle, and decant.

The SBR packaged system consists of one reactor. The maximum design treatment capacity of the SBR is 28,800 gallons per day (or 20 gpm). Flow to the reactor is automatically shut off and diverted to the infiltration gallery when the high-high level switch in the SBR has been activated. Actual average leachate flow rate from both operable units is approximately 3 gallons per minute.

Operation of the reactor is automatically controlled by a process controller with high and low level switches. The initial high and low levels as well as internal controller settings (internal cycle times, aeration frequency and duration times, etc.) are specified and preset by the SBR supplier.

Each reactor cycle will produce sludge. The sludge is automatically pumped by a waste activated sludge pump into the sludge thickening tank (T-8-1). This process called sludge wasting is expected to occur during each reactor cycle. Sludge wasting occurs during the decant phase, with the duration automatically regulated by the process controller. The volume of sludge generated is dependent upon the amount of suspended solids(TSS), biological oxygen demand (BOP), and chemical oxygen demand (COD) present in the influent to the SBR system. Sludge solids are processed by the plate and frame filter press.

b. Metals Removal (MR) System.

The packaged metal removal unit (Photos 33) uses pH adjustment, flocculation,

clarification, and sedimentation to reduce the concentration of metals in the leachate. The system consists of a large tank which is divided into a flash mixing zone, a flocculation zone and a clarification zone. In addition, the system utilizes three chemical sources: a 20 to 50 percent concentration sodium hydroxide storage tank (T-2-1-1), a 50 percent concentration sulfuric acid storage tank (T-2-1-3), and an anionic polymer day tank (T-2-1-2). The design throughput of the MR system is 28,800 gallons per day (or 20 gpm).

The metals are removed by raising the pH of the leachate to approximately 9.5. At this pH, the metal constituents become insoluble and form metal hydroxide compounds. These hydroxide compounds settle to the bottom, which allows them to be separated from the clarified water.

Based upon treatability testing, it is anticipated that only sodium hydroxide addition is needed to initiate the precipitation, flocculation and sedimentation of metals. The addition of polymer promotes more efficient settling by creating larger floe particles. From the first mixing chamber, the leachate overflows to the second mixing chamber where, during the slower mixing, an insoluble metal precipitate (floe) forms. Polymer is then added and mixed using a variable speed mixer to enhance large, heavy floe particle formation. The liquid and floe overflow into a clarifier where the heavy floe material settles to the bottom. The clarified liquid overflows to the third mixing chamber where final pH adjustment is performed using 50 percent sulfuric acid. The effluent pH will be controlled within the range of 6 to 9. After final pH adjustment, the treated leachate flows to the low profile air stripper feed tank. The solids that are collected in the bottom of the clarifier are periodically transferred to the sludge thickening tank (T-8-1) for dewatering.

Once the system is started and the pH adjusted at various stages of the process, the level in the clarifier and the volume of sludge removed are controlled by the Programmable Logic Controller (PLC).

c. Low Profile Air Stripper.

The low profile air stripper (R-4-1) (Photo 34) is a packaged unit that uses air-water contacting to transfer volatile organic constituents from the influent water stream to the air stream. This contacting is accomplished on a series of aeration trays within the air stripper unit. Effluent from the MR system flows to the air stripper feed tank (T-3-1), which acts as an equalization tank to ensure a relatively constant flow to the air stripper. Effluent water from the air stripper is pumped to the carbon vessels (T-6-1 and T-6-2) for final polishing before discharge.

The low profile air stripper has a modular design capable of accommodating several aeration trays. The design allows the trays to be easily removed, cleaned, and replaced with minimal downtime. The design flow rate of the unit is 20 gpm.

The water enters near the top and flows horizontally across each tray and through a

weir to the tray below. A pressure blower provides air for the aerating process. The air enters the bottom of the unit and is forced through openings in the trays, bubbling through the water to form "a surface of foam" which provides extreme turbulence and excellent volatilization. The overall effect is a multiple counter-current contact of water and air, with each tray having a cross-flow of water opposing a vertical flow of air. The effluent air stream does not require any treatment and is vented outside the building.

d. Sludge Thickening Tank.

This tank is used to store and further thicken the sludge generated from both the SBR treatment process and the MR system.

The sludge thickening tank (Photo 32) provides the operator the ability to decant water from the settled sludge. Excess water in the sludge thickening tank is decanted when there is sufficient sludge volume to dewater (the tank should be at least half full). Decant valves at several liquid heights are used to decant the excess water. An 8-inch length of clear pipe, installed downstream from the decant valves, allows the operator to see when sludge is encountered so that the operator knows when to stop decanting. The decant water is discharged to the building sump where it is then pumped back to the SBR inlet. The decanting process thickens the sludge and reduces the volume of material to be dewatered. The sludge thickening tank is designed to increase the solids content of the sludge to approximately 2.5-4 percent solids by weight. The sludge is thoroughly mixed in the tank and the material is pumped to the filter press.

e. Sludge Dewatering System.

The sludge dewatering system consists of a packaged filter press unit (Photo 36). The filter press consists of a number of polypropylene plates, each of which is covered with a polypropylene filter cloth. Diatomaceous earth is added to the filter cloth (as a pre-coat) before the thickened sludge is introduced to the unit. The filter plates are pressed together hydraulically and the sludge is pumped through the unit. Sludge is retained by the filter cloth and water is forced out through small holes in the press plates which direct the water out of the unit. The sludge is then removed by manually scraping it off the filter cloths at the completion of the press cycle. The filtrate water is directed to the building sump for further treatment. The filter press utilizes a fully automatic hydraulic closure system mounted on the filter press assembly. The hydraulic closure system consists mainly of a electro/hydraulic power unit, a double acting hydraulic cylinder and a hydraulic control.

The electro/hydraulic power unit is designed to open the press, close the press and maintain sealing pressure while feeding sludge at pressures up to 100 psi gauge pressure. The hydraulic control system is integrated into the filter press control panel and controls hydraulic pressure with a contact pressure switch with two snap-action contacts.

Compressed air is blown through the filter press at the end of the filtering process to purge the feed lines and dry the filter cake. The filter cake is then discharged into a hopper where it is collected prior to disposal at an approved facility. Toxicity Characteristic Leaching Procedure (TCLP) testing of the dewatered sludge is performed to determine regulatory status, i.e. whether it is classified as hazardous or non-hazardous waste for purposes of disposal.

f. Carbon Adsorption.

The carbon adsorption polishing system consists of two steel vessels filled with granular activated carbon (Photo 35). Each carbon vessel is sized to treat a maximum flow rate of 75 gpm. The design flow rate of each vessel is 20 gpm. The carbon vessels are also capable of operating in either parallel or series should additional capacity or reduction in effluent concentration be required. Standard operating procedure at the Smith's Farm OU2 Landfill is to operate the carbon vessels in series. Periodic sampling of the effluent from the primary vessel monitors for breakthrough of organic constituents (which means the carbon no longer removes the constituents to non-detect levels) exiting the first vessel. When breakthrough occurs, the plant operator switches flow to the secondary vessel which becomes the primary vessel and calls the carbon supplier for replacement of the spent carbon vessel. The primary purpose of the system is to remove residual organic compounds in the treated leachate leaving the low profile air stripper. The system is designed to operate 24 hours per day with a pH between 6.0 and 9.0, and water temperature ranging from 50 to 68˚ F.

g. Instrumentation and Controls.

The following section identifies the various instrumentation and control hardware associated with each major section of the leachate extraction and treatment system.

Main Control Panel - Extraction wells EW-1 through EW-5 are air-driven and are enabled from the Main Control Panel (MCP) via solenoid valve FV-7-1. With hand switch HS-7-1-3 in the Auto position, the extraction well pumps continuously pump to the lift station sump. The Main Control Panel (MCP) provides monitoring and control functions for the leachate collection and treatment process in the treatment plant. An industrial computer on the MCP displays, in graphic format, the status of the treatment plant equipment. Graphics are color animated and follow the process and instrumentation diagram (P&ID) format. The industrial computer communicates with the Programmable Logic Controller (PLC) in the MCP on a real time basis and receives updates on the process.

An auto dialer is provided in the MCP that receives three alarm status conditions for MR chemical feed systems low level; Sludge thickening tank high level; and common process alarm.

The auto dialer is programmed to deliver these alarms to the plant operator's telephone number and the assistant operator's telephone number.

The MCP has motor starters, on-off-auto hand switches and "on" indicating lights for MR Feed Pump, Air Stripper Feed Pump, Air Stripper Sump Pump, Air Stripper Blower, and Building Sump Pump.

Alarm lights indicate conditions for the most of the process equipment. Additional indicators without alarms exist for the SBR reactor basin, SBR effluent tank, leachate lift station sump, and air stripper feed tank (high and low levels). PID controllers are provided for the flow control valves and flow meters associated with the MR feed and the air stripper effluent flow rates.

h. Leachate Treatment Maintenance and Recording.

The Plant Operator is expected to be on site three days per week (M, W, and F). Each day the operator visits the site, the normal maintenance activities associated with the equipment is performed. A daily report is prepared each day the operator is present, a separate log book is kept on all maintenance activities.

SBR - General maintenance includes: service all pumps, aeration devices, motors, actuators and valves in accordance with manufacturers recommendations provided in the Equipment O&M Manuals; check for unusual oil leakage from associated equipment; verify that all associated equipment (pumps, aeration devices, decanting mechanisms, level switches, etc.) are operable; check controller for proper timer and counter adjustments; verify proper operation of the nutrient feed systems and change out feed drums as necessary; remove any debris floating on the surface of the water in the reactors; hose down the sides (inside) of the reactors to remove any residues; inspect tanks for leaks.

MR System - The normal maintenance activities associated with the MR system performed 3 times per week include: servicing all process pumps, metering pumps, and motors; checking the operation of the mixer in the flash mix chamber and flocculation chamber; checking on the floe formation and settling rates in the clarifier; checking on the quantity of sludge generated and sludge blowdown schedules; checking on the timed sequence for sludge removal from the treatment system; manually removing light end material which may float to the top of the clarifier; and inspecting the MR system for leaks.

Air Stripper - The normal maintenance activities associated with the air stripper performed 3 times per week include: service all process pumps, motors, gaskets, and blower; checking the flow rate, influent and effluent pH, and temperature of the water; inspect the unit for leaks; checking for unusual oil leakage from associated equipment; verifying that all associated equipment (pumps, blower, level switches, etc.) are operable; checking pneumatic pressure drop and air flow rate for signs of inefficiency or clogging of the holes in the trays.

Sludge Thickener - The normal maintenance activities associated with the sludge thickener performed 3 times per week include: service all pumps and motors;

checking for unusual oil leakage from associated equipment; verify that all associated equipment (pumps, decanting mechanisms, etc.) are operable; remove any debris floating on the surface of the water in the sludge thickener; hose down the sides (inside) of the sludge thickener to remove any residues; inspect tanks for leaks; decant supernatant and pump sludge to filter press as needed.

Sludge Dewatering System - The normal maintenance procedures associated with the filter press during regular operation performed 3 times per week includes: checking the level in the hydraulic fluid reservoir; checking the filter cloths for blockage and tearing; checking adjustments of the pressure control valves, flow control valves, pump regulators, and signaling devices; checking for external leaks, damage and unusual equipment noise.

Carbon Filter - The primary maintenance required by the carbon filters is the replacement of the carbon in the vessels with fresh carbon, the flow routing changes associated with this procedure, and periodic checks for tank and piping leaks.

Operational and Maintenance Logs, Records, and Reports - A daily "Operations and Maintenance Routine Check" is utilized to ensure that necessary observations and tasks are completed during each visit to the plant. The checklist is based on the equipment and processes in the plant system. In addition to the routine checklist, the Operator maintains a log book for entering routine and unusual operating conditions encountered in operating the plant system. The daily log is maintained in a journal with sequentially numbered pages. All entries are initialed by the operator making the entry. The log book is also used to record any changes in the operation of the treatment system.

Records of service, maintenance and repair indicate the downtime and cost required to perform the work. This information is used to develop historical data vital for planning purposes. Records are also used to find recurring trouble areas where improved maintenance or other appropriate action may be required. The following records are used in controlling and evaluating the total maintenance program including preventive and corrective tasks: Equipment Data Manuals, Service Records, Motor Service Records, and Spare Parts Records.

On-Site Analytical Data - The analytical program is designed to provide the Operator with data on which to base operational decisions. Routine analyses are run on-site by the plant operating staff. A table has been prepared which presents the sampling groups, the analysis to be performed, the recommended frequency of analysis and the analytical methods to be used.

Results of all analyses performed are recorded on a daily basis in a summary form to provide a convenient single source of plant operational data. These summary sheets are bound and filed in the permanent plant files. Work sheets used while running analyses are kept as part of the permanent plant records. These sheets are dated and the complete identification of each sample included with the calculations. All calculations are signed by the person performing the analysis.

Data is input into a database or spreadsheet on a daily or routine basis. This allows the data to be sorted by analytical parameter, date, sampling location, etc. Spreadsheets are sent to Mactec in order to prepare summary reports which are needed for the plant permanent files and for reporting to the Kentucky DWM and USEPA.

i. Groundwater Monitoring Network.

Groundwater monitoring at Smith's Farm's OU2 is conducted as required by 401 KAR 34:060 sections 10 and 11 and to support the effectiveness and integrity of the remedy liner. As the shallow groundwater at the soil/bedrock interface is directly affected by the infiltration of storm water, the shallow wells may be dry during or following periods of low rainfall. Since the flow of leachate is also along the soil/bedrock interface, the primary mechanism of contaminant migration usually ceases or diminishes during periods of dry weather.

Selection of Existing Groundwater Monitoring Wells - The groundwater monitoring program included collecting and analyzing groundwater samples from monitoring wells screening two distinct groundwater layers: shallow groundwater ranging from approximately three to ten feet below the ground surface and deep groundwater from within the New Providence Shale and the New Albany Shales at depths ranging from 26.5 feet to 225 feet below the ground surface.

It was determined that groundwater monitoring wells MW-16, MW-18, MW-19, MW-22A, MW-22B, MW-24A, and MW-24B, which were installed prior to the OU2 RA, would be utilized as part of the groundwater monitoring system. Monitoring wells, MW-1 through MW-8, MW-17, and MW-20 were decommissioned by American Environmental during the OU2 RA. Monitoring wells MW-23A and MW-23B, originally protected during construction, are no longer being used for monitoring.

Installation of Groundwater Monitoring Wells - To monitor the flow directions and constituents within the groundwater in the vicinity of OU2, seven Type II groundwater monitoring wells were installed. Six of the groundwater monitoring wells (MW-25 through MW-30) are located around the perimeter of OU2 in locations believed to be pre-landfill topographic valleys, and the seventh monitoring well (BG-1) is a background monitoring well located upgradient from OU2. The locations of these groundwater monitoring wells are depicted in Figure 9. The monitoring wells were constructed in accordance with the Well Installation and Initial Monitoring Plan dated June 1996 using a four-inch inner diameter (ID) stainless steel riser with five-foot screened intervals across the soil/bedrock interface to allow monitoring of the shallow groundwater. Continuous-wrap screen was used to allow for the future modification of the monitoring wells to recovery wells, if needed. The filter pack for each well was installed extending from the boring termination depth to one foot above the well screen. After installing the filter pack, each well was surged with a surge block for approximately five minutes. Then the

depth to the filter pack was checked and, if necessary, more filter sand was added. The filter pack was sealed with a two-foot thick bentonite seat and the monitoring well completed with grout extending from the bentonite seal to the ground surface. Well protection for each well includes a concrete well pad, a locking steel protective casing, and three-bumper posts around the perimeter of the well pad. The newly installed monitoring wells were considered developed after removing a minimum of five well casing volumes and when the pH, conductivity, temperature, and turbidity stabilized.

Groundwater Monitoring Procedures - Four groups of groundwater monitoring wells are used to monitor the groundwater around the perimeter of OU2 on an annual or semi-annual basis.

The groups are defined as follows:

- *Group A*: MW-3 through MW-8 and MW-11 through MW-15; Type II monitoring wells located in the immediate vicinity of OU I.

- *Group B*: MW-25 through MW-30 and BG-1; Type II monitoring wells located in the immediate vicinity of OU2 that screen the soil/bedrock interface

- Group C: MW-22A, MW-22B, MW-24A, and MW-24B; Type III and Type IV monitoring wells located in the immediate vicinity of OU2 that screen the New Providence shale and the New Albany shale

- *Group D*: MW-18 and MW-19; Type II monitoring wells located downgradient of OU2 near the Unnamed Tributary that screen the soil/bedrock interface.

Group A wells are used for release detection in OU1, while Group B are used for release detection in OU2. Group D wells are sampled to monitor the groundwater down gradient of OU2 in the vicinity of the Unnamed Tributary, if a release is detected in Group B. Table 2 presents the intended monitoring schedule for the groups. Presentation of this data is necessary to report on the effectiveness of the landfill liner and treatment facility. Data has not historically been presented to report on these parameters. Presentation of this data in tabular form and spatially represented in a plot plan is thus recommended in this 5-year review.

k. Discharge Requirements.

The treatment plant is not operated under a National Pollutant Discharge Elimination System (NPDES) permit. However, the plant is required to meet certain discharge guidelines which have been determined in concert with the U.S. EPA and the Kentucky Department of Environmental Protection, Cabinet for Natural Resources and Environmental Protection. The treatment plant discharges to the Unnamed

Tributary which eventually discharges off-site into Bluelick Creek. Effluent discharge criteria for the treatment plant are shown in Table 3.

6. Deed Restrictions, Land Controls, Perimeter Fence

As stated in the 1993 ROD, "the future use of the land surrounding the Smith's Farm property is expected to be residential. The very knobby, hilly topography could not easily support commercial development. Additionally, structures built in slopes or on hilltops would have to be anchored into the bedrock and structures built in the ravines would be subject to washouts during very heavy rains. The Smith's Farm property contains two major hazardous waste disposal areas. While the remaining Smith's Farm property may be available for residential or commercial development, this Record-of-Decision calls for deed restrictions, groundwater-use and land-use restrictions which will, along with the proximity of two hazardous waste disposal areas, tend to retard development." Later, the document states, "The landfill and the immediate area around the landfill shall not be utilized for residential or commercial building due to the continued presence of hazardous contaminants on-Site and the probable settling and subsidence of the landfill."

The purpose of the fence and gate is to control access and prevent the entry of unauthorized persons onto the site. A six foot high, galvanized steel fence topped with three strands of barbed wire has been installed around the perimeter of the site. Warning signs have been placed on the fence at approximately 300 foot intervals. The fence is typically placed within the property boundaries.

Maintenance of the perimeter fence, attached warning signs, gates and gate locks consists of repairs necessitated by damage from vandalism, accidents and/or normal wear and tear. A quarterly inspection is conducted to determine the integrity of the fence and the required maintenance. The inspection is performed by walking the perimeter and noting any necessary repairs. The Quarterly Inspection and Maintenance Form (Appendix E) is used to record the results of the inspection.

F. Summary of Continuing Operations and Maintenance/Inspections and Reports

Operation and maintenance of the site is being conducted in accordance with the O&M Plans for the landfill and treatment plant. System operations requirements for the Smith's Farm Landfill include:

- Mowing the cap as necessary, inspection of the landfill cap and quarterly inspections of surface drainage system;
- Quarterly inspections of the pumping operations;
- Quarterly monitoring of leachate treatment influent, air stripper effluent, and effluent;
- Ongoing maintenance of the landfill cap; leachate collection/extraction and transmission system;

- Ongoing maintenance of the Leachate Treatment Plant (LTP)

Cap system maintenance has generally been limited to routine mowing, periodic weed control and woody vegetation removal, fence repair, rodent control and occasional repair of stressed or eroded areas.

V. PROGRESS SINCE 2001 REVIEW

Statutory based reviews of the operation, maintenance, and functioning of the landfill cap, leachate collection and transmission system, leachate treatment system, and discharge/disposal system should continue until the USEPA makes a written determination that further reviews are unnecessary to ensure protectiveness. This is the Third Five Year Review. As such, the progress from the first review is evaluated in the following sections.

A. Protectiveness Statement From Last Review:

Based on the 2001 Five-Year Review, the following conclusions were drawn under the "Protectiveness Statement":

- The remedy at the Site currently protects human health and the environment because it eliminates the exposure pathways relative to surface soils, surface water and leachate water in the short term.

- The landfill cap is effective at containing contaminants through preventing the infiltration of storm water and preventing direct contact or exposure of landfill waste by humans and fauna.

- The leachate collection and transmission system prevents migration of hazardous substances offsite or to streams or groundwater.

- The leachate treatment system is effective in meeting the discharge limits established by the USEPA and the State of Kentucky for the site contaminants.

Statements in the 2001 5-year review suggested that in order for the remedy to be protective in the long term, the following actions need to be taken:

- enforce deed restrictions; and

- verify migration prevention to determine whether or not the leachate capture system is successfully preventing migration off site

B. Status of 2001 Recommendations and Follow-up Actions

In the 2001 five year review, none of the following deficiencies were sufficient to warrant a finding of "not protective" as long as corrective action is taken. There were no indications of early potential

failure. In each section, the issue in the last review is restated, and is followed by the current status of those conditions:

1. Landfill

2001 Issue:

Overall, the large eroded areas stressed or areas of stressed vegetation that were noted in the previous five-year review have reduced in size. Some small areas remain. There are also isolated instances of rodent tunneling beneath the surface cover.

2001 Recommendation:

- Corrective actions should be conducted to repair several small areas of localized erosion or rodent penetration to the OU2 cap.

- Corrective actions should be conducted to repair several small areas of localized stressed vegetation.

- Gaseous emissions from the venting system should be monitored quarterly to report on the decomposition and decline of contained contaminants over time.

2006 Status:

Corrective actions to repair small areas of erosion and localized stressed vegetation were evident. Vegetation had thickened on the caps. There are still some small isolated areas of stressed vegetation or erosion that will need continuing care, but no major areas of stress.

There have been no efforts to monitor the gaseous emission from the venting system, and there are no plans present. Action will be recommended again in this 2006 report.

2. Leachate Collection and Transmission

2001 Issue:

Influent samples for each operable unit should be taken and analyzed quarterly until a trend can be established. The need for treatment may diminish over time and eventually meet discharge standards with less aggressive treatment.

During the site visit in 2001, Law stated that the treatment system had not experienced any discharge limit concentration exceedences except for two occasions in November, 2000 when excess sludge build up in the metals precipitation unit caused abnormally high concentrations of VOCs to be released from the sludge, subsequently traveling through the plant. This situation was corrected. Mr. Bocarro (of Law) stated that most of the on-going, day-to-day tasks and activities were operating adequately and the facility was being operated in accordance with the Revised September 1, 1999 Operation and Maintenance Manual.

2001 Recommendation: No recommendation.

2006 Status:

Influent concentrations have been included in tabular form. Semi-annual effluent monitoring is also reported in the annual reports. The data has not been presented graphically to provide a conceptual site model of treatment performance with time. This is recommended for the future. Also, according to some of the data presented, the measurements have not been able to accomplish low enough detection limits to definitively state discharge is below the KPDES requirements for some of the identified constituents. Many of the KPDES constituents identified are established at 5 mg/L allowed, (Table 7). The detection limits should be investigated for future effluent monitoring.

3. Groundwater Migration Monitoring

2001 Issue:

The monitoring data were inconclusive regarding containment of the plume. The three rounds of data reviewed varied significantly, and were inconclusive regarding migration prevention when compared with background concentrations. The contaminant concentrations need to be reevaluated annually and plotted on a site map as part of the annual report to determine if the leachate capture system is successfully preventing migration off site.

The ROD requires deed restrictions be implemented to eliminate the possibility of wells being installed within the vicinity of the landfill. This was not evident in the document review.

A local quarry is located nearby. Blasting is a common occurrence, and has been suspected of altering the groundwater flow conditions in the fractured bedrock. Evaluation of the impacts of blasting operations should be done to ascertain if these activities could compromise the remedy.

2001 Recommendation:

Due to the dense clay, shale and limestone sub surface features characteristic of the site, the deep limestone aquifer has not been addressed by the selected remedy. Blasting at local quarry has previously been noted to be a common occurrence, and has been suspected of altering the groundwater flow conditions in the fractured bedrock. Evaluation of the impacts of blasting operations should be done to ascertain if these activities could compromise the remedy.

2006 Status:

No evaluation has been performed to date to determine if impacts of blasting operations at the nearby quarry could compromise the remedy.

Groundwater monitoring is still inconclusive with regards to plume concentrations versus time. Reports have not been generated to define spatial extent of contaminants within the landfill. Groundwater monitoring has not been reported to show site wide plume concentrations and variability of contaminant extent within the landfill, as compared to design values. A monitoring recommendation is carried over in this review, not in reference to the blasting at the nearby quarry, but as a documentation of contaminant decomposition and change over time within the landfill.

Operators show there are 3-4 samples collected periodically for the entire area. The schedule as defined above has not been adhered to, since man)' of the collection wells are passed over during dry periods. The inability to collect groundwater samples during dry periods has until now not been construed as a problem, since previous investigations have suggested the exposure of groundwater to leachate is insignificant due to the periodical exposure. The purpose, though, is to show effectiveness of the landfill liner and treatment. More attention should be paid to the collection and reporting of monitoring data.

4. Leachate Treatment

2001 Issue:

Cleaning Frequency

The metals removal unit was responsible for exceeding discharge criteria due to an excess buildup of material on the tank sidewalls. The tanks should be periodically inspected eliminate future occurrences.

GAC Testing

GAC should be monitored for breakthrough following the second unit for a period of time following detection of indicator compounds in the effluent from the lead unit. Lead column replacement is not necessary immediately.

2001 Recommendation:

The metals removal unit tanks should be periodically inspected to eliminate future occurrences of buildup of material on the tank sidewalls.

The GAC unit should be monitored for breakthrough following the second unit for a period of time following detection of indicator compounds in the effluent from the lead unit. Lead column replacement is not necessary immediately.

2006 Status: The metals removal unit is now cleaned on a routine basis to eliminate future occurrences of buildup of material on the tank sidewalls.

Primary testing of the flow is conducted routinely prior to final discharge. If the trace is found in the measurement, the effluent is again pumped through the system. Sampling is then

conducted after the different treatment units to monitor for breakthrough. Repairs and/or replacements are then made as necessary.

5. Fence

2001 Issue:

There are areas of damaged fence at perimeter.

2001 Recommendation:

Repair damage fence at perimeter and implement erosion control measures.

2006 Status:

Operations reports note several instances offence repair from fallen trees and other instances that have damaged the perimeter fencing. As vegetated areas on the site have expanded, erosion is only noted in a few minor and isolated areas.

6. O&M Manual and Quarterly Inspection Reports

2001 Issue:

OU2 cap system maintenance has generally been limited to routine mowing, periodic weed control and woody vegetation removal, fence repair, rodent control and occasional repair of stressed or eroded areas.

During the first five-year review period, Law reported some operational problems and some minor maintenance issues with the landfill and Leachate Treatment Plant as discussed above. The cap and LTP units have functioned properly since the corrective actions.

2001 Recommendations:

a. Inspect gas vent pipes for damage or tilting. A gas vent well tilting down slope may be an indication of cover soil movement

Status 2006: MACTEC stated that the tilt of the gas vents have been evaluated to determine whether the tilt compromised the release of gas from the subsurface. Results show that the gas is able to release efficiently, as the tilting is minor.

b. The Quarterly Inspection Report checklist should provide some space for the inspector/operator to provide a narrative explanation of deficient items found during O&M inspections.

Status 2006: O&M maintenance does allow a comments section.

c. A form should be added to the O&M manual to document non-routine maintenance such as washout of the access road, cover soil slides, etc.

Status 2006: Access Road and General Comments sections added to Quarterly Inspection Reports

d. Requirements for reports distribution and frequency of generation should be indicated in the O&M Manual.

Status 2006: Quarterly inspection reports and annual reviews are completed in a timely manner for the site.

e. Emergency numbers should also be included to alert agencies in case of a contaminant release. Contacts such as the design engineer and construction contractor are also typically included in an O&M Manual.

Status 2006: Emergency numbers are readily available.

f. The O&M Manual needs to address initial and ongoing operator O&M and OSHA training.

Status 2006: Operators maintain OSHA certification.

g. For leachate treatment systems, the O&M manual should address testing, manifesting, transportation and disposal sites. The manual should contain a copy of the letter and other documentation from the landfill that specifies the conditions and profile of the wastes under which they will accept the filter cake.

Status 2006: Waste letter and documentation for the disposal of filter cakes is adequately maintained.

h. Address purchase and inventory! of spare parts, materials, and supplies.

Status 2006: Spare parts are on hand, and addressed. There is no issue.

i. Specify how the manual will be kept current

Status 2006: The O&M Manual was updated in 2002 and has addressed the issues noted. Operator changes manual operations as needed. The next update is scheduled for 2007, following the 2006 5-year review.

C. Status of Issues from Annual Reports Since 2001 5-Year Review:

1. Issue: OU1 Retaining Wall

Status: Retaining wall has been constructed, reinforced and is checked regularly for cracks or signs of deterioration. The wall appears to be well maintained.

2. Issue: Fence line

Status: Fence is repaired as breeches occur.

3. Issue: Vandalism, Trespassing

Status: Vandalism and trespassing continue to be an issue at the site. Signs are shot with firearms, marked with spray-paint and often disappear. Youth use the hill of the landfill during evenings of wet or snowy weather as a slide. Motorbike riding is a common occurrence on the Smith Farm land adjacent to the landfill, inside the fence perimeter. Alcoholic beverage containers are continually being collected and disposed of by the site operators.

VI. 2006 FIVE-YEAR REVIEW

A. Administrative Components

The Smith's Farm Landfill Site five-year review was conducted by the Army Corps of Engineers, Louisville District for USEPA, Region V. The USEPA Remediation Project Manager for the site is Mr. Clark Rushing. The following team members from the Corps of Engineers assisted in the review:

Richard Kennard, Project Geologist
Kari Meier, Project Chemist
Sandra Frye, Regulatory Specialist

The five-year review consisted of the following activities: a review of relevant documents (see References); interviews with USEPA RPM; Smith Farm Landfill operator Eddie Taylor (MACTEC); representatives from the Kentucky Department of Environmental Protection (KDEP), Division of Waste Management; representatives of the site Environmental Project Management and Operations and Maintenance Contractor (MACTEC); concerned citizens via response to paper/flier announcements by Region 4 EPA; and a site inspection.

A notice regarding the review report was placed in the local newspaper (Pioneer News). The announcement is included as Appendix (A). Participants and contacts for this 5-year review are provided in Appendix (B).

The final report will be available in the information repository (Ridgeway Memorial Library.) Notice of completion will be placed in the local newspaper and local and state contacts will be notified by letter.

B. Community Notification and Involvement

This review will be placed in the site files and local repository for Smith's Farm Landfill. The repository is located at Ridgeway Memorial Library, located at 2nd and Walnut Street in Shepherdsville, Kentucky, 40165.

C. Document Review

Documents reviewed during this 5-year review period are included in the References at the end of this Document.

D. Site Visit/Inspection

The Third Five-Year Review site inspection for the Smith's Farm Landfill Site was held on March 16, 2006. The site visit began with a meeting at the Leachate Treatment Plant, which included an overview of the review process, regulatory issues, operational status, and interviews with Mr. Eddie Taylor, on-site operation and maintenance, MACTEC; Jeff Engels, MACTEC; and David Miller, Ford Motor Co. The list of USACE, KDEP, and PRP personnel who participated in the meeting are provided as Appendix B to this report. Weather for the site visit was bright, cool and windy.

During the site visit, the following features were inspected or observed: the OU1 and OU2 landfill caps and surface drainage system, the leachate collection and transportation system, leachate treatment plant, treated leachate discharge system, and general site conditions. In general, the leachate collection, transportation, treatment, and discharge system were found to be operating and functioning properly. A summary of the inspection findings are presented below. Refer to Appendix C for the site inspection checklists that detail the inspection parameters.

1. Landfill Cap

The landfill cover system appears to be effective in isolating waste and contaminants. The cap was observed to be in good condition. The vegetative cover was thorough and relatively abundant. There were few small areas with sparse vegetation (Photo 25). No woody plants or shrubs were observed. There was no evidence of geosynthetics damage over the capped areas inspected and no bulging. No slope instability was visible although some gas vents and protective bollards on the landfill were observed to be tilted (Photo 14). MACTEC explained that vent pipes and bollards were not set during construction specifically for monitoring movement of the landfill cap. Concrete monuments are placed and are surveyed for this purpose (Photo 9). On March 16, 2006, MACTEC stated that the tilt of the gas vents have been evaluated to determine whether the tilt compromised the release of gas from the subsurface. Results suggest that the gas is able to sufficiently release efficiently, as the tilting is minor.

Due to the slope of the landfill and the strategic location of interceptor ditches/benches, there was no evidence of ponding on the cap. The benches slow down runoff velocity, intercepts and directs it to lined letdown channels (Photos 15, 16). Letdown channels

descend down the steep south slope which collect runoff by the benches. These channels are lined, rip-rapped and grouted and in good repair.

There were several evidences of rodent burrowing, cracks or small areas of surface erosion. On-site operator indicated that Site Management is notified of any vegetative distressed or eroded sections of the cap and benches needing repair when they exceed several inches in depth or several square feet in area and repairs are made as part of warranty agreements with a subcontractor by backfilling with equivalent cap material and reseeding with equivalent seed mix, mulching and watering. Repairs are usually pursued on an as-needed basis but usually in the spring or fall to facilitate the necessary re-vegetation. Since there is on going activity at this site, repairs to the cap are required on a continuing basis. Eroded portions of benches are repaired immediately as conditions allow.

2. Leachate Treatment

The leachate treatment system appeared to be operating and functioning properly. Visual inspections of the treatment interior showed no critical signs of wear. The interior and all equipment were very clean, painted and well maintained (Photos 29-36). The operator was knowledgeable and forthcoming with plant operations and procedures.

3. Operations and Maintenance

a. Manuals

The O&M Manual was readily available in the office and included as-built drawings, maintenance logs, sampling and analysis plan, site-specific safety and health plan, and OSHA training records. A copy of the Treatment Plant O&M Manual was reviewed for this report.

The operators confirmed the Health and Safety Plan (HASP) is in place and sufficient to control risks at the site and is being properly implemented. The remedial action objective of preventing direct contact or ingestion of contaminated soils and leachate continues to be met by the intact cap.

b. Costs

The estimated construction cost for the landfill cap, leachate/GW collection, transmission and discharge system from 1999 through 2005, by the Feasibility Study (FS), was $33.4 M. Actual cost was $15.5 M. Estimated cost of the Leachate Treatment Plant was $1.1 M. Actual cost was approximately $1.7 M. Projected estimated O&M costs through 2029 are estimated at $0.425M per year (FS, June 1994). On average, O&M costs since 1996 have run 24% lower than the original FS estimate of $0.45 M, (Table 4). Since the opening of plant treatment facility operations in 1999, O&M costs have run about 6% lower than the original FS estimate. This includes large annual costs in 2001 due to the additional costs of construction and connection of the OU1 influent line to the treatment facility at OU2.

c. Land Controls

The entire site is securely fenced; however, there have been instances of falling trees and trespassers compromising the fence line. These sections have been repaired in a timely manner. Gates are locked and warning signs have been posted along the entire chain-link fence alignment and access roads around and on the site, approx 100 feet apart. Several signs have been marked with graffiti, shot with guns, or stolen by the local trespassers (Photos 40-42).

Deed restrictions require enforcement of the landfill and the immediate area around the landfill to not be utilized for residential or commercial building due to the continued presence of hazardous contaminants on-Site and the probable settling and subsidence of the landfill. The ROD also requires water use restrictions for ground water and surface water in the immediate area of the landfill. These waters shall not be used for potable water sources as a precaution against possible future releases of contaminants. No new wells have been identified within the deed restriction area.

E. Data Review/Contaminant Trend Analysis

1. Influent/Effluent Data

Influent and effluent data have been provided in tabular form, but have not been graphed by the contractor to provide a site conceptual description of change in contaminant concentrations time. These are suggestions for inclusion in annual reports, so that reviewers and decision makers have a chronological understanding of the concentrations of contaminants at the site and the effectiveness of treatment. A simple plot of some of the influent parameters in Figure 11 suggests an increase in treated contamination after the addition of OU1 to the treatment facility in 2001. The subsequent decline of these parameters is followed by peaking concentrations in early 2005. The variation supports need for continued treatment. Comparison of influent and effluent concentrations show the facility is adequately removing contaminant from the area. It does not, however, provide information of the possible transfer to groundwater, plume extent, or change of leachate concentrations spatially with time. This should be addressed by evaluation of groundwater monitoring data.

Evaluation of the effluent data as presented in the annual reports for 2001, 2002, 2003, 2004 and 2005 (Appendix D) show there are a few isolated instances of exceedences. In addition, review of effluent reported parameters shows there are some estimated concentrations where the instrument detection limits are often not sufficient to achieve low enough detection to screen against the KPDES permit limits for some of the analytes. Investigation of method reporting limits and effluent discharge is recommended. An evaluation of detection limits as compared to these criteria should be included in the parameters. Analysis methods reported in data tables of annual reports should include the preparation methods used to prepare the sample for analysis. Also, validation of laboratory analysis should be presented in the annual reports. Detection limits and percent recoveries should be included in these reports.

Finally, there seem to be some inconsistencies in the values reported for influent data for the two recorded events in 2002 as provided in the annual reports for 2002 and 2003. Recommend review of data and correction of consolidated tables, as necessary.

2. Monitoring Data

Data from monitoring wells have not been presented in annual reports. This is partially due to the difficulty of data collection during dry seasons, since the aquifer is below the leachate zone except during wet periods. This data is necessary to prove effectiveness of the landfill liner in prevention of transfer of leachate to the groundwater, and is useful to determine the integrity of the existing liner. Previous reports note the collection of groundwater has been difficult, so we suggest that monitoring data be consciously collected during or after a wet period, then reported and plotted to show spatial variability in the plume for OU1 and OU2. Additionally, this monitoring is needed to comply with the ROD pg 92 (Sections 10 and 11 of 401 KAR 34:060), which states, "Should the groundwater monitoring at the Site indicate that the MCLs/MCLGs are consistently exceeded, then an appropriate corrective action will be applied to comply with the MCLs/MCLGs." No data has been sufficiently provided for such a determination.

While land use restrictions are implemented to prevent the use of groundwater at receptor locations, to remain protective in the long-term, groundwater monitoring is also required to identify any potential for contamination prior to off-site migration. Due to the inadequate groundwater monitoring at this site, the potential for future problems cannot be addressed, thus long term protectiveness of the remedy is not supported.

F. Interviews

The following individuals were contacted by letter as part of the five-year review:

1. Mr. Jeff Engles, MACTEC Engineering and Consulting, Site Operations and Maintenance

2. Susan Mallette, Kentucky Department of Environmental Protection, Superfund Branch, Division of Water Management (letter)

3. Robert Pugh, Kentucky Department of Environmental Protection, Superfund Branch, Division of Water Management (letter)

Mr. Engles is the project manager for MACTEC, and is listed as a point of contact for the public on the front gate of the facility. He was included in the interview process, since he has potential connection to local residents. His comments were solicited to address general sentiment of the local community:

1. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please give purpose and results.

Response: *MACTEC has not had routine communications with the local public. Our contact information is posted at the front gate, but to date we have not been contacted by anyone.*

2. Have there been any complaints, violations, or other incidents related to the site requiring a response by your office? If so, please give details of the events and results of the responses.

Response: *MACTEC's field personnel have received complaints from the adjacent property owner/residents regarding 4-wheeler activity on the Smith's Farm property surrounding the landfill. MACTEC has placed and maintained additional "NO TRESPASSING " signs on the fencing surrounding the site. The maintenance and security of the landfill is not included in the controlled area of the facility, however, in an attempt to reduce trespassing, additional signs have been placed on the property surrounding the facility and local police have been asked to provide stepped-up surveillance over the weekends.*

3. Are you aware of any shortcomings in current site operations; noting which inadequacies, if any, currently prevent the remedy from being protective?

Response: *MACTEC is not aware of any shortcomings at this time. The site is continually monitored by Eddie Taylor and as issues arise, they are addressed.*

4. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

Response: *None at this time*.

Mr. Pugh and Ms. Mallette were initially contacted in February 2006 and notified that the Five Year Review was being conducted. Both participated in the Site Inspection Visit, and offered input to the current status of the site, and O&M issues including permits and long-term monitoring. Both verbally expressed pleasant views of the operations during the visit. During the course of the formal review process, both Ms. Mallette and Mr. Pugh participated in an interview to clarify or expand on the following various points of the Remedial Action:

1. What is your impression of the project? (General sentiment)

Response: *It's a well-maintained and monitored site.*

2. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please give purpose and results.

Response: *KDWM has generally conducted yearly inspections at this site. Site staff has always been informative regarding concerns and the remedies. The yearly reports have been thorough.*

3. Have there been any complaints, violations, or other incidents related to the site requiring a response by your office? If so, please give details of the events and results of the responses.

Response: *No complaints have been logged nor any Notice of Violations issued for this site.*

4. Do you feel well informed about the site's activities and progress?

Response: *This office has been kept well informed about activities at the site. Site staff has contacted us as needed.*

5. Are you aware of any shortcomings in current site operations; noting which inadequacies, if any, currently prevent the remedy from being protective?

Response: *The remedy is believed to be protective of human health and the environment.*

6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

Response: *No comments.*

EPA Region IV Remedial Project Manager, Mr. Clark Rushing. Mr. Rushing provided background information on the Smith's Farm Superfund Site, a history of site activities, and a list of potential contacts having knowledge of site activities. Mr. Rushing provided extensive documentation that is maintained in Region IV s Atlanta offices as part of the Deletion Docket and CERCLA Administrative Record for the Site. Mr. Rushing also actively participated in the site inspection visit on March 16, 2006. His interaction with local residents is summarized here:

Eleven local residents were interviewed on June 27, 2006 by EPA. Interviews were conducted door-to-door in the neighborhood located adjacent to the southeastern corner of the site. In addition, fact sheets about the 5-year review process and the consequences of trespassing on the site were handed out to interviewees. The fact sheet can be found in appendix F.

The interview questions and responses are as follows:

1. What is your overall impression of the Five-year review process?

Response: *All residents interviewed had little knowledge of the 5-year review process.*

2. In terms of site security, are you aware of activities such as trespassing and vandalism at the site? If so, please give details.

Response: *Most residents were unaware of trespassing activity on the site. Several residents claimed they have seen off-road vehicle trailers near the site but were unaware of specific off-road activities on the site. Several residents also claim that off-road vehicles have been driven on their property without permission.*

3. Are you, and members of your family, aware of the potential risk of entering the site both from a health and legal perspective?

Response: *All but three residents interviewed said they are aware of both the legal and health consequences of trespassing on the Smith's Farm landfill site.**

* All residents were given a fact sheet outlining the consequences of trespassing on the site regardless of their answer to this question.

4. Do you have suggestions for maintaining some level of security and curtailing trespassers at the site?

Response: *All residents agreed that 24-hour guards or dogs would be the only way to stop trespassing. Most residents agreed that surveillance cameras would do little to mitigate the problem.*

5. Are there any community concerns that EPA should address or be aware of?

Response: *There were no community concerns related to the site.*

6. Do you feel well informed about current and future activities at the site?

Response: *All residents felt that they either had enough information or did not care to receive more unless there was a problem.*

7. Would you be interested in reuse of the site (e.g. - park, nature preserve, etc.)?

Response: *All residents except one expressed interest in seeing the site reused as a park or nature preserve. These residents felt that the site should be used for something beneficial to the community. The one resident who answered "no " expressed concern about illegal activities on the site if it were open to the public.*

VII. TECHNICAL ASSESSMENT

According to the current guidance of the 5-Year review, here we address the Remedy function and protectiveness by addressing 3 specific questions:

A. Question A: Is the Remedy Functioning as Intended by the Decision Documents?

This question is addressed by evaluating the operations of the collection and monitoring system at the site, and reviewing the assessments conducted in Sections VI. D. and VI. E. above. As stated in the 1993 ROD, OU2 and OU1 were initially treated as separate phases of the investigation and remediation of the Smith's Farm Site, but since then, the enforcement activities for both Operable Units have been combined. The leachate extraction systems for each of these sites pump into a single facility, for combined treatment.

Remedial Action Performance

The treatment facility was initially designed to treat OU2 design concentrations as summarized in Table 5. Values reported in the table subsequent to the design values are prior to treatment. Leachate from the OU1 landfill was collected in 2-10,000 gallon tanks and hauled off site between September 1995 and October 2000. Leachate generated in OU1 based on 1999/2000 data is approximately 40,000 gallons per year. In October 2000, a force main was installed which allowed leachate generated by OU1 to be combined with OU2 leachate for treatment at the OU2 plant.

As reported in the 2001 5-year review, 3.05 million gallons of leachate from OU2 had been treated since the plant O&M phase began January 28, 1999. A review of available records and influent and effluent monitoring reports through December 31, 2005, show that approximately 5.66 million gallons of additional leachate has been treated (OU1 and OU2 combined) during this review period of January 1, 2001 to December 31, 2005. The difference in contaminant concentrations between the two operable units are not monitored directly. Although the addition of OU1 influent to the treatment system only fractionally increase the value treated influent, a significant increase in influent contaminant concentrations was observed (Figure 11). The influent concentrations subsequently decreased through 2003, but then increased in 2004 to early 2005. Influent data since last review shows most compounds still remain above discharge standards with seasonal variation in elevated contaminants and treated concentrations (Table 6). Total contaminant mass removed has not been estimated for this site.

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

The arsenic drinking water MCL was noted as an ARAR change defined during this 2006 5-year review period. The change is not expected to affect the effluent discharge criteria at the site, although KDEP should be consulted. No additional contaminants were noted. The ARARs Review and Risk Assessment Review conducted for this conclusion are summarized here:

As done in 2001, an ARAR review was repeated for the site in accordance with the EPA guidance document, "Comprehensive Five-Year Review Guidance," EPA 540-R-01-007, OSWER No. 9355.7-03B-P June 2001. No additional or altered requirements were implemented during this review that currently affects the remedy. The following documents were reviewed to determine initial and current ARARs:

- Record of Decision, September 17, 1993
- Commonwealth of Kentucky Natural Resources and Environmental Protection Cabinet, Department for Environmental Protection letter July 10, 1997 from Jack A. Wilson Director, Division of Water to Nathaniel Peters, II PhD, P. E, Law Engineering and Environmental Services, Incorporated Re: Smith's Farm Operable Unit 2

- United States Environmental Protection Agency, Region 4, July 6, 1998 letter to Mr. R. Daniel Lopper, P. E. et Al. Law Engineering and Environmental Services, Inc.

- Commonwealth of Kentucky Natural Resources and Environmental Protection Cabinet, Department for Environmental Protection letter March 29, 2000 from Michael V. Wech, Manager Hazardous Waste Branch to Mr. Victor Doritis Re: Smith's Farm Claim for Exclusion from the 1999 Hazardous Waste Assessment.

- First 5-Year Review Report, 2001

- Law Environmental 1999 O&M Manual

- MACTECH 2002 O&M Manual

A summary of the initial ARARs is provided by the 2001 5-year review, and reviewed here to determine any potential for update.

Specific compliance monitoring of the effluent at the Smith's Farm were identified in a letter dated July 10, 1997, from the State of Kentucky to Law Environmental. It appears a compliance monitoring program and matrix was proposed and agreed upon by the appropriate parties. These parameters as well as those originally proposed in the ROD and those stated in the O&M Manual are identified in Table 7.

1. Applicable ARARs for Protectiveness Review:

Per EPA Guidance, only those ARARs that address risk posed to human health or the environment need be reviewed. Other ARARs listed in the ROD and not reviewed in this five-year review were location- and action-specific requirements that were germane to the construction and operational activities of the landfill, leachate treatment, support structures and sediment removal etc. Those ARARs were not considered pertinent to evaluating the protectiveness of the remedy from an on going operation and maintenance perspective. Such ARARs included 401 KAR 34:230, Sections 6,7,8,9 - landfills, landfill cap design, 401 KAR 34:190 - tank design and 401 KAR 34:240, 50:025, 51:010, 51:052, 52:010, 63:005, 63:010,63:020,63: 021- Air pollution and fugitive emissions control requirements relative to construction activities, 601 KAR 1:025- Transportation of hazardous material, KRS 174.415- Hazardous material, permits, emergency procedures, enforcements, KSR 262 - Soil and Water Conservation requirements, 401 KAR 34:070 and KAR 47:040 - Deed notices on solid or hazardous wastes, and others such as OSHA standards, groundwater monitoring as well as Fish and Wildlife, Endangered Species and Wetlands Protection. The relevant ARARS requiring evaluation during the 5-year review are as follows:

a. 401 KAR 34: 060, Sections 1, 8, 9,12 - Ground Water Protection

No specific ground water protection standards were identified as a remediation goal with a definitive endpoint, however applicable ground water criteria were generally referenced in the ROD, section 7.6.4 (pg 92), section 9.2.2 (pg 115-120). Identified

programs for consideration include Federal ARARs from the Resource Conservation and Recovery Act (RCRA) (42 USCA Section 6901 et seq and 40 CFR Part 264), and the Clean Air Act (42 USCA 7401 et seq and 40 CFR part 50 and 61). Both discussions address monitoring programs and evaluation with a later determination on the appropriateness of any warranted additional corrective action. Reference #3 above (letter 7/6/98) did not address any groundwater monitoring requirements, but was rather restricted to monitoring and reporting requirements for the leachate treatment plant.

b. 401 KAR 5:005 - Permits to discharge sewage; industrial and other wastes; definitions

Reference letter 7/10/97 indicates permit requirements were waived, contingent on effluent criteria in the letter's attachment.

c. 401 KAR 5:026 -:035 - Kentucky's Surface Water Quality Standards

While water quality standards were defined in the ROD as ARARs, the majority of the effluent discharge criteria were ultimately established by the State of Kentucky in the 7/10/97 letter. Aside from the risk-based numbers for eleven (11) constituents identified in Table 9.0c (pg 113) of the ROD, an additional twenty (20) constituents (see Table 6 below) were added by the State. The effluent limits presented by the State for semi-volatiles and volatiles appear to have been set at a default value of 5 µg/1. Since the receiving surface water, Bluelick Creek, as stated in the ROD, is still (and as of June, 2006) not identified specifically in the State surface water designated use provisions (401 KAR 5:026) it is not possible to assign specific water quality based standards for the various parameters identified. Effluent limits defined in the 7/10/97 letter generally meet or exceed water quality standards promulgated by the State of Kentucky (401 KAR 5:031) for the majority of designated uses, however since the decision logic for the development of the effluent parameters could not be determined, any general statements regarding compliance with State Water Quality Standards, as promulgated currently, again can not be made.

d. 401 KAR 34: 060 sections 10 and 11 - compliance monitoring programs and corrective action programs

Since corrective action criteria were not explicit in the ROD, follow up compliance monitoring and corrective action will continue to be evaluated by EPA and the State of Kentucky under the monitoring and reporting provisions of operations and maintenance protocols defined in the appropriate remediation documents (see ROD pg 92: Sections 10 and 11 of 401 KAR 34:060).

e. Maximum Contaminant Levels (MCLs)

The Maximum Contaminant Level (MCL), 40 CFR Part 141 lists National Primary Drinking Water Regulations. The MCLs are maximum allowable concentrations for

drinking water. There is a change listed for arsenic drinking water standards. Table 7 includes these criteria. The arsenic regulations listed in § 141.51 and § 141.62 are effective for the purpose of compliance on January 23, 2006. The regulations enforce the arsenic MCL at 0.01 mg/L and a new MCLG at 0.0 mg/L. Currently, the effluent discharge criterion for arsenic at Smith's Farm is 0.011 mg/L, prior to dilution in the adjacent stream. It is expected that the discharge after dilution still remains protective, but regulators may want to consider this regulation, since the stream is likely a splashing/wading stream for the adjacent neighborhood youth.

Additionally, these MCLs should be considered when evaluating groundwater monitoring data. Groundwater monitoring data should be evaluated to determine the integrity of the landfill liner as a protective measure for preventing contaminant leaching to groundwater during wet periods.

2. To Be Considered, (TBC)

Maximum Contaminant Level Goals (MCLGs)- 40 CFR Part 141 lists National Primary Drinking Water Regulations. MCLGs are non-enforceable levels that fall into the ground water monitoring and corrective action provisions. With the MCL change above, a new MCLG at 0.0 mg/L was also enforced for arsenic drinking water standards. The arsenic regulations listed in § 141.51 and § 141.62 are effective for the purpose of compliance on January 23, 2006.

3. KPDES regulations and Kentucky Water Quality Standards

EPA five-year review guidance requires a comparison of standards identified in the ROD against current standards. If a current standard is more stringent than the previous standard, the review process continues utilizing standards originally identified in the ROD as well as those current standards that are more stringent than those in effect at the signing of the ROD. There have been two federal actions pertaining to landfills under the Clean Water Act, since the opening of the plant. These were noted in the 2001 review.

a. On January 19, 2000 (65 FR 3008) EPA promulgated final effluent limitations guidelines (ELGs) for RCRA Subtitle C and RCRA Subtitle D landfills.

b. On October 30, 2000 (65 FR 64746) EPA reissued the Multi-Sector General Permit (MSGP) for discharges of storm water associated with industrial activity (see 40 CFR 122.26).

There have been no new standards issued for landfills since the last review. Landfills are addressed under Sector L of that federal general permit for storm water. While it is clear from the applicability sections of both regulations that "inactive" landfills addressed under the National Contingency Plan (NCP) are not directly covered under the scope of the regulation, these newly promulgated standards may be relevant and appropriate under the ARAR analysis. Furthermore, the State of Kentucky is fully authorized under the CWA to

implement all permitting programs. In the 2001 review, the existing analytical parameter list for the Smith's Farm site was compared with the ELG (40 CFR 445) parameter list as well as the parameter list identified under Sector L of the MSGP, or existing State storm water program, to determine if expanding the current monitoring program would enhance protectiveness to the site activities.

All 40 CFR 445 defined parameters have higher effluent values than those currently in place at the Smith's Farm effluent treatment plant, but no ROD or KPDES criteria for BOD_5 or TSS were found in any Smith Farm requirements. The remaining ten (10) parameters of the federal regulations were not listed in the ROD or any State of Kentucky communication letters. It was recommended in 2001 that these ten (10) parameters be considered for inclusion of existing monitoring and reporting requirements. To date, pH, BOD, and TSS are monitored at the site to reflect treatment plant performance. Ammonia (as N), a-terpinol, aniline, benzoic acid, naphthalene, p-cresol, and pyridine are still not included in reports.

4. Compliance with ARAR Summary Statement

A review of standards identified as ARARs in the ROD was completed as well as an evaluation of new standards promulgated since the signing of the ROD. Three new federal regulations under the CWA have been promulgated since the ROD was signed: Effluent Limitation Guidelines for Landfills (40 CFR 445), the storm water general permit regulations for industrial activity (September 29,1995, reissued March 30,2000), specifically Sector L (of the federal multi-sector general permit) and arsenic MCLs and MCLGs (40 CFR 141) implemented as new drinking water standards (effective January 23,2006). While these new regulations are not directly applicable to site operations, they may be considered relevant and appropriate and could be further evaluated for incorporation into site operations. Additionally, the State of Kentucky is a fully authorized CWA State, and therefore any State adoption of these federal regulations would override the federal program.

5. ARAR Compliance Recommendation

All parties should evaluate potential protectiveness benefits associated with the recently promulgated drinking water MCL and MCLG for arsenic with the operation of landfills.

Risk Assessment Review

In addition to the ARARs Review, an evaluation of the Remedy Risk Assessment was conducted. No change/findings of toxicity values, exposure pathways, land use, contaminants or byproducts, or risk calculations pertinent to the site were noted. The arsenic drinking water MCL noted as an ARAR change above is the only change found effecting Question B in this review. The change is not expected to affect the effluent discharge criteria at the site, although KDEP should be consulted.

C. Question C: Has Any Other Information Come to Light That Could Call Into Question the Protectiveness of The Remedy?

Issues that affect the protectiveness of the remedy are identified in section VIII below. In summary, groundwater monitoring is not currently conducted effectively to determine potential for offsite migration. Gas vent monitoring is not conducted to evaluate horizontal atmospheric pollution. Vandalism and Trespassing are an ongoing concern.

D. Summary of Technical Assessment

Although the extraction and treatment system is currently operating as intended, the arsenic groundwater MCL has changed during this review period, and groundwater monitoring and gas vent monitoring are not conducted effectively to determine off-site migration potential.

VIII. CURRENT ISSUES

None of the following deficiencies are sufficient to warrant a finding of "not protective" as long as corrective action is taken on the noted deficiencies. There were no indications of early potential failure.

A. Landfill

The site is well maintained. Overall, the large eroded areas or areas of stressed vegetation that were noted in the previous five-year review have reduced in size. Some small areas remain. There are some locations of rodent tunneling beneath the surface cover.

B. Leachate Collection and Transmission

The interior of the facility is very clean and well maintained. All operations noted in the previous review needing attention have been addressed.

C. Groundwater Migration Monitoring/Gas Vent Monitoring

- The operations manual identifies the need for groundwater monitoring. Although some wells are often dry, the requirements indicate that the plumes should be plotted to show spatial extent of these plumes.

- Monitoring well results do not appear in quarterly or annual reports during this review period. The site operator indicated that a select few wells are routinely sampled, although one of the four wells is usually dry. In addition, the change of environmental teams during the course of the past five years has made it difficult to obtain a timeline of monitoring data for this review. Thus we have not evaluated spatial extent of contaminant in monitoring wells in this review.

- The Record of Decision for groundwater (OU2) requiring continued monitoring of the landfill collection and treatment system by analysis of groundwater and leachate samples has not produced appropriate reports of contaminant concentrations with time.

- In addition, gas vents have not been monitored at the site. Monitoring probes are not present at the site, neither within the site nor at the perimeter/boundary. These vents could provide evidence of decomposition of landfill contaminants and could be used to document this decontamination with time. They also help to maintain cover system stability and limit horizontal migration of landfill gas from the site.

D. Leachate Treatment

Treatment system is clean and maintained in excellent condition.

E. Vandalism/Trespassing

Vandalism and trespassing continue to be an issue at the site. Signs are shot with firearms, marked with spray-paint and often disappear. Youth use the hill of the landfill during evenings of wet or snowy weather as a slide. In addition the adjacent property contains a fenced-in hill that local trespassers use as a motorbike trail ride and entertainment. The senior technician of the site noted routine use of the hill for those purposes and a fear of liability for the possibility of injury on the property due to these occurrences. He also notes that in cleanup of these grounds alcoholic containers are often collected for disposal. Three adjacent property owners have complained that the motorbike trail use of the Smith Farm hill leads the trespassers into their property as well.

F. Operation & Maintenance Manual

All operations needing attention in the previous review have been addressed and are well kept.

G. Data Analysis and Reporting

- Reporting Parameters: Review of effluent reported parameters shows there are some estimated concentrations, where method reporting limits appear to be above the allowed discharge limit per the KPDES permit. As reported by the Annual O&M Reports during this review period, these parameters include, but may not be limited to: methylene chloride, 2,4-dinitrotoluene, diethyl phalate, arsenic, beryllium, cadmium, lead, mercury, selenium, thallium, zinc. It is noted that the KPDES levels for mercury and silver were established below achievable detection levels, such that variances were granted.

- Conceptual Site Model: There is no conceptual model presented in annual reports to show site progress. As the need for treatment may diminish over time and eventually meet discharge standards with less aggressive treatment, annual reports should plot the influent and effluent concentrations versus time to show annual variability and overall site progress.

IX. RECOMMENDATIONS AND FOLLOW-UP ACTIONS

A. Landfill

- Corrective actions should be conducted to repair several small areas of localized erosion or rodent penetration to the OU1 and OU2 caps.

- Corrective actions should be conducted to repair the few small areas of localized stressed vegetation.

B. Leachate Collection and Transmission

Continue diligent maintenance. All operations noted in the previous review needing attention have been addressed.

C. Groundwater Migration Monitoring/Gas Vent Monitoring

- Data should be used to show change in concentration with time within the landfill during wet seasons, but should also be used to evaluate the integrity of the landfill liner with respect to leaching through the liner to groundwater. Deficiencies in the liner would present themselves in groundwater monitoring. To date, monitoring well data is not reported to show history of the contaminant plume within the landfill or as a protective measure surrounding the landfill. Spatial extent of the plume concentrations is not routinely evaluated. As recommended in the 2001 review, the contaminant concentrations need to be reevaluated annually and plotted on a site map as part of the annual report to determine if the leachate capture system is successfully preventing migration off site.

- It is recommended that MACTEC and the PRP work to compile these data and begin adding monitoring data to the annual reports to define spatial extent of contaminants in the landfill and show the change of concentrations over time. As operations at the site work to remove contaminant from the landfill, these monitoring wells should be used to show the change in concentrations with time within the regions of the landfill itself, and to evaluate the protectiveness to the groundwater below.

- There should be some record of historic plume concentrations and locations of these contaminants with time in order to address decomposition and treatment of the contaminants.
- An evaluation should be conducted to determine whether gaseous emissions from the landfill should be included in monitoring strategy. The purpose of monitoring gas emissions is to determine the effectiveness of the existing vent system and measure horizontal migration of landfill gas from the site. If necessary, monitoring should be done through some perimeter gas monitoring probes, in order to detect whether landfill gas is migrating laterally from the site. Such monitors do not currently exist at the site, and would need to be installed.

D. Leachate Treatment

There are no additional recommendations for the treatment system in this review.

E. Vandalism/Trespassing

- Continue to periodically check and repair damaged fence in a timely manner.
- Consider implementing more progressive trespassing and vandalism control measures.

F. Operation & Maintenance Manual

Recommend continual as-needed update to the O&M manual to reflect changing processes or routines in the facility maintenance.

G. Data Analysis and Reporting

Recommendations for reporting parameters include:

- An evaluation of detection limits and reporting limits as compared to these criteria should be included in the parameters reported. Method reporting limits should be, at a minimum, less than one-half of the project specified action levels for reliable project decision-making.
- Analysis methods reported in data tables of annual reports should also include the preparation methods used to prepare the sample for analysis.
- Detection limits and percent recoveries should be included in these reports.

Recommendations for conceptual site model:

- In order to determine site progress and to monitor whether the leachate capture system is successfully preventing migration off site, further reporting should include timeline plots in which each report should build on the last. Figures generated from these tables should show 1) influent concentrations with time which will illustrate annual fluctuations, natural attenuation and more importantly, the functionality of the site operations for long-term progress and 2) monitoring well data to spatially represent contaminant extent and migration or decomposition with time. A figure or table of effluent concentrations with time will also provide a simple mechanism to show whether there have been discharge exceedences from the site.
- Data tables in each annual review for leachate influent and effluent should build upon previous data so that change in concentrations over time is recorded and plotted.

- Data tables and/or figures should be included in each annual review for monitoring well data, which should be able to show a spatial conceptual site model of contaminants over time.

X. PROTECTIVENESS STATEMENT

Based on this Five-Year Review and the above summary, the following conclusion is drawn:

The remedy at the Site currently protects human health and the environment because the landfill cap is in tact, the leachate treatment system is effective and all residents in the vicinity obtain water from the city, thus eliminating the exposure pathways relative to surface soils, surface water and leachate water. However, in order for the remedy to be protective in the long-term, groundwater monitoring data must be reported and evaluated to ensure that the remedy prevents migration of hazardous substances offsite within groundwater.

XI. NEXT REVIEW

The Smith's Farm Landfill Site is a statutory site that requires on-going five-year reviews. USEPA should conduct the next review within five years of completion of this third five-year review, listed as the date of signature on the inside cover of this report.

REFERENCES

1. Record of Decision, Remedial Alternative Selection, Smith's Farm Site-First Operable Unit, Brooks, Kentucky, U.S. Environmental Protection Agency, Region Iv, Atlanta, Georgia, September 29, 1989.

2. Administrative Order [UAO] For Remedial Design and Remedial Action (Third Amendment), Smith's Farm Site, EPA Docket No. 90-27-C, March 14, 1990.

3. Amendment to the Record of Decision (A Fundamental Change To The Remedy), Smith's Farm CERCLA NPL Site, Operable Unit One, Brooks, Bullitt County, Kentucky, United States Environmental Protection Agency, Region Iv, Atlanta, Georgia, September 30, 1991.

4. Record of Decision for Operable Unit Two, Smith's Farm (Brooks), CERCLA NPL Site, Shepherdsville, Bullitt County, Kentucky, KYD0972674139, Summary Of Remedial Alternative Selection and the Declaration, U.S. Environment Protection Agency, Region IV, Atlanta, Georgia, September 17, 1993.

5. Unilateral Administrative Order For Remedial Design/Remedial Action, Smith's Farm CERCLA NPL Site, Operable Unit Two, Brooks, Bullitt County, Kentucky, United States Environmental Protection Agency, Region IV, Atlanta, Georgia, April 22, 1994.

6. Final Remedial Action Report, Smith's Farm Operable Unit One, Brooks, Kentucky, Prepared For Smith's Farm Operable Unit One, 106 Order Respondents, Brooks, Kentucky, January 31, 1996.

7. Document Package for the Remedial Action Completion Acceptance for the Smith's Farm (Brooks) CERCLA NPL Site, Operable Unit One, Brooks, Bullitt County, Kentucky, United States Environmental Protection Agency, Region IV, Atlanta, Georgia, April 16, 1996.

8. Consent Decree (Civil Action No. C90-0232-L (R), United States of America, et al., Plaintiffs V. Mary Ruth Smith et al., Defendants, October 14, 1997.

9. Administrative Order on Consent, Smith's Farm Superfund Site, Bullitt County, Kentucky, January 23, 1998. (Note: 24 De Minimis Parties.)

10. Draft Final Construction [RA] Report, Smith's Farm Operable Unit Two, Bullitt County, Kentucky (August 27, 1998), Law Engineering and Environmental Services, Inc.

11. Operation and Maintenance Plan, Remedial Action, Smith's Farm Operable Unit One, 106 Order Respondents, Originally Prepared By Law Engineering and Environmental Services, Inc., Kennesaw, Georgia, 1995; Updated by MACTEC, Latest Update, 2001.

12. Five-Year Review, Smith's Farm (Brooks), CERCLA NPL Site, Brooks, Bullitt County, Kentucky. Prepared by the United States Environmental Protection Agency Region IV, Atlanta, Georgia, September 1998.

13. Appendix B, KIPDA Area Development District, Water-Resource Development: A Strategic Plan, Summary of Water Systems, Figure: EXISTING & PROPOSED WATER LINES, KIPDA in Bullitt County, Kentucky. Prepared By: Water Resource Development Commission, Department for Local Government, Draft October, 1999. http://kgsweb.uky.edu/download/water/wrdc/kipda.pdf

14. EPA guidance document, "Comprehensive Five-Year Review Guidance," EPA 540-R-01-007, June 2001.

15. Five-Year Review, Smith's Farm (Brooks), CERCLA NPL Site, Brooks, Bullitt County, Kentucky. Prepared by the U.S. Corps of Engineers, Louisville, Kentucky, for the United States Environmental Protection Agency Region IV, Atlanta, Georgia, September 2001.

16. 2000 Annual Operation & Maintenance Report, Smith's Farm Operable Units One And Two, Shepherdsville, Kentucky; Prepared by LAW Environmental; Prepared For: Smith's Farm Operable Units One and Two, 106 Order Respondents, Shepherdsville, Kentucky, March, 2001.

17. 2001 Annual Operation & Maintenance Report, Smith's Farm Operable Units One And Two, Shepherdsville, Kentucky; Prepared by LAW Environmental; Prepared For: Smith's Farm Operable Units One and Two, 106 Order Respondents, Shepherdsville, Kentucky, April, 2002.

18. 2002 Annual Operation & Maintenance Report, Smith's Farm Operable Units One And Two, Shepherdsville, Kentucky; Prepared by MACTEC; Prepared For: Smith's Farm Operable Units One and Two, 106 Order Respondents, Shepherdsville, Kentucky, April, 2003.

19. 2003 Annual Operation & Maintenance Report, Smith's Farm Operable Units One And Two, Shepherdsville, Kentucky; Prepared by MACTEC; Prepared For: Smith's Farm Operable Units One and Two, 106 Order Respondents, Shepherdsville, Kentucky, March, 2004.

20. 2004 Annual Operation & Maintenance Report, Smith's Farm Operable Units One And Two, Shepherdsville, Kentucky; Prepared by MACTEC; Prepared For: Smith's Farm Operable Units One and Two, 106 Order Respondents, Shepherdsville, Kentucky, April, 2005.

21. 2005 Annual Operation & Maintenance Report, Smith's Farm Operable Units One And Two, Shepherdsville, Kentucky; Prepared by MACTEC; Prepared For: Smith's Farm Operable Units One and Two, 106 Order Respondents, Shepherdsville, Kentucky, March, 2006.

Note: Some text in this document has been extracted, summarized, and/or edited from the above Smith's Farm Landfill Superfund Site documents

TABLES

Table 1: Site Remedial History for OU1 and OU2.

OU	Action Name	Actual Start	Actual Completion
0	LANDFILL WASTE OPERATIONS BEGIN	1950s	
0	DISCOVERY		2/1/1980
0	PRELIMINARY ASSESSMENT		7/1/1982
0	SITE INSPECTION		8/1/1984
0	REMOVAL	6/18/1984	8/17/1984
0	PROPOSAL TO NPL		10/15/1984
0	NPL RP SEARCH		5/15/1985
0	FINAL LISTING ON NPL		6/10/1986
0	RI/FS NEGOTIATIONS	3/15/1987	4/15/1987
0	REMOVAL	5/27/1988	5/27/1988
0	NPL RP SEARCH		1/31/1989
0	LANDFILL WASTE OPERATIONS CEASE	approx	5/1/1989
1	ADMINISTRATIVE RECORDS	6/1/1989	6/1/1989
1	COMBINED RI/FS	4/3/1987	9/29/1989
1	RECORD OF DECISION		9/29/1989
0	ADMINISTRATIVE RECORDS	12/29/1988	10/4/1989
1	ADMIN ORDER ON CONSENT		11/13/1989
1	RD/RA NEGOTIATIONS	12/20/1989	3/14/1990
1	UNILATERAL ADMIN ORDER		3/14/1990
0	REMOVAL ASSESSMENT	9/30/1991	9/30/1991
1	ROD Amendment		9/30/1991
1	PRP RD	5/4/1990	4/14/1992
2	PRP RI/FS	11/9/1989	9/17/1993
2	RECORD OF DECISION		9/17/1993
2	RD/RA NEGOTIATIONS	10/29/1993	4/22/1994
2	UNILATERAL ADMIN ORDER		4/22/1994
2	PRP RD	6/1/1994	3/13/1996
1	PRP RA	5/20/1993	4/22/1996
0	CONSENT DECREE	7/25/1997	10/10/1997
0	ADMIN ORDER ON CONSENT		1/23/1998
0	FIRST FIVE YEAR REVIEW	3/1/1998	9/30/1998
0	SECOND FIVE YEAR REVIEW	3/1/2001	9/30/2001

Table 2: Groundwater Monitoring Table

Group	Monitoring Period	Monitoring Frequency
A	Years 1-30	Annual
B	Years 1-5, Years 6-30	Semi-Annual, Annual
C	Years 1-30	Annual
D	NA	When a release is detected in a Group B well

Table 3: Treatment Plant Effluent Discharge Criteria

PARAMETER	LIMIT	PARAMETER	LIMIT
Benzene	<5 ug/l	Antimony	62 ug/l
Butyl benzyl phthalate	<10 ug/l	Arsenic	11 ug/l
2-Chlorophenol	23 ug/l	Barium	231 ug/l
1,2-Dichlorobenzene	<5 ug/l	Beryllium	5.3 ug/l
1,4-Dichlorobenzene	<5 ug/l	Cadmium	1.1 ug/l
1,1-Dichloroethane	<5 ug/l	Chromium(VI)	11 ug/l
1,2-Dichloroethene	<5 ug/l	Copper	12 ug/l
Dichloroethene, total	<5 ug/l	Cyanide	5 ug/l
Dichloromethane	<5 ug/l	Iron	1.0 mg/l
1,2-Dichloropropane	<5 ug/l	Lead	3.2 ug/l
2,4 Dimethylphenol	<10 ug/l	Mercury*	0.2 ug/l
Ethylbenzene	<5 ug/l	Nickel	0.160 mg/l
Nitrobenzene	250 ug/l	Selenium	0.005 mg/l
N-nitroso-di-n-propylamine	11 ug/l	Silver*	0.5 ug/l
Phenol	<10 ug/l	Thallium	11 ug/l
Tetrachloroethane	<5 ug/l	Zinc	0.110 mg/l
Toluene	<5 ug/l		
1,1,2-Trichloroethane	<5 ug/l		
Trichloroethene	<5 ug/l		

* The discharge limits for the constituents of concern were established during design as the criteria required of the equipment manufacturers and the installation contractor. The effluent discharge criteria was established as 0.012 ug/l for Mercury and 0.12ug/l for Silver. These detection levels are not currently achievable, therefore, the lowest possible reporting levels the laboratory can achieve (0.2 ug/l for Mercury and 0.5 ug/l for Silver) have been substituted.

Table 4: Annual O&M Costs

Date From	Date To	Total Cost rounded to nearest $100
Jan-96	Dec-96	$129,000*
Jan-97	Dec-97	$107,000*
Jan-98	Dec-98	$199,000*
Jan-99	Dec-99	$411,700
Jan-00	Dec-00	$366,900
Jan-01	Dec-01	$660,800**
Jan-02	Dec-02	$317,000
Jan-03	Dec-03	$408,400
Jan-04	Dec-04	$499,400
Jan-05	Dec-05	$304,600
Average		$340,380

* Partial O&M costs (OU1); OU2 completed Dec 1998

** OU2 leachate line directed to combine with OU1 influent flow for treatment during this year. Cost reflects new construction, site repairs and additional labor and engineering associated with the improvements.

Table 5: Comparison of Initial and Current Leachate Concentrations

Constituent	Basis for Design 1995 (mg/l)	2000 Average (mg/l)	2001 Average (mg/l)	2002 Average (mg/l)	2003 Average (mg/l)	2004 Average (mg/l)	2005 Average (mg/l)	Action Limit (mg/l)
Biological Oxygen	2600	53	171.5	117	64	162	75.5	Report
Nickel	0.19	<0.05	<0.05	0.02	0.03	0.03	0.03	0.16
Methylene Chloride	2.9	1.1	2.8	0.687	0.72	2.16	1.015	Report
Benzene	0.14	0.008	0.018	0.0065	<0.05	<0.05	<0.05	0.005
Phenol	29	0.29	1.07	0.345	0.36	0.12	0.27	0.1
TCE	0.38	0.012	0.085	0.019	0.037	0.057	0.037	0.005
Total Suspended Solids	160	32	19	26	10.5	29	19.5	Report

Table 6: Influent Parameters

	ROD	KPDES Std.	2/10/1999	4/28/1999	5/26/1999	6/30/1999	7/28/1999	8/30/1999	11/1/1999	11/22/1999	12/29/1999	2/7/2000	3/6/2000	3/29/2000	1/3/2001	6/25/2001	6/12/2002	12/11/2002	6/13/2003	12/5/2003	6/3/2004	12/15/2004	6/24/2005	1/4
General Parameters (mg/L) unless otherwise noted																								
BOD			110		52.3	37.8	34.4	55.1	49.9	58.3	76.9	79.6	55.6	25	180	163	123	111	81	47	104	220	51	
COD			270	250	232	173	189	244	287	291	293	278	269	180	404	410	254	290	197	120	254	340	190	
N(NH3)			20	16	6.8	14.7	12.9	7.83	14.9	6.74	12.6	7.85	5.23		15.5	5.35	9	8	6.9	6	4	5.9	7.1	
N(K)			17	20	15.2	16	16	19	20	21	18.1	19	12	14	15	12	9	10	7.9	6	6.4	7.6	6.6	
N(NO3)																	0.55				0.4	0.41	0.15	
N(NO2)																			0.007			0.6	0.15	
N(NO2+NO3)												0.25	0.27	0.15	0.28	<0.10	0.55	0.5	0.007		0.4			
TOC			89	75	54.9	46.6	52.5	62.1	76	76	151	78	56.5	59	123	86	120	55	49.3	42	75.9	166.2	41.8	
pH (s.u.)			7.9	6.9	6.77	7.03	6.8	6.88	6.79	7.02	7.47	7.83	7.63	7.31	7.74	6.7	6.8	7.82	6.67	7	6.6	7.2	6.86	
TDS			1300	1400	1290	1390		1720	1740	1690	1670	1540	1490	1450	1450	1430	1290	1300	1310	1424	1480	1500	1500	
TSS			31	10	36	20	29	36	28	107	19	16	16	14	26	12	42	10	11	10	29	<5	284	
Turbidity (NTU)			200	160	154	153	155	110	186	196	38	30.5	38.2	67.5	191	91.6	54	300	100	36.6	5.1	190	2.8	
Metals (mg/L)																								
Antimony	0.062	1.6																						
Arsenic	0.011	0.05	0.0023	0.0021											<.01	<.01								
Barium	0.231		0.65	0.49	0.51	0.44	0.44	0.43	0.53	0.7	0.65	0.63	0.1	0.5	0.365	0.286	0.1	0.19	0.12	0.09	0.12	0.8	0.22	
Beryllium		0.0053																						
Cadmium		0.0011																						
Calcium			160	150	134	132	143	156	156	139	138	135	53.3	127	118	121	100	120	110	110	124	127	124	
Chromium	0.011	0.011																						
Copper		0.012																						
Iron		1	20	15	15.7	17.8	14.9	10.7	14.7	22.3	8.63	4.15	0.1	7.58	7.15	7.79	4.3	8	5.98	9.18	7.5	51.6	60.4	
Lead		0.0032																						
Magnesium			97	94	89.9	84.6	98.1	102	101	88.9	96	93.2	84.7	98	93.1	91.6	89	92	120	96.7	119	110	112	
Manganese			2.1	2	1.85	1.6	1.95	1.91	1.77	1.49	1.69	1.46	1.46	1.37	1.85	2.29	1.8	1.51	1.69	1.4	1.71	1.57	1.52	
Nickel	0.16		0.021												<0.05	<0.05		0.02	0.03	0.03	0.03		0.09	
Selenium	0.005		0.0058	0.0035											<0.10	<0.10						0.08		
Zinc	0.11		0.0029												<0.02	<0.02		0.02	0.05	0..03		0.1	0.14	
Volatile organics (µg/L) by method SW8260																								
Acetone			5100	7000	5000		3000	3800	2300	200	5300	4500	2700		12000	13000	1840	4100	3040	4840	2130	6690	502	
Chloroethane												8												
1,1-DCE	5								18	5		12			19	14		7				14		
cis 1,2 DCE									17	5		11			14	15	7					8		
1,1-DCA	5								44	5	42	41	10		59	75		71		48	68	148	22	
Chloroform			330		590	590	590	590	300	5	42	300	130		740	950		178	550	310	422	1230	189	
2-Butanone					2300		1200	1600	1200	100	2700	2100	1700		4700	5500	7	2070	1390	1480	883	4060	362	
1,2-Dichloropropane	5			100																				
4-Meth-2-Pentanone			76						410	10	880	500	480		1400	1400	260	604		520	221	1050		
2-Hexanone									11	10	50	21	12		31	29				17				
Methylene Chloride	5		1100	2200	1700	1700	750	750	840	50	1400	1000	470		2700	2900	450	924	800	640	1390	2930	109	
1,1,2,2-Tetrachloroethane	5			130					68	5	98	85	61		170	150	68	84	100	62		238	45	
Toluene	5			200					77	5	92	100	32		150	150		55		39		112	25	
Benzene	5								22	5		22	8		15	21	5	8						
Ethylbenzene	5								20	5		45	31		23	39	6	10				14		
m-, and p-Xylene									280		260	350	150		150	200		43		15		38		
o-Xylene										5								11		5		14	6	
1,1,2-TCA	5			310					160	5	67	190	120		350	370	139	178	140	99	160	500	78	
1,1,1-TCA	5			130					52	5		46			73	67	13	15	70	21		43	11	
Semi-volatile organics (µg/L) by method SW8270																								
TCE	5								28	5	32	34	12		78	92	12	26	50	24	50	64	20	
Isophorone			93		53	33	32	42	60		11	69	54		130	140	50	60	580	60	60	136		
2,4-Dimethylphenol												13	13		17									
2-Methylphenol			76	110	59	41	34	43	58		71	64	44		110	160	60				50			
Phenol			470	990	360		200		54	31	490		330		940	1200	290	400	320	400	140	100		
4-Methylphenol					64	42	29	49	66			65	44		130	160								
Naphthalene					110	110		110																
2-methNaph					26	26	26																	
Hexachlorocyclopentadiene					28																			
bis 2-ethylhexyl) phthalate										10														
2,2-oxybis (1-Chloropropane											71													

Table 7: Effluent Parameters Summary

	Applicable							To Be Considered	
Effluent Parameters	**7/10/1997 KPDES letter***	**9/17/1993 ROD**	**1999 LAW O&M Manual Table 1.1**	**2002 Current MACTECH O&M Manual Table 1.1**	**401 KAR 5:031 Surface Water Standards[4]**	**401 KAR 34:060 Groundwater Standards**	**Comments**	**40 CFR 141 Subpart G MCLs[5]**	**40 CFR 141 Subpart F MCLGs[5]**
Arsenic[1]	0.050 mg/l	0.011 mg/l	0.011 mg/l	0.011 mg/l	0.01 mg/l	0.050 mg/l		0.010 mg/l	0.0 mg/l
Barium		0.231 mg/l	0.231 mg/l	0.231 mg/l	1 mg/l	2 mg/l		2 mg/l	2 mg/l
Beryllium[1]	0.0053 mg/l		0.0053 mg/l	0.0053 mg/l	0.004 mg/l	0.004 mg/l		0.004 mg/l	0.004 mg/l
Cadmium[1]	0.0011 mg/l		0.0011 mg/l	0.0011 mg/l	0.005 mg/l	0.005 mg/l		0.005 mg/l	0.005 mg/l
Hexavalent Chromium	0.011 mg/l	0.011 mg/l	0.011 mg/l	0.011 mg/l		0.1 mg/l		0.1 mg/l	0.1 mg/l
Copper[1]	0.012 mg/l		0.012 mg/l	0.012 mg/l	1.3 mg/l			1.3 ppm[6]	1.3 ppm[6]
Free Cyanide	0.005 mg/l		0.005 mg/l	0.005 mg/l	0.7 mg/l	0.2 mg/l		0.2 mg/l	0.2 mg/l
Iron[1]	1.0 mg/l		1.0 mg/l	1.0 mg/l					
Lead[1]	0.0032 mg/l		0.0032 mg/l	0.0032 mg/l	0.015 mg/l	0.05 mg/l		0.015 mg/L[6]	0.0 mg/l
Mercury[1]	0.000012 mg/l		0.0002 mg/l[2]	0.0002 mg/l[2]	0.002 mg/l	0.002 mg/l		0.002 mg/l	0.002 mg/l
Nickel[1]	0.160 mg/l		0.160 mg/l	0.160 mg/l	0.61 mg/l	0.1 mg/l			
Selenium[1]	0.005 mg/l		0.005 mg/l	0.005 mg/l	0.17 mg/l	0.05 mg/l		0.05 mg/l	0.05 mg/l
Silver[1]	0.00012 mg/l		0.0005 mg/l[2]	0.0005 mg/l[2]		0.05 mg/l			
Thallium[1]	0.040 mg/l	0.011 mg/l	0.011 mg/l	0.011 mg/l	0.0017 mg/l	0.002 mg/l		0.002 mg/l	0.0005 mg/l
Zinc[1]	0.110 mg/l		0.110 mg/l	0.110 mg/l	7.4 mg/l				
2-chlorophenol		0.023 mg/l	0.023 mg/l	0.023 mg/l	0.081 mg/l				
Methylene Chloride	< 0.005 mg/l	5.870 mg/l	< 0.005 mg/l	< 0.005 mg/l	0.0046 mg/l	0.005 mg/l			
Nitrobenzene		0.250 mg/l	0.250 mg/l	0.250 mg/l	0.017 mg/l				
N-nitroso-di-n-propylamine		0.011 mg/l	0.011 mg/l	0.011 mg/l	0.0033 mg/l				
1,1-Dichloroethane	< 0.005 mg/l		< 0.005 mg/l	< 0.005 mg/l					
1,1-Dichloroethylene, total	< 0.005 mg/l		< 0.005 mg/l	< 0.005 mg/l	0.00057 mg/l	0.007 mg/l		0.007 mg/l	0.007 mg/l
1,2-Dichloroethane	< 0.005 mg/l		< 0.005 mg/l	< 0.005 mg/l	0.00038 mg/l	0.005 mg/l		0.005 mg/l	0.0 mg/l
1,2-Dichloropropane	< 0.005 mg/l		< 0.005 mg/l	< 0.005 mg/l	0.0005 mg/l	0.005 mg/l		0.005 mg/l	0.0 mg/l
Trichloroethylene	< 0.005 mg/l		< 0.005 mg/l	< 0.005 mg/l	0.0025 mg/l	0.005 mg/l		0.005 mg/l	0.0 mg/l
Benzene	< 0.005 mg/l		< 0.005 mg/l	< 0.005 mg/l	0.0022 mg/l	0.005 mg/l		0.005 mg/l	0.0 mg/l
1,1,2-Trichloroethane	< 0.005 mg/l		< 0.005 mg/l	< 0.005 mg/l	0.00059 mg/l	0.005 mg/l		0.005 mg/l	0.003 mg/l
Tetrachloroethylene	< 0.005 mg/l		< 0.005 mg/l	< 0.005 mg/l	0.00069 mg/l	0.005 mg/l		0.005 mg/l	0.0 mg/l
Toluene	< 0.005 mg/l		< 0.005 mg/l	< 0.005 mg/l	6.8 mg/l	1 mg/l		1 mg/l	1 mg/l
Ethylbenzene	< 0.005 mg/l		< 0.005 mg/l	< 0.005 mg/l	3.1 mg/l			0.7 mg/l	0.7 mg/l
1,2-Dichlorobenzene	< 0.005 mg/l		< 0.005 mg/l	< 0.005 mg/l	2.7 mg/l	0.6 mg/l		0.6 mg/l	0.6 mg/l
1,4-Dichlorobenzene	< 0.005 mg/l		< 0.005 mg/l	< 0.005 mg/l	0.4 mg/l	0.075 mg/l		0.075 mg/l	0.075 mg/l
Phenol	< 0.005 mg/l	365.000 mg/l	< 0.010 mg/l[3]	< 0.010 mg/l[3]	21 mg/l		discrepancy unresolved		
2,4-Dimethylphenol	< 0.005 mg/l	4.570 mg/l	< 0.010 mg/l[3]	< 0.010 mg/l[3]	0.38 mg/l		discrepancy unresolved		
Butyl benzyl phthalate	< 0.005 mg/l		< 0.010 mg/l[3]	< 0.010 mg/l[3]	1.5 mg/l		discrepancy unresolved		

[1]Note: Parameters listed in the above table with an (*) were indicated in the 7/10/97 letter from Kentucky Department of Environmental Protection to Law Environmental as "Total Recovery."

[2]Note: MACTECH O&M Manual (2002) stated the discharge limits for mercury and silver were established during design, as criteria required of the equipment manufacturers and the installation contractor. The effluent discharge criteria were established as 0.000012 mg/l Mercury and 0.00012 mg/l for Silver. These detection levels are not currently achievable, therefore, the lowest possible reporting levels the laboratory can achieve (0.0002 mg/l Mercury and 0.0005 mg/l Silver) have been established. Other laboratory limits should be evaluated in the future with respect to permit requirements.

[3]Note: No explanation defining the difference between design criteria (O&M Manual) and KDEP for the three indicated parameters have been identified.

[4]Note: Allowable instream concentrations for Human Health Domestic Water Supply

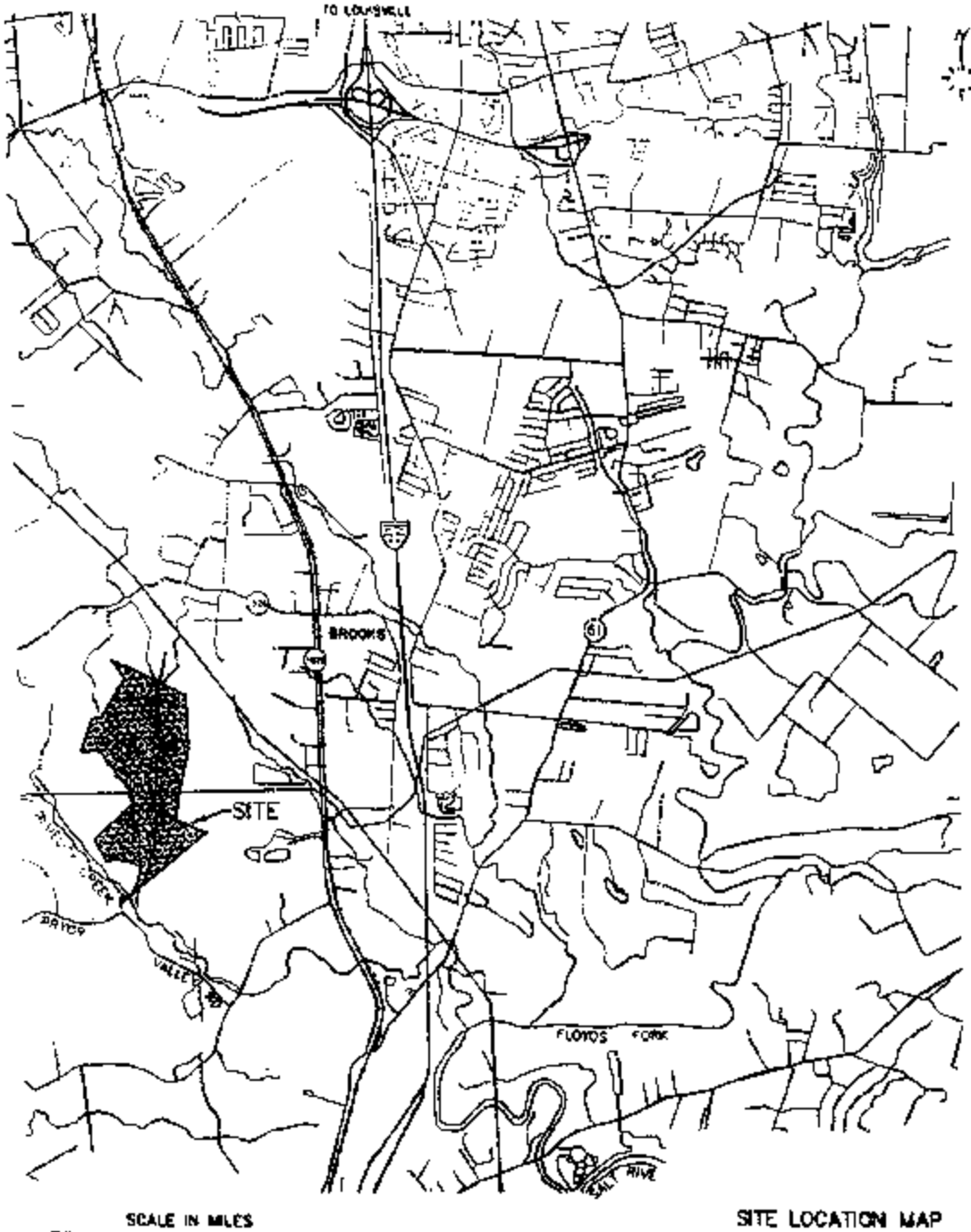
[5] Federal Drinking Water Standards, 40 CFR 141

[6] Action Level for analyte as listed in Appendix A Part D 40 CFR 141

Table 8: Smith's Farm Landfill
2006 5-year Review Recommendations

Issue	Recommendations	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness	
					Current	Futur
Erosion	Repair eroded areas of cap	PRP	EPA	Quarterly Reports	N	N
Stressed Vegetation	Repair areas of stressed vegetation	PRP	EPA	Quarterly Reports	N	N
Groundwater Monitoring	Plot contaminant concentrations on site map as part of the annual report in order to monitor concentrations within the landfill and determine if the leachate capture system is successfully preventing migration off site	PRP	EPA	2006 Annual Report	N	N
Gas Venting	Conduct evaluation to determine whether gaseous emissions should be monitored to ensure the effectiveness of the existing vent system	PRP	EPA	2007 Annual Report	N	N
Vandalism/ Trespassing	Consider implementing more progressive trespassing and vandalism control measures	PRP	EPA	On-going	N	N
Data Reporting	An evaluation of detection limits and reporting limits as compared to permit limits should be included in the parameters reported	PRP	EPA	2006 Annual Report	N	N
Data Reporting	Annual reports should plot the influent and effluent concentrations versus time to show annual variability and overall site progress	PRP	EPA	2006 Annual Report	N	N

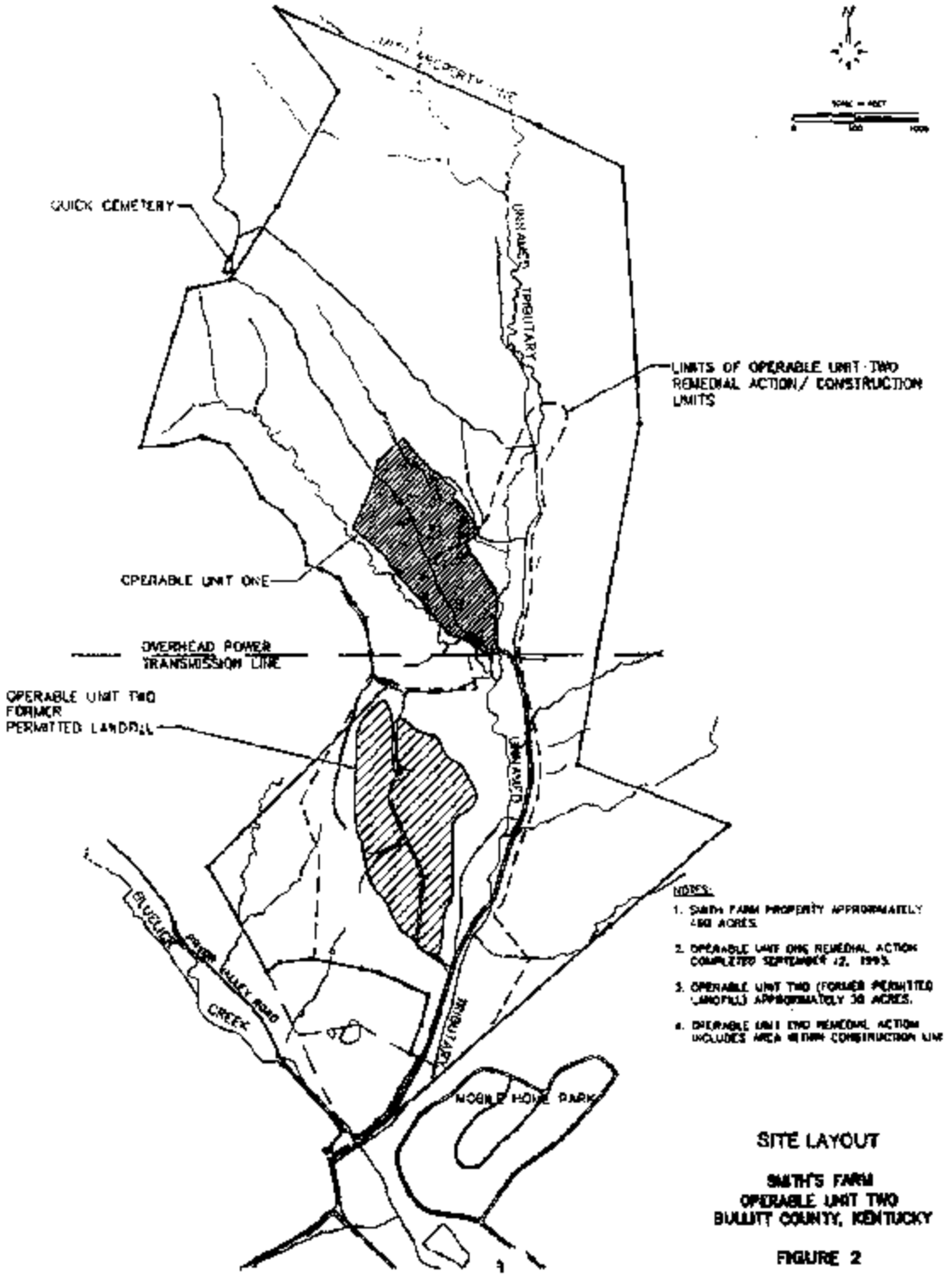
FIGURES



SITE LOCATION MAP

SMITH'S FARM
OPERABLE UNIT TWO
BULLITT COUNTY, KENTUCKY

FIGURE 1

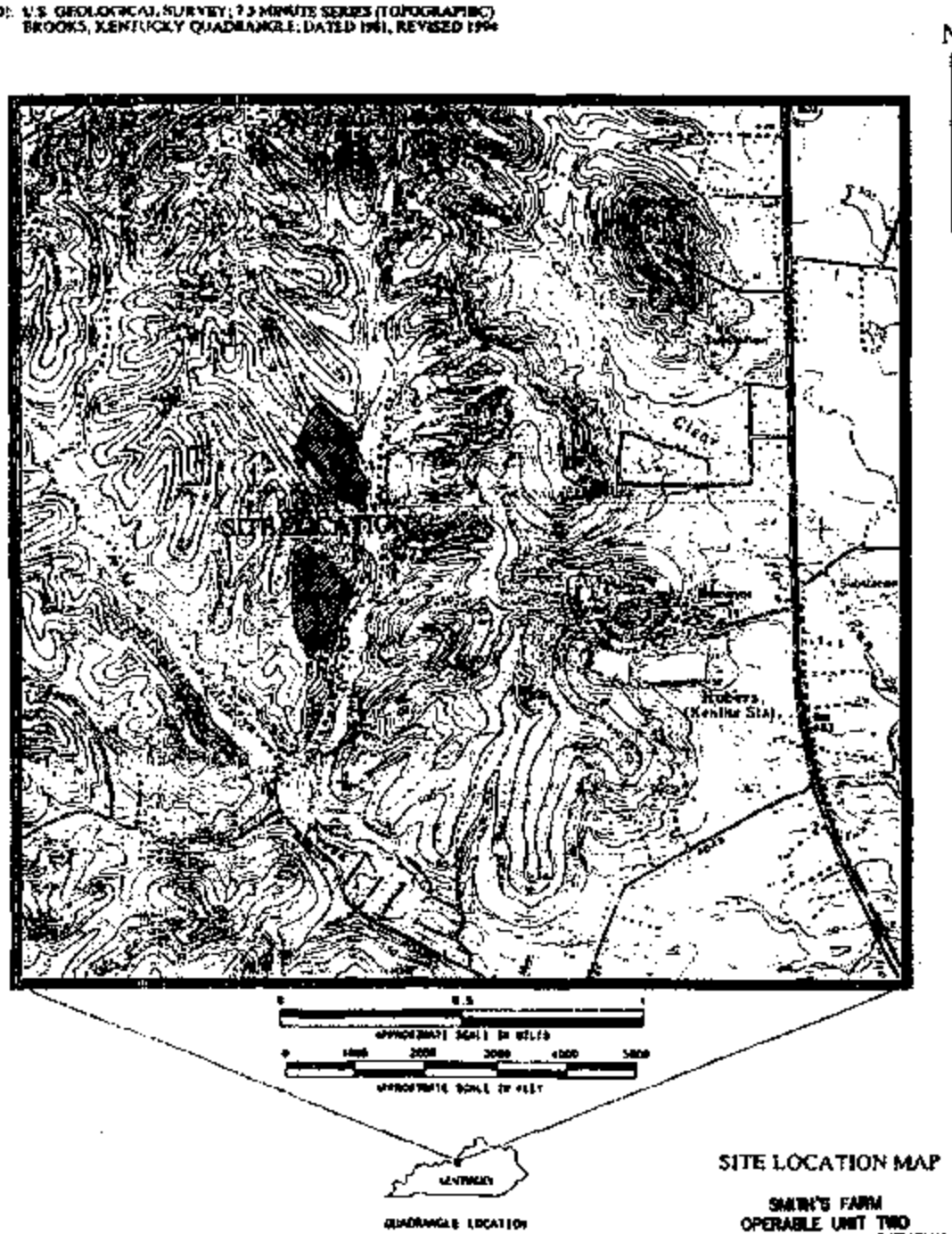


SITE LAYOUT

SMITH'S FARM
OPERABLE UNIT TWO
BULLITT COUNTY, KENTUCKY

FIGURE 2

SOURCE: U.S. GEOLOGICAL SURVEY; 7.5 MINUTE SERIES (TOPOGRAPHIC)
BROOKS, KENTUCKY QUADRANGLE; DATED 1961, REVISED 1994



QUADRANGLE LOCATION

SITE LOCATION MAP

SMITH'S FARM
OPERABLE UNIT TWO
BULLITT COUNTY, KENTUCKY

FIGURE 3

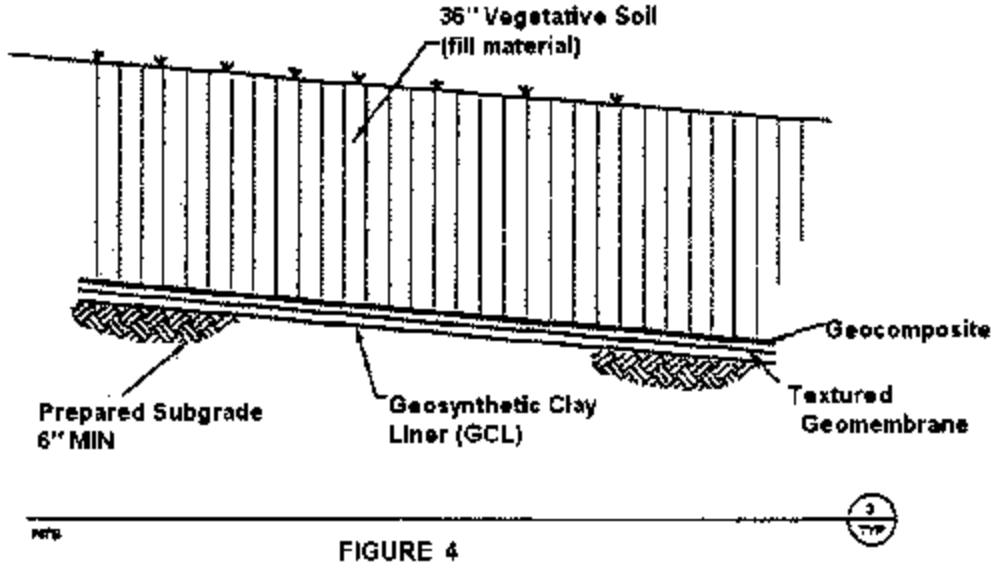


FIGURE 4

LANDFILL COVER SYSTEM SECTION

NOTES:

1. SEE DRAWING NO. CL-101 FOR EROSION CONTROL SYMBOLS.
2. SEE DRAWING NO. CL-105 FOR APPROXIMATE LOCATION OF WATER LINE. WATER LINE, LOCATED WEST OF THE PAVED ACCESS ROAD, IS NOT SHOWN HERE FOR CLARITY.
3. ELEVATION OF SUBGRADE SHALL VARY ALONG TERRACES TO MAINTAIN A UNIFORM THICKNESS OF SOIL COVER AS THE TERRACE ELEVATION VARIES FOR DRAINAGE.
4. DRAINAGE DITCH DIMENSIONS CANNOT BE ACCURATELY REPRESENTED AT THE SCALE OF 1"=100' ON THIS DRAWING. REFER TO DETAIL 5.1 ON DRAWING NO. CL-105 FOR DITCH DIMENSIONS.
5. HAY BALE SEDIMENT BARRIERS SHALL BE USED IN AREAS OF LOCALIZED EROSION OR AS DIRECTED BY THE ENGINEER. HAY BALE LOCATIONS ARE NOT SHOWN ON THIS DRAWING. REFER TO DETAIL 6.6 ON DRAWING NO. CL-106 FOR HAY BALE INFORMATION.
6. SEE DRAWING NO. CL-108 FOR TURF REINFORCEMENT MATTING (TRM) INSTALLATION DETAILS.

DRAINAGE DITCH SCHEDULE

DRAINAGE POINT	NORTHING	EASTING
1	198567.3	1573075.7
2	198388.8	1572860.1
3	198063.7	1571887.5
4	198631.-	1572383.0
5	198430.5	1572684.4
6	198116.9	1572381.5
7	198756.5	1572281.6
8	199637.2	1573151.7
9	199979.8	1572985.7
10	198812.1	1571469.9
11	198102.4	1572916.4
12	198456.1	1572732.2
14	198421.3	1572958.5
15	198282.9	1573116.4
16	198675.7	1573032.7
17	198835.0	1573163.4
18	200587.7	1572284.0
19	200350.3	1572824.7
20	200240.3	1572881.6
21	200106.1	1572805.4
22	198648.2	1573105.8

LEGEND

- TOE DRAIN
- PROPERTY LINE
- GABIONS
- EXISTING DITCH
- PROPOSED PERMANENT FENCE
- TERRACE
- PROPOSED SILT FENCE
- PROPOSED CHECK DAM
- EROSION CONTROL REVEGETATION MATTING (ECRM)
- TRM (ENKAMAT 7020)
- TRM (ENKAMAT 7010)
- SOD
- PROPOSED DITCH
- SURFACE WATER FLOW DIRECTION
- HIGH POINT ON TERRACE
- CULVERT WITH RIPRAP
- TOE DRAIN OUTLET

Figure 5
Surface Water Drainage/Erosion Control

NOTES:

1. LOCATIONS OF EXISTING SURFACE AND SUBSURFACE STRUCTURES ARE APPROXIMATE. FIELD LOCATION OF STRUCTURES WILL REQUIRE CONTRACTORS VERIFICATION.
2. EXTEND INVERT ELEVATION OF EXTRACTION WELLS THREE FEET BELOW TOP OF SHALE FORMATION.
3. SEE DWG. CL-002 FOR LOCATION AND ELEVATIONS OF LEACHATE COLLECTION TRENCH PIPE.
4. SEE DWGS. CL-002 FOR LOCATION AND ELEVATIONS OF GROUND WATER INTERCEPTOR TRENCH.
5. SEE DWG. CL-111 FOR DETAILS OF THE EXTRACTION WELL MANHOLES.
6. SEE DWG. CL-007 FOR LEACHATE PLANT AND SEPTIC SYSTEM LAYOUT PLAN.
7. SEE DWG. ME-012 FOR LIFT STATION PIPING DETAILS.
8. SEE DWG. ME-013 FOR EXTRACTION WELL PIPING DETAILS.
9. EXISTING 4" DIA. OR 6" DIA. SCHEDULE 40 PVC PIPE, DEPTH UNKNOWN.
10. LOCATION AND EXTENT OF BOTH LEACHATE SEEPS AND LEACHATE SEEP INTERCEPTOR TRENCH ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BEFORE CONSTRUCTION.
11. SEE DWG. CL-007 FOR ACCURATE DEPICTION OF LEACHATE LIFT STATION. LIFT STATION DEPICTED GRAPHICALLY ON THIS SHEET FOR CLARITY AND IS NOT TO SCALE.

LEACHATE COLLECTION SYSTEM
SCHEDULE LOCATION

	DEPTH*	NORTHING	EASTING
EW-1	26 FEET	198872	1572315
EW-2	35 FEET	199308	1572340
EW-3	25 FEET	199701	1572300
EW-4	37 FEET	199392	1572041
EW-5	47 FEET	199750	1572585
JUNCTION MANHOLE	*	198882	1572569
LO-1	N/A	198838	1572715
LO-2	N/A	198830	1572861
LO-3	N/A	199134	1572440
LO-4	N/A	199195	1572412
LO-5	N/A	199508	1572389
LO-6	N/A	199184	1572508
LO-7	N/A	199838	1573557

SEE PLAN VIEW FOR COORDINATES FOR INFILTRATION GALLERY

* APPROXIMATE DEPTH OF EXTRACTION WELLS FROM FINAL GRADE TO BOTTOM OF WASTE. FOR DEPTH OF JUNCTION MANHOLE SEE DRAWING C-112

LEGEND:

- LC — APPROXIMATE LOCATION OF EXISTING LEACHATE COLLECTION PIPE
- PROPOSED PERIMETER LEACHATE COLLECTION TRENCH WITH STATION MARKS
- GR — PROPOSED LEACHATE GRAVITY LINE
- FM — PROPOSED LEACHATE FORCE MAIN
- GROUND WATER INTERCEPTOR TRENCH WITH TRENCH DISCHARGE POINT
- LEACHATE COLLECTION PIPE CLEANOUT AND VENT
- EW-2 PROPOSED LEACHATE EXTRACTION WELL
- JUNCTION MANHOLE LEACHATE MANHOLE
- APPROXIMATE LOCATION OF LEACHATE SEEP INTERCEPTOR TRENCH
- APPROXIMATE LOCATION OF LEACHATE SEEP
- LO-1 LEACHATE DETECTION POINT
- P.O.B. POINT OF BEGINNING

Figure 6
Leachate Collection System, OU2

GAS VENT SCHEDULE

VENT NUMBER	NORTHING	EASTING
1	198588.7	1572641.6
2	198850.2	1572536.9
3	198800.3	1572400.0
4	198837.1	1572564.6
5	198912.3	1572748.9
6	198954.3	1572580.4
7	199047.0	1572946.8
8	198986.1	1572152.4
9	199010.0	1572050.0
10	199181.0	1572537.9
11	199134.7	1572189.4
12	199279.3	1572504.9
13	199208.9	1572787.5
14	199305.9	1572714.1
15	199338.0	1572825.9
16	199360.0	1572133.0
17	199400.0	1572200.0
18	199351.9	1571971.1
19	199811.1	1572357.4
20	199646.9	1572476.1
21	199628.5	1572761.7
22	199689.6	1572864.6
23	199853.1	1572443.7
24	199834.9	1572402.6
25	199769.9	1572197.0
26	199908.9	1572825.5
27	199933.9	1572899.1
28	200000.0	1572967.0
29	199946.9	1572448.1
30	200014.5	1571968.9
31	200142.0	1572293.6
32	200172.0	1572680.8
33	200247.1	1572544.8
34	200296.6	1572413.1
35	200240.4	1571976.6
36	200368.7	1572393.3
37	200440.5	1572326.0
38	200560.0	1572310.0
39	200560.0	1572115.0

MONUMENT 50
N 200522.05
E 1573310.39
ELEV = 559.22

MONUMENT 51R
N 200223.78
E 1573322.15
ELEV = 569.93

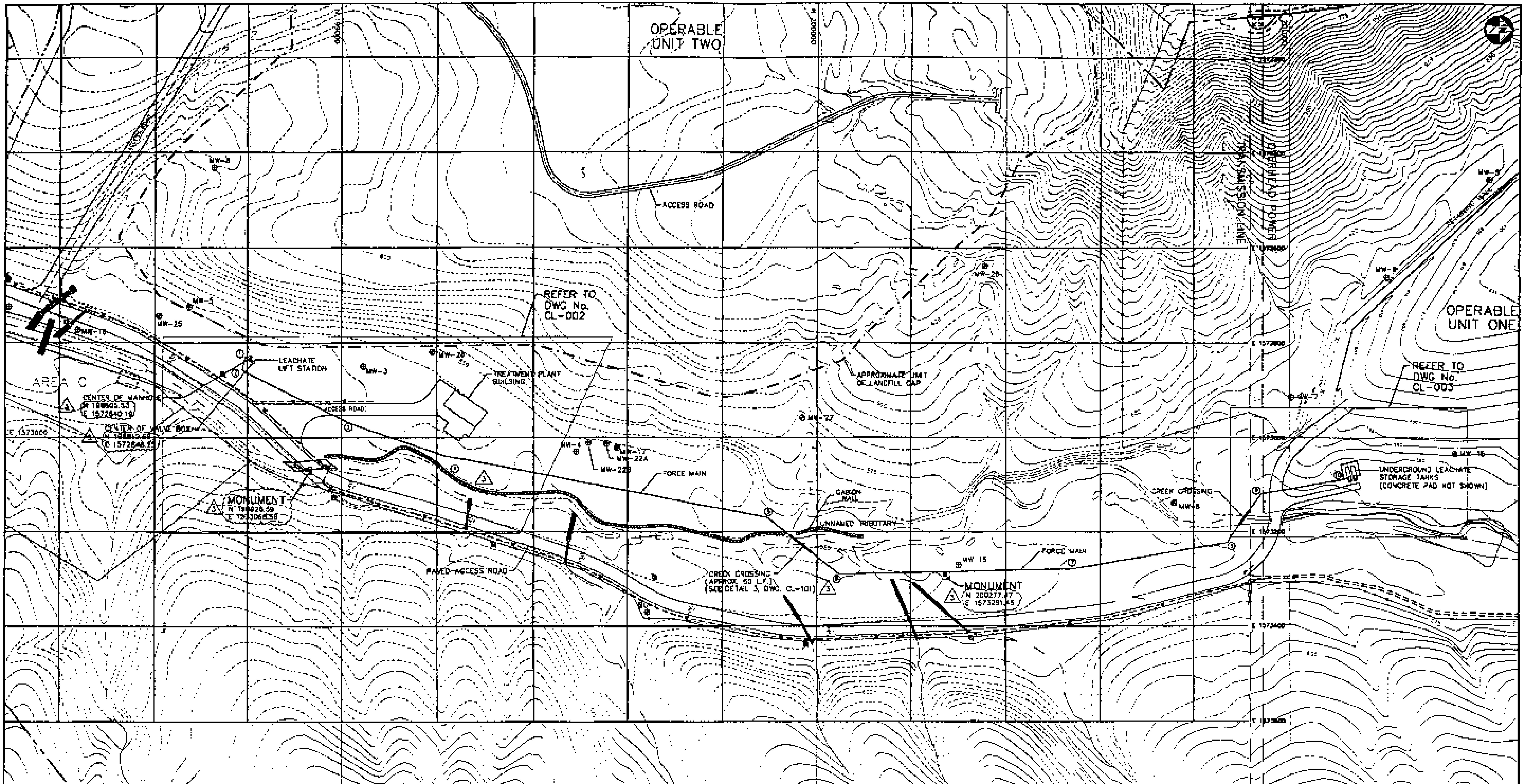
NOTE:

1. GAS VENTS TO BE CONSTRUCTED ON TERRACES SHALL BE CONSTRUCTED ON THE FRONT EDGE OF THE TERRACE.
2. GAS VENTS LOCATED ADJACENT TO WESTERN EDGE OF LANDFILL SHALL BE LOCATED A MINIMUM OF SIX FEET FROM THE VERTICAL FACE OF THE TRENCH.

LEGEND:

- ⊕ 1 — PROPOSED GAS VENT AND DESIGNATION
- ——— GAS VENTING GEOCOMPOSITE
- TERRACE WITH GAS VENTING GEOCOMPOSITE
- TERRACE WITHOUT GAS VENTING GEOCOMPOSITE

Figure 7
Gas Control System



FORCE MAIN ALIGNMENT

POINT No.	NORTH	EAST
1	198706	1572528
2	198789	1572867
3	199020	1572969
4	199219.6	1573040.5
5	199895	1573173
6	200047.8	1573290.9
7	200539	1573379
8	200871	1573223
9	200942	1573170
10	201101	1573080

LEGEND:

- EXIST. WATER LINE
- EXISTING GABIONS
- EXISTING BENCHMARK
- PROPOSED FORCE MAIN
- PROPERTY LINE
- EXISTING FENCE
- EXISTING CONTOUR
- EXISTING DITCH
- MW-20 EXISTING MONITORING WELL

NOTES:

1. TOPOGRAPHIC CONTOURS SHOWN ON THIS DRAWING WERE OBTAINED FROM CONTRACT DRAWINGS FOR REMEDIAL ACTION. NOT ALL CONTOURS HAVE BEEN UPDATED TO REFLECT AS-BUILT INFORMATION.
2. THIS DRAWING DEPICTS THE CONSTRUCTION AREA IN ITS ENTIRETY. DETAILED INFORMATION FOR THE FORCE MAIN LAYOUT IS PROVIDED ON THE REFERENCED DRAWINGS.
3. CONTRACTOR SHALL USE CAUTION WHEN WORKING IN THE VICINITY OF OVERHEAD POWER LINES AND OTHER UTILITIES, AND SHALL OBSERVE SAFE WORK PRACTICES.
4. CONTRACTOR SHALL PROTECT EXISTING GABIONS BETWEEN ALIGNMENT POINTS 5 AND 6. GABIONS THAT ARE DAMAGED SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
5. FORCE MAIN ALIGNMENT MAY REQUIRE ADJUSTMENT, DEPENDING ON SITE CONDITIONS. ALIGNMENT ADJUSTMENTS SHALL BE APPROVED BY THE ENGINEER. INSTALL ELBOW FITTINGS AT INDICATED LOCATIONS. AT OTHER PIPE BENDS, INSTALL ELBOWS OR BEND PIPE TO MINIMUM RADIUS IN ACCORDANCE WITH PIPE MANUFACTURER'S SPECIFICATIONS.

SCALE IN FEET 0 100 200

THESE DRAWINGS HAVE BEEN REVISED TO RECORD CHANGES MADE DURING CONSTRUCTION BASED ON AVAILABLE INFORMATION, AND DO NOT NECESSARILY REFLECT ALL DETAILS OF THE PROJECT AS ACTUALLY BUILT.

SURVEYED COORDINATES FOR FORCE MAIN, MONUMENTS AND LEACHATE LIFT STATION WERE PROVIDED BY FORCE MAIN CONTRACTOR'S SURVEYOR.

REV	DATE	BY	CHK	APP	DESCRIPTION
3	3/2/01				CONSTRUCTION REVISIONS
2	8/7/00	SAL	JLS	VCO	RELEASED FOR CONSTRUCTION
1	3/19/00	SAL	JLS	VCO	REISSUED FOR BIDDING

DESIGNED: S.A. LIND
DRAWN: C. BUDSOCK/V. ZUNIGA
CHECKED: J. STUDER
IN CHARGE: J. STUDER
DATE: 10 AUG 99

SMITH'S FARM OPERABLE UNITS ONE AND TWO

BULLITT COUNTY, KENTUCKY

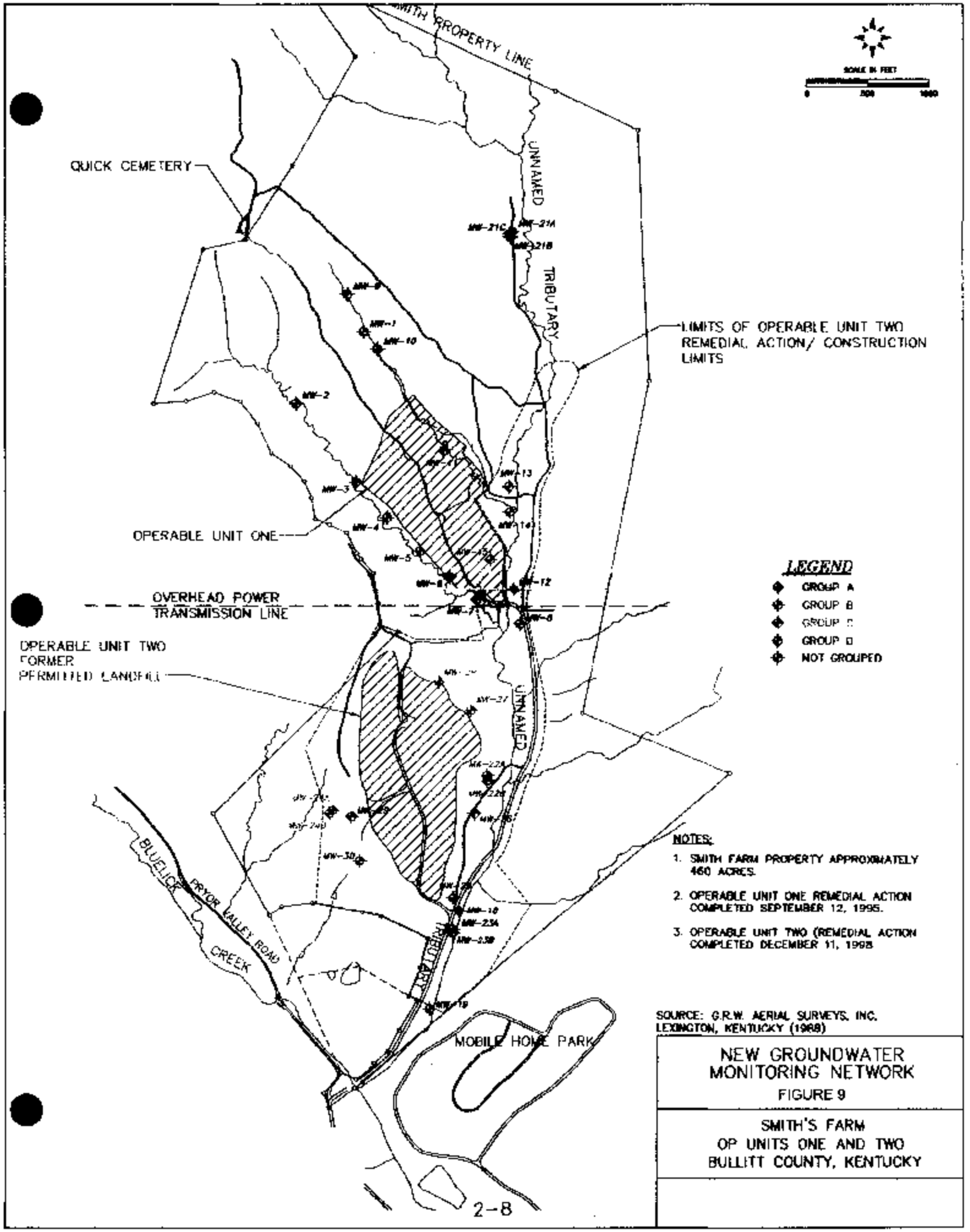
APPROVED

OU1 LEACHATE ROUTING

FIGURE 8

SCALE: AS SHOWN
CONTRACT: 12000-8-0206
DWG NO.: CL-001
REV: 3
SHEET: 3

CADD FILE: PLOT DATE: 3/2/01


SMITH PROPERTY LINE
QUICK CEMETERY
UNNAMED TRIBUTARY
LIMITS OF OPERABLE UNIT TWO REMEDIAL ACTION/ CONSTRUCTION LIMITS
OPERABLE UNIT ONE
OVERHEAD POWER TRANSMISSION LINE
OPERABLE UNIT TWO FORMER PERMITTED LANDFILL
UNNAMED
BLUELICK CREEK
PRYOR VALLEY ROAD
MOBILE HOME PARK
LEGEND
GROUP A
GROUP B
GROUP C
GROUP D
NOT GROUPED
NOTES:
1. SMITH FARM PROPERTY APPROXIMATELY 460 ACRES.
2. OPERABLE UNIT ONE REMEDIAL ACTION COMPLETED SEPTEMBER 12, 1995.
3. OPERABLE UNIT TWO (REMEDIAL ACTION COMPLETED DECEMBER 11, 1998
SOURCE: G.R.W. AERIAL SURVEYS, INC. LEXINGTON, KENTUCKY (1988)
NEW GROUNDWATER MONITORING NETWORK
FIGURE 9
SMITH'S FARM
OP UNITS ONE AND TWO
BULLITT COUNTY, KENTUCKY

STREAM NUMBER		1 (**)	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18 (*)	19
STREAM IDENTIFIER	Units	System Influent	50% NaOH	75% H_3PO_4	Air Stream	SBR Outlet	SBR Sludge Waste	SBR NaOH	0.1% Polymer	Sludge Out	93.19% H_2SO_4	Air Stripper Feed Tank Inlet	Stripper - Inlet	Stripper - Outlet	Air Stream	Carbon - Out	Sludge C. Tank	Sludge Thickening Tank Out	Solids from Press	Sump
FLOW RATE	GPM	30.30	0.0118	0.0085	407 cfm	22.19	0.36	0.0371	0.0513	2.90	0.0032	30.35	30.35	30.35	350 cfm	30.35	0.31	1.84	---	3.04
TOTAL MASS FLOW	lb/hr	10,080.0	6.5	6.4	---	11,264.0	173.9	23.6	8	1,2[illegible].1	2.9	8,759.9	8,769.9	8,760.0	---	8,760.9	111.61	415.7	34.6	1,530.6
METALS AND SOLIDS																				
BARIUM	ug/L	820	0	0	---	820	---	0	0	---	0	160	150	160	---	---	---	---	---	---
CADMIUM	ug/L	12	0	0	---	12	---	0	0	---	0	1	7	7	---	---	---	---	---	---
IRON	ug/L	140,000	0	0	---	140,000	---	0	0	---	0	360	360	640	---	---	---	---	---	---
MAGNESIUM	ug/L	20,000	0	0	---	80,000	---	0	0	---	0	47,000	47,000	47,000	---	---	---	---	---	---
NICKEL	ug/L	190	0	0	---	190	---	0	0	---	0	44	44	44	---	---	---	---	---	---
ZINC	ug/L	48	0	0	---	48	---	0	0	---	0	70	70	25	---	---	---	---	---	---
THALLIUM	ug/L	26	0	0	---	26	---	0	0	---	0	23	23	23	---	---	---	---	---	---
ARSENIC	ug/L	35	0	0	---	35	---	0	0	---	0	25	25	25	---	---	---	---	---	---
LEAD, TOTAL	ug/L	7	0	0	---	7	---	0	0	---	0	4	4	4	---	---	---	---	---	---
BOD	mg/L	2,600	---	---	---	300 (est)	---	0	---	---	0	500 (est)	500 (est)	500 (est)	---	---	---	---	---	---
TOTAL SUSPENDED SOLIDS	mg/L	580,000	---	---	---	---	---	---	---	---	---	10,000	10,000	10,000	---	---	---	---	---	---
% SOLIDS	%	0.45	---	---	---	0.4	1.0	---	---	2.0	---	0.15	0.15	0.15	---	---	6.35	4.06	45.0	---
VOLATILE COMPOUNDS																				
METHYLENE CHLORIDE	ug/L	2,900	0	0	---	---	---	0	0	---	0	2,930	2,900	5	---	5	---	---	---	---
1,1 DICHLOROETHANE	ug/L	430	0	0	---	---	---	0	0	---	0	430	430	5	---	5	---	---	---	---
1,2 DICHLOROETHENE, TOTAL	ug/L	80	0	0	---	---	---	0	0	---	0	80	80	5	---	5	---	---	---	---
1,2 DICHLOROETHANE	ug/L	220	0	0	---	---	---	0	0	---	0	220	220	5	---	5	---	---	---	---
1,2 DICHLOROPROPANE	ug/L	160	0	0	---	---	---	0	0	---	0	160	160	5	---	5	---	---	---	---
TRICHLOROETHENE	ug/L	340	0	0	---	---	---	0	0	---	0	340	380	5	---	5	---	---	---	---
BENZENE	ug/L	140	0	0	---	---	---	0	0	---	0	140	140	5	---	5	---	---	---	---
1,1,2-TRICHLOROETHANE	ug/L	250	0	0	---	---	---	0	0	---	0	250	250	5	---	5	---	---	---	---
TETRACHLOROETHANE	ug/L	130	0	0	---	---	---	0	0	---	0	130	130	5	---	5	---	---	---	---
TOLUENE	ug/L	3,600	0	0	---	---	---	0	0	---	0	3,600	3,600	5	---	5	---	---	---	---
ETHYL BENZENE	ug/L	280	0	0	---	---	---	0	0	---	0	280	280	5	---	5	---	---	---	---
1,2 DICHLOROBENZENE	ug/L	110	0	0	---	---	---	0	0	---	0	110	110	5	---	5	---	---	---	---
1,4 DICHLOROBENZENE	ug/L	220	0	0	---	---	---	0	0	---	0	220	220	5	---	5	---	---	---	---
PHENOL	ug/L	23,000	0	0	---	---	---	0	0	---	0	23,000	23,000	23,000 ***	---	5	---	---	---	---
2,4 DIMETHYLPHENOL	ug/L	7,400	0	0	---	---	---	0	0	---	0	7,400	7,400	7,400 ***	---	5	---	---	---	---
BUTYL BENZYL PHTHALATE	ug/L	15	0	0	---	---	---	0	0	---	0	15	15	15 ***	---	5	---	---	---	---

NOTES:

* = TOTAL MASS FLOW REPORTED IN POUNDS PER DAY FOR THE SLUDGE BASED UPON CONVERSION OF THE METAL TO THE HYDROXIDE AND ACTIVATED SLUDGE AT 45 WT% SOLID WITH 1.0 PRECOAT

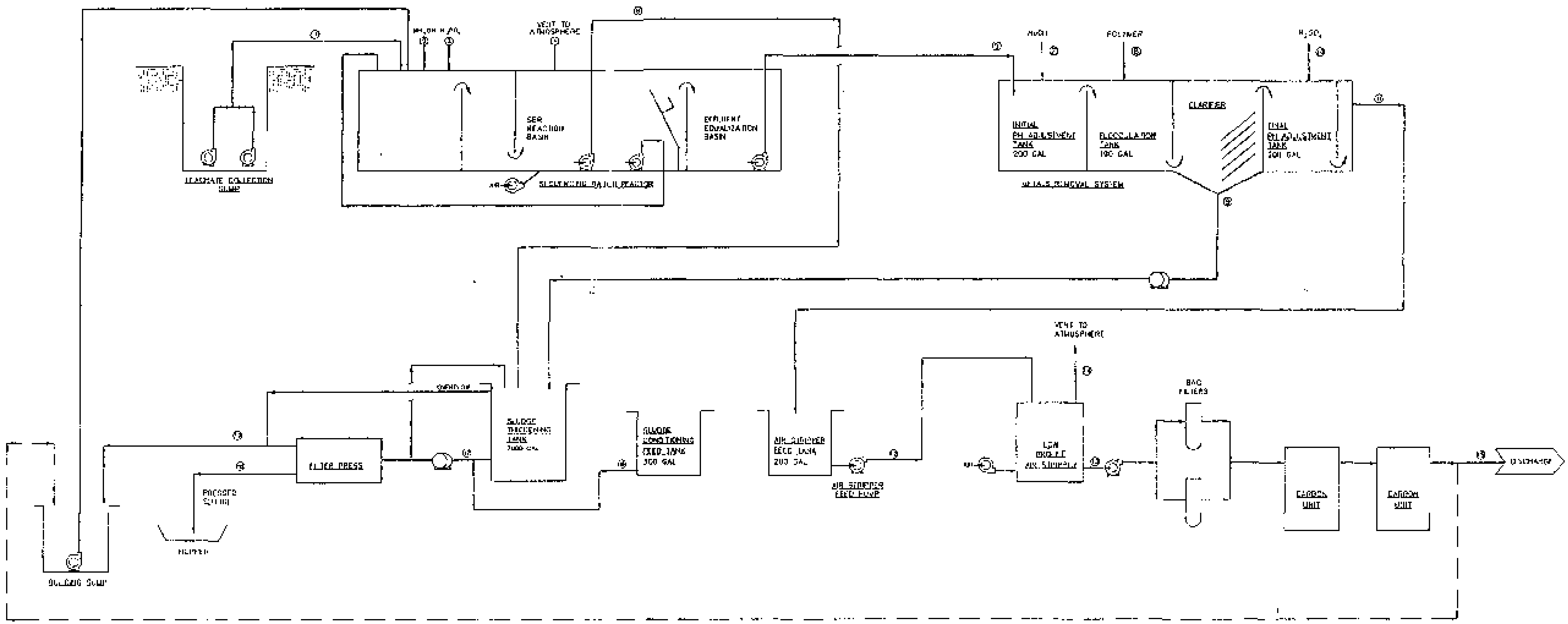
** = CONCENTRATIONS BASED UPON TREATABILITY STUDY FOR LEACHATE FROM SMITH'S FARM OPERABLE UNIT TWO LANDFILL SITE, APRIL 1995

*** = THESE COMPOUNDS ARE NOT SIGNIFICANTLY REMOVED BY AIR STRIPPING. EFFLUENT CONCENTRATION ASSUMED EQUAL TO INFLUENT CONCENTRATION AS A MAXIMUM.

GPM = GALLONS PER MINUTE

lb/hr = POUNDS PER HOUR

ug/L = MICROGRAMS PER LITER



SMITH'S FARM OPERABLE UNIT TWO	Figure 10
BULLITT COUNTY, KENTUCKY	Process Flow Diagram

41-963508

PI-002 | 0 | 63

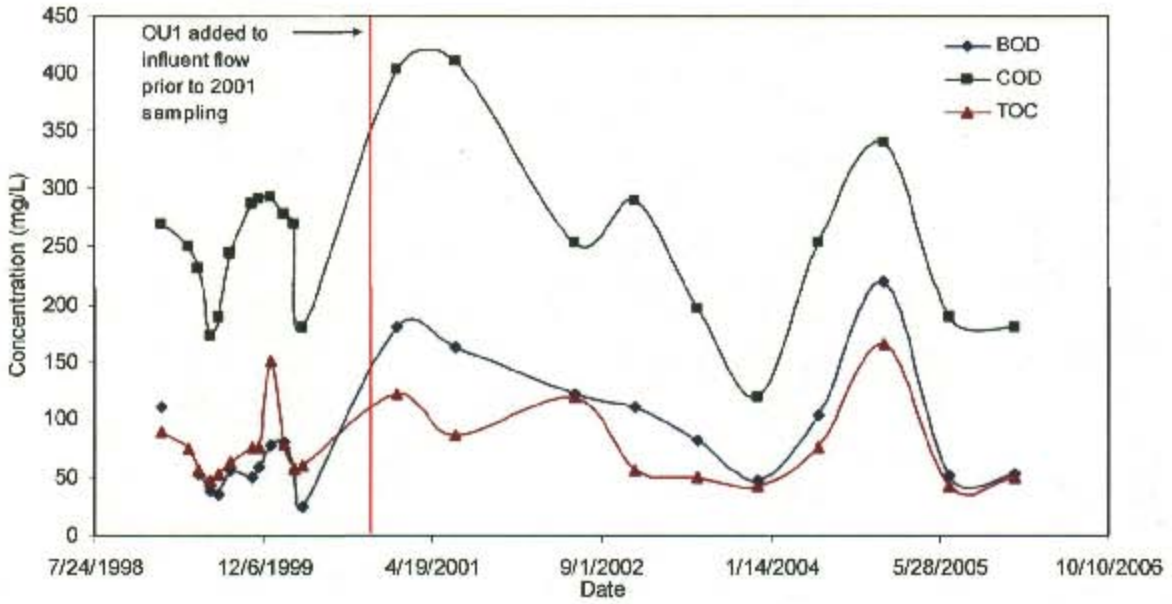


Figure 11
BOD, COD and TOC influent concentrations with time
Smith's Farm Landfill
Brooks County, KY

Photographs

5-Year Review Site Visit March 16, 2006

Photo 1- Entrance Gate and Signs Posted.

Photo 2- Entrance Gate and Signs Posted

Photo 3- Inside Gate: looking toward leachate treatment facility; OU2 to left of structure, adjacent property and stream to right of photographer

Photo 4- Leachate Treatment Facility

Photo 5- Storage for Maintenance Equipment: Adjacent to Leachate Treatment Structure

Photo 6- Leachate Collection Lift Station

Photo 7- Typical Monitoring Well Installation

Photo 8- Letdown Channel at OU2

Photo 9- OU2: Marker for elevation monument (foreground), and gas vents (back)

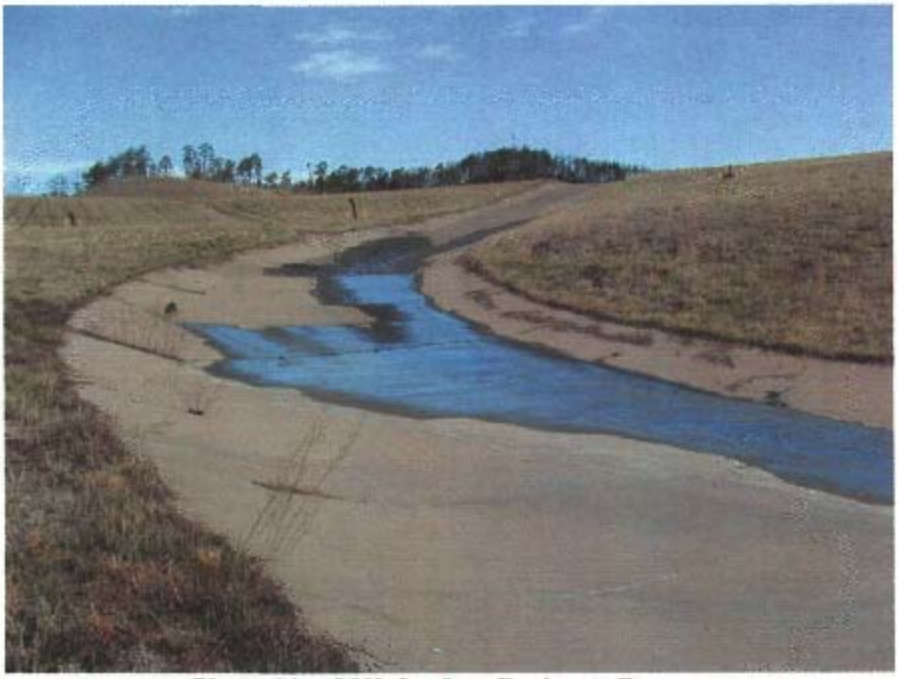


Photo 10- OU2 Surface Drainage Feature

Photo 11- OU2 Surface Drainage Feature

Photo 12- OU2 Typical Extraction Well, and Gas Vent

Photo 13- View to north across top of OU2: Improved vegetation is evident

Photo 14- OU2 Typical Extraction Well, and Gas Vent: Some erosion and rodent burrowing evident at base

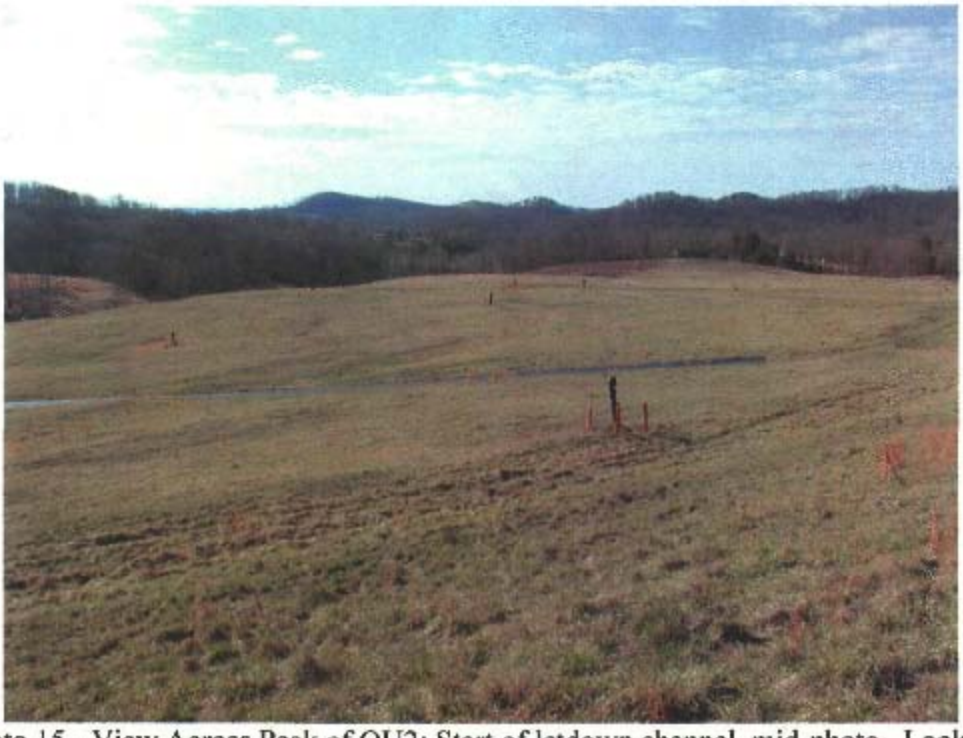


Photo 15- View Across Peak of OU2: Start of letdown channel, mid-photo. Looking south

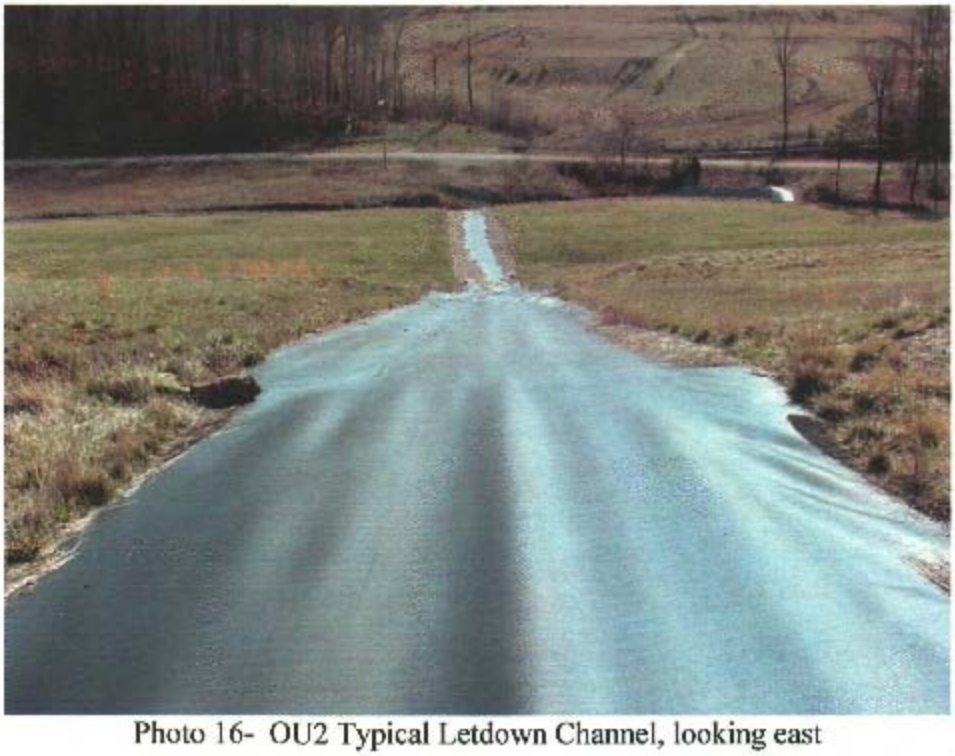


Photo 16- OU2 Typical Letdown Channel, looking east

Photo 17- View down at two monitoring locations from top of OU2: looking east

Photo 18- Base of OU1, looking northwest

Photo 19- OU1 Collection Pump Station

Photo 20- OU1 Slope Near Retaining Wall

Photo 21- OU1 Retaining Wall

Photo 22- OU1: view down from top of retaining wall

Photo 23- View Across OU1: Retaining wall to left of photographer, looking south.

Photo 24- View Across OU1: Retaining wall to left of photographer, looking south.

Photo 25- Small Area of Stressed Vegetation at OU1

Photo 26- OU1 Western Boundary, looking south.

Photo 27- Sandbags protecting drain from debris at southernmost corner of OU1.

Photo 28- Collected Leachate from Extraction Wells 1, 2, and 4

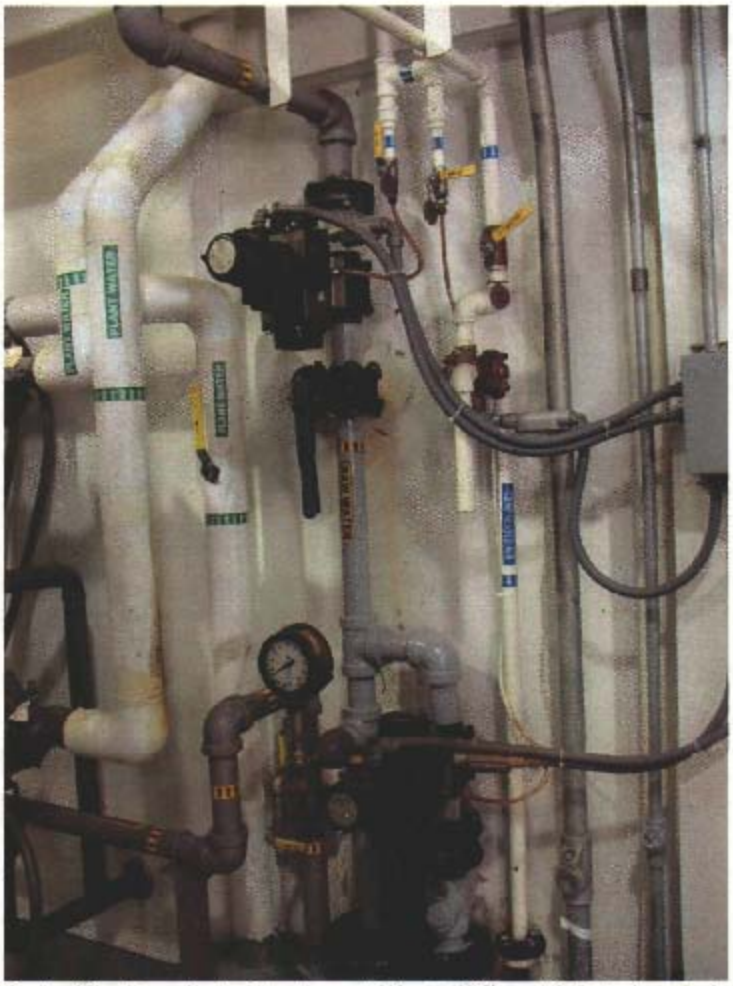


Photo 29- Leachate Treatment Plant-Influent Metering Point

Photo 30- Package Sequencing Batch Reactor (SBR)

Photo 31- Package Sequencing Batch Reactor (SBR) Control

Photo 32- Sludge Thickening Tank (T-8-1)

Photo 33- Package Metals Removal Unit (MRU)

Photo 34- Package Low Profile Air Stripper (R-4-1)

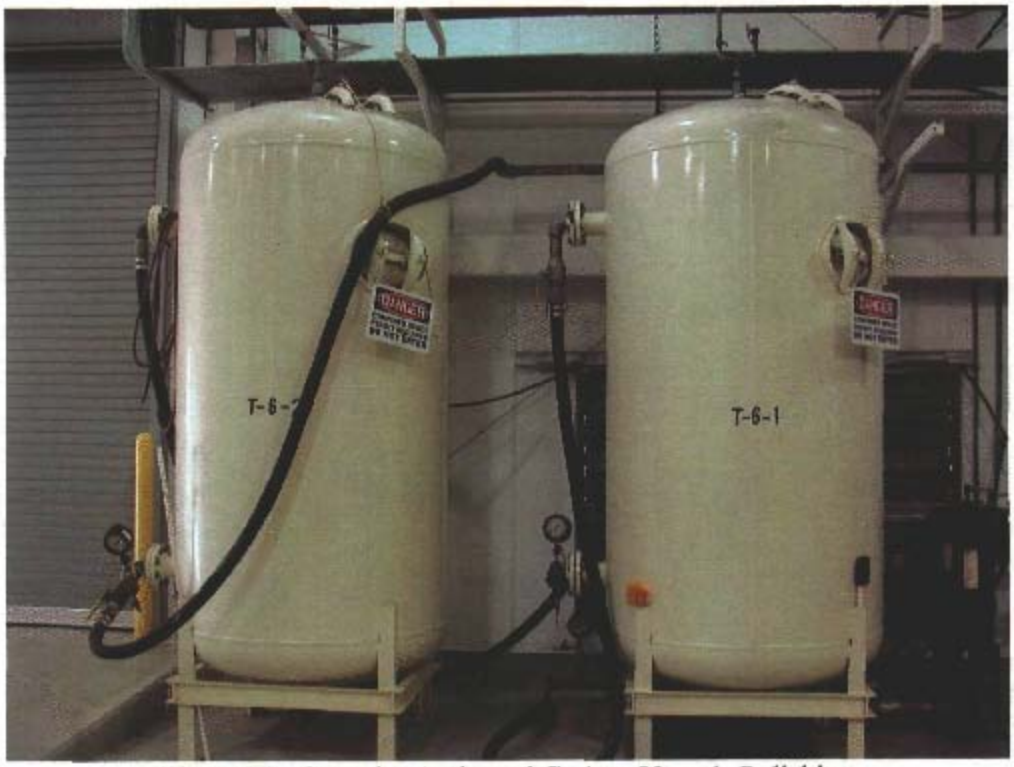


Photo 35- Granular Activated Carbon Vessel- Polishing

Photo 36- Package Filter Press- Sludge Dewatering

Photo 37- Effluent Discharge Point

Photo 38- Bike Trails on Smith Farm Property, Trespassing.

Photo 39- Bike Trails on Smith Farm Property, Trespassing.

Photo 40- Sign Vandalism

Photo 41- Sign Vandalism

Photo 42- Sign Vandalism

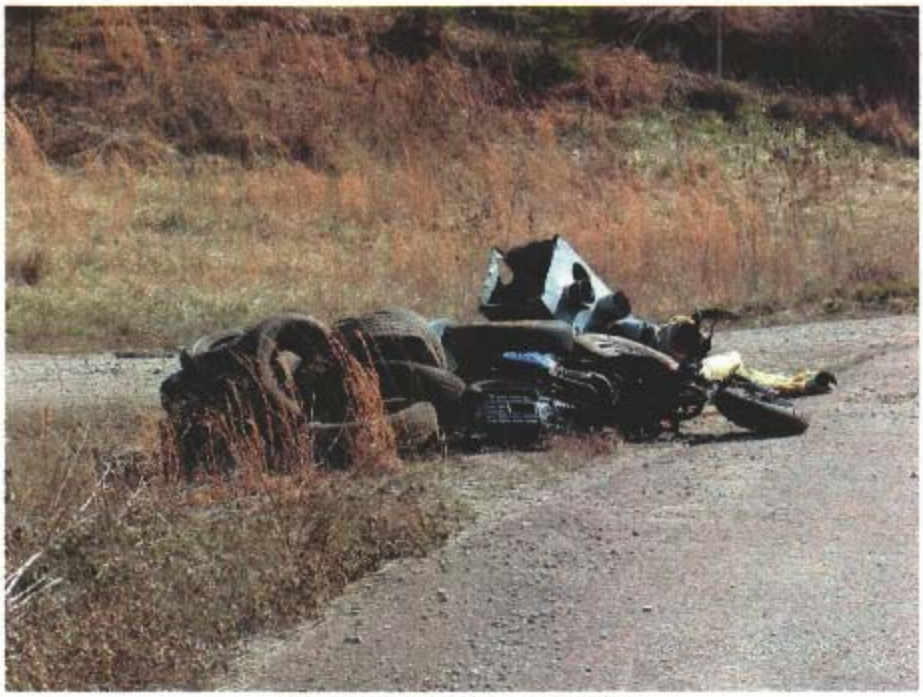


Photo 43- Onsite waste pile.

Photo 44- Stream adjacent to right side of entry drive, and property on other side of stream, outside of entry gate

Photo 45- Stream adjacent to right side of entry drive, and property on other side of stream, inside of entry gate

Photo 46- Proximity of adjacent property (left) to entry gate (right). Photographer is inside gate.

Photo 47- View of adjacent property, from inside gate.

Appendix A

5-Year Review EPA Public Notice

EPA Announces a Five-Year Review For the Smith's Farm Superfund Site

The U.S. Environmental Protection Agency (EPA), is currently conducting a Five-Year Review of the Smith's Farm Superfund Site located on Pryor Valley Road in Brooks, Kentucky. The purpose of a Five-Year Review is to evaluate the implementation and performance of the selected cleanup remedy in order to determine if the remedy is, or will be, protective of human health and the environment.

The site was placed on the National Priorities List (NPL) in June 1986 and includes two operable units (OUs). OU 1 includes soil, sediment and groundwater contamination, as well as drums containing hazardous materials, associated with an unpermitted drum disposal area. A remedy for OU 1 was selected through a Record of Decision (ROD) signed in September 1989 and amended in 1991. OU 2 includes landfill wastes, leachate, leachate sediment, surface soil, groundwater and surface water contamination associated with the 37.5-acre landfill. A remedy for OU 2 was selected through a ROD signed in September 1993.

The Superfund law requires the U.S. EPA to evaluate the effectiveness of the selected remedy every five years until the site contaminant concentrations are at levels which allow for unlimited use of the property. This is the second Five-Year Review of the Smith's Farm Site.

It is anticipated that the Five-Year Review Report will be completed by September 2006. Upon completion, a copy of the final report will be placed in the local information repository located at the Ridgeway Memorial Library, located at 2nd and Walnut Street in Shepherdsville, Kentucky 40165. A copy will also be placed on EPA's website, http://www.epa. gov/superfund/sites/fiveyear/index. htm

If you have concerns or suggestions regarding the Smith's Farm Five-Year Review, please contact either Clark Rushing, Remedial Project Manager, U.S. EPA, Region 4, 61 Forsyth St. SW, Atlanta, GA 30303-8960, (404) 562-8821, Rushing. Clark@epa.gov or Eddie L. Wright, Community Involvement/EJ Coordinator, U.S.EPA, Region 4, 61 Forsyth St. SW, Atlanta, GA 30303-8960, (404) 562-8669, wright.eddie@epa.gov.

Appendix B

5-Year Review Participants

5-Year Review Participants

Name/Title	Organization	Address	Phone	Fax	E-mail
Richard Kennard, Env. Geologist	USACE Louisville	P. O. Box 59 Louisville, KY 40201-0059	502-315-6323	502-315-6309	Richard. A. Kennard@LRL02.usace.army.mil
Kari L. Meier, Env. Chemist	USACE Louisville	P. O. Box 59 Louisville, KY 40201-0059	502-315-6316	502-315-6309	Kari.L.Meier@LRL02.usace.army.mil
Susan Mallette, Env. Tech	KDEP, Div. of Waste Management	14 Reilly Road, Frankfort, KY 40601-1190	502-564-6716	502-564-5096	Susan. Mallette@KY.gov
Robert Pugh, Env. Tech	KDEP, Div. of Waste Management	14 Reilly Road, Frankfort, KY 40601-1190	502-564-6716	502-564-5096	Robert.Pugh@KY.gov
Kelli Reynolds, Env. Tech	KDEP, Div. of Waste Management	14 Reilly Road, Frankfort, KY 40601-1190	502-564-6716	502-564-5096	Kelli.Reynolds@KY.gov
Davis Miller, Principal Env. Engineer	Ford Motor Company	Parklane Towers West, Suite 950, Three Parklane Blvd, Dearborn, MI 48126	313-322-3761	313-248-5030	DMiller2@Ford.com
Eddie Taylor, Sr. Env. Tech.	MACTEC Engineering and Consulting, Inc.	13425 Eastpoint Centre Dr. Suite 122, Louisville, KY 40223	502-955-5349	502-253-2501	ETaylor@MACTEC.com
Jeffery Engels, Sr. Env. Tech., Principal	MACTEC Engineering and Consulting, Inc.	3200 Town Point Drive, NW, Suite 100 Kennesaw, GA 30144	770-421-3353	770-421-3486	JDEngles@MACTEC.com
Clark Rushing Remedial Project Mgr.	U.S. EPA, Region 4	61ForsythSt. S. W. Atlanta, GA 30303	404-562-8821	404-562-8788	Rushing.Clark@EPA.gov

Appendix C

5-year Review Site Inspection Checklists

Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

Five-Year Review Site Inspection Checklist (Template)

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION

Site name: Smith's Farm	**Date of inspection:** 3/16/06
Location and Region: Shepherdsville, KY Region IV	**EPA ID:** ~~AI4323~~ KYD097267413
Agency, office, or company leading the five-year review: USEPA Region IV	**Weather/temperature:** Sunny, Windy, Cool

Remedy Includes: (Check all that apply)

- X Landfill cover/containment
- Access controls
- X Institutional controls
- X Groundwater pump and treatment
- Surface water collection and treatment
- Other _____
- Monitored natural attenuation
- Groundwater containment
- X Vertical barrier walls

Attachments: Inspection team roster attached Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** Ebbert B Taylor (Name) Operator (Title) _____ (Date)
   Interviewed at site at office by phone Phone no. _____
   Problems, suggestions; Report attached _____

2. **O&M staff** _____ (Name) _____ (Title) _____ (Date)
   Interviewed at site at office by phone Phone no. _____
   Problems, suggestions; Report attached _____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; Report attached _____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; Report attached _____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; Report attached _____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; Report attached _____

4. **Other interviews** (optional) Report attached.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1.	**O&M Documents**			
	O&M manual	X Readily available	X Up to date	N/A
	As-built drawings	X Readily available	Up to date	X N/A
	Maintenance logs	X Readily available	X Up to date	N/A
	Remarks			
2.	**Site-Specific Health and Safety Plan**	X Readily available	X Up to date	N/A
	Contingency plan/emergency response plan	X Readily available	X Up to date	N/A
	Remarks			
3.	**O&M and OSHA Training Records**	Readily available	Up to date	N/A
	Remarks			
4.	**Permits and Service Agreements**			
	Air discharge permit	Readily available	Up to date	X N/A
	Effluent discharge	Readily available	Up to date	X N/A
	Waste disposal, POTW	Readily available	Up to date	X N/A
	Other permits	Readily available	Up to date	X N/A
	Remarks			
5.	**Gas Generation Records**	Readily available	Up to date	X N/A
	Remarks			
6.	**Settlement Monument Records**	X Readily available	X Up to date	N/A
	Remarks			
7.	**Groundwater Monitoring Records**	X Readily available	X Up to date	N/A
	Remarks			
8.	**Leachate Extraction Records**	X Readily available	X Up to date	N/A
	Remarks			
9.	**Discharge Compliance Records**			
	Air	Readily available	Up to date	X N/A
	Water (effluent)	X Readily available	X Up to date	N/A
	Remarks			
10.	**Daily Access/Security Logs**	Readily available	Up to date	X N/A
	Remarks			

IV. O&M COSTS

1. **O&M Organization**

State in-house	Contractor for State
PRP in-house	X Contractor for PRP
Federal Facility in-house	Contractor for Federal Facility
Other	

2. **O&M Cost Records**

Readily available Up to date
Funding mechanism/agreement in place
Original O&M cost estimate _____ Breakdown attached

Total annual cost by year for review period if available

From _____ To _____ _____ Breakdown attached
Date Date Total cost
From _____ To _____ _____ Breakdown attached
Date Date Total cost
From _____ To _____ _____ Breakdown attached
Date Date Total cost
From _____ To _____ _____ Breakdown attached
Date Date Total cost
From _____ To _____ _____ Breakdown attached
Date Date Total cost

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: R & R Lift Station Pump

V. ACCESS AND INSTITUTIONAL CONTROLS Applicable N/A

A. Fencing

1. **Fencing damaged** X Location shown on site map X Gates secured N/A
Remarks _____

B. Other Access Restrictions

1. **Signs and other security measures** Location shown on site map X N/A
Remarks _____

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented — Yes X No N/A
Site conditions imply ICs not being fully enforced — Yes X No N/A

Type of monitoring (*e.g.*, self-reporting, drive by) self
Frequency quarterly
Responsible party/agency MACTEC
Contact Jeff Engels, MACTEC PM

Name	Title	Date	Phone no.

Reporting is up-to-date — X Yes No N/A
Reports are verified by the lead agency — X Yes No N/A

Specific requirements in deed or decision documents have been met — X Yes No N/A
Violations have been reported — They are reported here. Yes No N/A
Other problems or suggestions: Report attached
Interviews with local residents indicate current controls may not be enough to keep trespassers out.

2. **Adequacy** ICs are adequate ICs are inadequate N/A
Remarks Controls such as signs and gates are repaired or replaced often, only to be vandalized or stolen again.

D. General

1. **Vandalism/trespassing** Location shown on site map No vandalism evident
Remarks Ongoing issue, Vandalism evident, Signs replaced are removed (stolen or shot) within days/weeks of replacement; gates repaired often

2. **Land use changes on site** X N/A
Remarks

3. **Land use changes off site** X N/A
Remarks

VI. GENERAL SITE CONDITIONS

A. Roads Applicable N/A

1. **Roads damaged** Location shown on site map X Roads adequate N/A
Remarks

B. Other Site Conditions

Remarks

VII. LANDFILL COVERS Applicable N/A

A. Landfill Surface

1. **Settlement** (Low spots) Location shown on site map Settlement not evident
   Areal extent 30' x 40' Depth -2"
   Remarks grid spacing

2. **Cracks** Location shown on site map X Cracking not evident
   Lengths Widths Depths
   Remarks

3. **Erosion** Location shown on site map Erosion not evident
   Areal extent Depth
   Remarks Some small erosion evident, but are being addressed adequately as they occur.

4. **Holes** Location shown on site map X Holes not evident
   Areal extent Depth
   Remarks

5. **Vegetative Cover** Grass X Cover properly established No signs of stress
   Trees/Shrubs (indicate size and locations on a diagram)
   Remarks

6. **Alternative Cover (armored rock, concrete, etc.)** X N/A
   Remarks

7. **Bulges** Location shown on site map X Bulges not evident
   Areal extent Height
   Remarks

8. **Wet Areas/Water Damage** X Wet areas/water damage not evident
   - Wet areas — Location shown on site map — Areal extent: _____
   - Ponding — Location shown on site map — Areal extent: _____
   - Seeps — Location shown on site map — Areal extent: _____
   - Soft subgrade — Location shown on site map — Areal extent: _____

   Remarks: _____

9. **Slope Instability** Slides — Location shown on site map — X No evidence of slope instability
   Areal extent: _____
   Remarks: _____

B. **Benches** Applicable X N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** — Location shown on site map — X N/A or okay
   Remarks: _____

2. **Bench Breached** — Location shown on site map — X N/A or okay
   Remarks: _____

3. **Bench Overtopped** — Location shown on site map — X N/A or okay
   Remarks: _____

C. **Letdown Channels** X Applicable N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** — Location shown on site map — X No evidence of settlement
   Areal extent: _____ Depth: _____
   Remarks: _____

2. **Material Degradation** — Location shown on site map — X No evidence of degradation
   Material type: _____ Areal extent: _____
   Remarks: _____

3. **Erosion** — Location shown on site map — No evidence of erosion
   Areal extent: _____ Depth: _____
   Remarks: _____

4. **Undercutting** Location shown on site map No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____

5. **Obstructions** Type_____ X No obstructions
Location shown on site map Areal extent_____
Size_____
Remarks_____

6. ***Excessive Vegetative Growth*** Type_____
X No evidence of excessive growth
Vegetation in channels does not obstruct flow
Location shown on site map Areal extent_____
Remarks_____

D. Cover Penetrations Applicable N/A

1. **Gas Vents** XActive Passive
Properly secured/locked X Functioning Routinely sampled X Good condition
Evidence of leakage at penetration Needs Maintenance
XN/A
Remarks_____

2. **Gas Monitoring Probes**
Properly secured/locked Functioning Routinely sampled X Good condition
Evidence of leakage at penetration Needs Maintenance N/A
Remarks_____

3. **Monitoring Wells (within surface area of landfill)**
Properly secured/locked X Functioning X Routinely sampled X Good condition
Evidence of leakage at penetration Needs Maintenance X N/A
Remarks_____

4. **Leachate Extraction Wells**
Properly secured/locked X Functioning Routinely sampled X Good condition
Evidence of leakage at penetration Needs Maintenance X N/A
Remarks_____

5. **Settlement Monuments** X Located X Routinely surveyed N/A
Remarks_____

E. Gas Collection and Treatment Applicable X N/A

1. **Gas Treatment Facilities**
   Flaring Thermal destruction Collection for reuse
   Good condition Needs Maintenance
   Remarks

2. **Gas Collection Wells, Manifolds and Piping**
   Good condition Needs Maintenance
   Remarks

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   Good condition Needs Maintenance N/A
   Remarks

F. Cover Drainage Layer X Applicable N/A

1. **Outlet Pipes Inspected** X Functioning N/A
   Remarks

2. **Outlet Rock Inspected** X Functioning N/A
   Remarks

G. Detention/Sedimentation Ponds Applicable X N/A

1. **Siltation** Areal extent_____ Depth_____ N/A
   Siltation not evident
   Remarks

2. **Erosion** Areal extent_____ Depth
   Erosion not evident
   Remarks

3. **Outlet Works** Functioning N/A
   Remarks

4. **Dam** Functioning N/A
   Remarks

H. Retaining Walls Applicable N/A

1. **Deformations** Location shown on site map X Deformation not evident
Horizontal displacement_____ Vertical displacement_____
Rotational displacement_____
Remarks_____

2. **Degradation** Location shown on site map X Degradation not evident
Remarks_____

I. **Perimeter Ditches/Off-Site Discharge** X Applicable N/A

1. **Siltation** Location shown on site map X Siltation not evident
Areal extent_____ Depth_____
Remarks_____

2. **Vegetative Growth** Location shown on site map X N/A
Vegetation does not impede flow
Areal extent_____ Type_____
Remarks_____

3. **Erosion** Location shown on site map X Erosion not evident
Areal extent_____ Depth_____
Remarks_____

4. **Discharge Structure** X Functioning N/A
Remarks_____

VIII. VERTICAL BARRIER WALLS Applicable N/A

1. **Settlement** Location shown on site map X Settlement not evident
Areal extent_____ Depth_____
Remarks_____

2. **Performance Monitoring** Type of monitoring NA
Performance not monitored
Frequency_____ Evidence of breaching
Head differential_____
Remarks_____

IX. GROUNDWATER/SURFACE WATER REMEDIES [X] Applicable [ ] N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines [X] Applicable [ ] N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
   [X] Good condition [X] All required wells properly operating [ ] Needs Maintenance [ ] N/A
   Remarks _____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   [X] Good condition [ ] Needs Maintenance
   Remarks _____

3. **Spare Parts and Equipment**
   [X] Readily available [X] Good condition [ ] Requires upgrade [ ] Needs to be provided
   Remarks _____

B. Surface Water Collection Structures, Pumps, and Pipelines [ ] Applicable [X] N/A

1. **Collection Structures, Pumps, and Electrical**
   [ ] Good condition [ ] Needs Maintenance
   Remarks _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   [ ] Good condition [ ] Needs Maintenance
   Remarks _____

3. **Spare Parts and Equipment**
   [ ] Readily available [ ] Good condition [ ] Requires upgrade [ ] Needs to be provided
   Remarks _____

C. Treatment System X Applicable N/A

1. **Treatment Train** (Check components that apply)
   - X Metals removal — Oil/water separation — X Bioremediation
   - X Air stripping — X Carbon adsorbers
   - Filters: Bag Filter
   - Additive (e.g., chelation agent, flocculent): EAP 7040
   - Others:
   - X Good condition — X Needs Maintenance
   - X Sampling ports properly marked and functional
   - X Sampling/maintenance log displayed and up to date
   - X Equipment properly identified
   - Quantity of groundwater treated annually: 909,947 gal
   - Quantity of surface water treated annually: NA
   - Remarks:

2. **Electrical Enclosures and Panels** (properly rated and functional)
   - N/A — X Good condition — Needs Maintenance
   - Remarks:

3. **Tanks, Vaults, Storage Vessels**
   - N/A — XGood condition — X Proper secondary containment — Needs Maintenance
   - Remarks:

4. **Discharge Structure and Appurtenances**
   - N/A — X Good condition — Needs Maintenance
   - Remarks:

5. **Treatment Building(s)**
   - N/A — X Good condition (esp. roof and doorways) — Needs repair
   - Chemicals and equipment properly stored
   - Remarks:

6. **Monitoring Wells** (pump and treatment remedy)
   - Properly secured/locked — X Functioning — X Routinely sampled — X Good condition
   - X All required wells located — Needs Maintenance — N/A
   - Remarks:

D. Monitoring Data

1. Monitoring Data
   - X Is routinely submitted on time — X Is of acceptable quality

2. Monitoring data suggests:
   - Groundwater plume is effectively contained — Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
   Properly secured/locked Functioning Routinely sampled Good condition
   All required wells located Needs Maintenance X N/A
   Remarks

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

For both OU1 and OU2, the remedial action objectives are to reduce or prevent the risk associated with direct exposure of humans and fauna to

- Landfill waste and contaminated on-site surface soils;
- Contaminated, on-site surface waters and groundwaters;
- Contaminated, on-site stream sediments; and
- Contaminated on-site leachate and leachate sediments.

Functioning. maintained well. Monitoring activities for GW and Air not accomplished

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

See Document text, section X for protectiveness statement

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

No unexpected costs

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

groundwater monitoring, gas vent monitoring

Appendix D

Annual Report Tables for 2001-2005

TABLES

Table 1: Summary of Treated Leachate Volume - Operable Units One and Two

	Plant Discharge Totals	OU-2 Monitoring Wells Discharge Totals				OU-2 Interceptor Tench Estimated Discharge Totals	OU-1 Tanks Discharge Totals		Monthly Rainfall
Month		MW-1	MW-2	MW-3	MW-4		North Tank	South Tank	Inches
JAN	56169	6558	7113	295	1435	40768	0	0	1.51
FEB	109437	6010	6919	390	1715	94403	0	0	3.77
MAR *	120437	0	0	0	0	120437	0	0	2.46
APR	128250	7903	8248	0	1403	110696	0	0	1.09
MAY	128428	6358	6468	128	1634	113840	0	0	6.61
JUN	95670	3037	3883	97	99	88014	0	540	2.56
JUL	113672	4763	4951	75	701	102516	0	667	2.98
AUG	72426	3845	4300	410	547	63324	0	0	3.07
SEP	89977	5333	4876	99	131	79538	0	0	2.97
OCT	111335	5130	3257	75	694	100748	0	1431	6.46
NOV	97311	6703	3466	0	293	84580	0	2269	5.51
DEC	118033	7101	3816	100	0	89249	210	17557	4.53
TOTALS	1241145	62741	57297	1669	6652	1088112	210	22464	43.52

NOTES:

All discharge volumes in gallons.

No discharge totals were calculated on OU-1 north and south tanks the first six months because the pump was set on automatic discharge.

MW-4 flow meter was damaged due to chemicals in ground water and is inaccurate for the last six months of the year.

* Monitoring wells on OU-2 were shut off in the month of march due to the locating and repair of an air leak associated with a junction box.

Prepared by: J. Ross
Checked by: R. Bocarro

Table 2: Treatment Plant Monthly Effluent Sampling Results

SAMPLE MONTH:		ROD	KPDES	January	March	June	September	December
DATE COLLECTED:		Effluent Requirements	Effluent Requirements	2/2/01	4/25/01	6/25/01	10/12/01	12/14/01
VOLATILE ORGANIC COMPOUNDS BY SW8260								
PARAMETERS	UNITS							
Acetone	ug/L			31	<20	<20	<20	<20
Benzene	ug/L		5	<5	<5	<5	<5	<5
Bromodichloromethane	ug/L			<5	<5	<5	<5	<5
Bromoform	ug/L			<5	<5	<5	<5	<5
Bromomethane	ug/L			<5	<5	<5	<5	<5
2-Butanone	ug/L			12	<10	<10	<10	<10
Carbon Disulfide	ug/L			<5	<5	<5	<5	<5
Carbon Tetrachloride	ug/L			<5	<5	<5	<5	<5
Chlorobenzene	ug/L			<5	<5	<5	<5	<5
Chloroethane	ug/L			<5	<5	<5	<5	<5
Chloroform	ug/L			<5	<5	<5	<5	<5
Chloromethane	ug/L			<5	<5	<5	<5	<5
Dibromochloromethane	ug/L			<5	<5	<5	<5	<5
1,2-Dichlorobenzene	ug/L			NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/L			NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/L			NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/L		5	<5	<5	<5	<5	<5
1,1-Dichloroethane	ug/L		5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	ug/L			<5	<5	<5	<5	<5
Tran-1,2-Dichloroethene	ug/L			<5	<5	<5	<5	<5
total 1,2-Dichloroethene	ug/L			NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/L		5	<5	<5	<5	<5	<5
1,2-Dichloropropane	ug/L		5	<5	<5	<5	<5	<5
trans-1,3-Dichloropropene	ug/L			<5	<5	<5	<5	<5
cis 1,3 Dichloropropene	ug/L			<5	<5	<5	<5	<5
Ethyl benzene	ug/L		5	<5	<5	<5	<5	<5
2-Hexanone	ug/L			<10	<10	<10	<10	<10
4-Methyl-2-pentanone	ug/L			<10	<10	<10	<10	<10
Methylene chloride	ug/L	5870	5	<5	<5	<5	<5	<5
Styrene	ug/L			<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	ug/L			<5	<5	<5	<5	<5
Tetrachloroethene	ug/L		5	<5	<5	<5	<5	<5
Toluene	ug/L		5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	ug/L		5	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	ug/L			<5	<5	<5	<5	<5
Trichloroethene	ug/L		5	<5	<5	<5	<5	<5
Vinyl Chloride	ug/L			<5	<5	<5	<5	<5
Xylenes total	ug/L			<5	<5	<5	<5	<5
SEMI-VOLATILE ORGANIC COMPOUNDS BY SW8270								
Acenaphthene	ug/L			<10	<10	<9	<9	<10
Acenaphthylene	ug/L			<10	<10	<9	<9	<10
Anthracene	ug/L			<10	<10	<9	<9	<10
Benzaldehyde	ug/L			NA	NA	NA	NA	NA
Benzo (A) Anthracene	ug/L			<10	<10	<9	<9	<10
Benzo (A) Pyrene	ug/L			<10	<10	<9	<9	<10
Benzo (B) Flouranthene	ug/L			<10	<10	<9	<9	<10
Benzo(g,h,i)perylene	ug/L			<10	NA	<9	<9	<10
Benzo(k)fluoranthene	ug/L			<10	<10	<9	<9	<10
4-Bromophenyl-phenylether	ug/L			<10	<10	<9	<9	<10
Butyl Benzyl Phthalate	ug/L		10	<10	<10	<9	<9	<10
Carbazole	ug/L			<10	NA	<9	<9	<10

Table 2: Treatment Plant Monthly Effluent Sampling Results continued...

SAMPLE MONTH:		ROD	KPDES	January	March	June	September	December
DATE COLLECTED:		Effluent Requirements	Effluent Requirements	2/2/01	4/25/01	6/25/01	10/12/01	12/14/01
SEMI-VOLATILE ORGANIC COMPOUNDS BY SW8270 continued...								
4-Chloro 3 methylphenol	ug/L			<10	<10	<9	<9	<10
4-Chloroaniline	ug/L			<10	<10	<9	<9	<10
bis(2-Chloroethoxy)methane	ug/L			<10	<10	<9	<9	<10
bis (2-Chloroethyl) Ether	ug/L			<10	<10	<9	<9	<10
bis(2-Chloroisopropyl) ether	ug/L			NA	NA	NA	NA	NA
bis (2-Ethylhexyl) phthalate	ug/L			<10	<10	<9	<9	<10
2-Chloronaphthalene	ug/L			<10	<10	<9	<9	<10
2-Chlorophenol	ug/L	23		<10	<10	<9	<9	<10
4-Chlorophenyl-phenyl ether	ug/L			<10	<10	<9	<9	<10
Chrysene	ug/L			<10	<10	<9	<9	<10
Di-n-butyl phthalate	ug/L			<10	<10	<9	<9	<10
Di-n-octyl phthalate	ug/L			<10	<10	<9	<9	<10
Dibenz(a,h)anthracene	ug/L			<10	<10	<9	<9	<10
Dibenzofuran	ug/L			<10	<10	<9	<9	<10
1,4-Dichlorobenzene	ug/L		5	<10	<10	<9	<9	<10
1,3-Dichlorobenzene	ug/L			<10	<10	<9	<9	<10
1,2-Dichlorobenzene	ug/L		5	<10	<10	<9	<9	<10
3,3'-Dichlorobenzidine	ug/L			<10	<10	<9	<9	<10
2,4-Dichlorophenol	ug/L			<10	<10	<9	<9	<10
Diethyl Phthalate	ug/L			<10	<10	<9	<9	<10
Dimethyl Phthalate	ug/L			<10	<10	<9	<9	<10
2,4-Dimethylphenol	ug/L	4570	10	<10	<10	<9	<9	<10
4,6-Dinitro-2-methylphenol	ug/L			<24	<24	<24	<24	<24
2,4-Dinitrophenol	ug/L			<58	<57	<57	<57	<58
2,4-Dinitrotoluene	ug/L			<10	<10	<9	<9	<10
2,6-Dinitrotoluene	ug/L			<10	<10	<9	<9	<10
Di-n-octylphthalate	ug/L			<10	NA	NA	NA	NA
Fluoranthene	ug/L			<10	<10	<9	<9	<10
Fluorene	ug/L			<10	<10	<9	<9	<10
Hexachlorobenzene	ug/L			<10	<10	<9	<9	<10
Hexachlorobutadiene	ug/L			<10	<10	<9	<9	<10
Hexachlorocyclopentadiene	ug/L			<24	<24	<24	<24	<24
Hexachloroethane	ug/L			<10	<10	<9	<9	<10
Indeno(1,2,3-cd)pyrene	ug/L			<10	<10	<9	<9	<10
Isophorone	ug/L			<10	<10	<9	<9	<10
2-Methylnaphthalene	ug/L			<10	<10	<9	<9	<10
2-Methylphenol	ug/L			<10	<10	<9	<9	<10
4-Methylphenol	ug/L			<10	<10	<9	<9	<10
N-Nitroso-di-n-propylamine	ug/L	11		<10	<10	<9	<9	<10
N-Nitrosodiphenylamine	ug/L			<10	<10	<9	<9	<10
Naphthalene	ug/L			<10	<10	<9	<9	<10
4-Nitroaniline	ug/L			<10	<10	<9	<9	<10
3-Nitroaniline	ug/L			<10	<10	<9	<9	<10
2-Nitroaniline	ug/L			<10	<10	<9	<9	<10
Nitrobenzene	ug/L	250		<10	<10	<9	<9	<10
4-Nitrophenol	ug/L			<49	<48	<47	<47	<48
2-Nitrophenol	ug/L			<10	<10	<9	<9	<10
2,2-oxybis (1-Chloropropane)	ug/L			<10	<10	<9	<9	<10
Pentachlorophenol	ug/L			<24	<24	<24	<24	<24
Phenantrene	ug/L			<10	<10	<9	<9	<10
Phenol	ug/L	365000	10	<10	<10	<9	<9	<10
Pyrene	ug/L			<10	<10	<9	<9	<10

Table 2: Treatment Plant Monthly Effluent Sampling Results continued...

SAMPLE MONTH:		ROD	KPDES	January	March	June	September	December
DATE COLLECTED:		Effluent Requirements	Effluent Requirements	2/2/01	4/25/01	6/25/01	10/12/01	12/14/01
SEMI-VOLATILE ORGANIC COMPOUNDS BY SW8270 continued...								
1,2,4 Trichlorobenzene	ug/L			<10	<10	<9	<9	<10
2,4,5-Trichlorophenol	ug/L			<10	<10	<9	<9	<10
2,4,6-Trichlorophenol	ug/L			<10	<10	<9	<9	<10
METALS								
PARAMETERS	UNITS							
Antimony	mg/L	0.062	1.6	<0.20	<0.200	<0.200	<0.200	<0.200
Arsenic	mg/L	0.011	0.05	<0.010	NA	<0.0100	<0.0100	<0.0100
Barium	mg/L	0.231		<0.10	0.112	0.139	0.248	0.262
Beryllium	mg/L		0.0053	<0.010	<0.0100	<0.0100	<0.0100	<0.0100
Cadmium	mg/L		0.0011	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015
Calcium	mg/L			41.8	66.1	80.4	123	114
Chromium	mg/L	0.011	0.011	<0.030	<0.0300	<0.0300	<0.0300	<0.0300
Copper	mg/L		0.012	<0.025	<0.0250	<0.0250	<0.0250	<0.0250
Iron	mg/L		1	0.131	0.311	0.310	0.161	0.193
Lead	mg/L		0.0032	0.02	<0.0200	<0.0200	<0.0200	<0.0200
Magnesium	mg/L			81.2	82.1	82.6	102	94.8
Manganese	mg/L			0.544	0.463	0.442	0.078	0.966
Mercury	mg/L		0.000012	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel	mg/L		0.16	<0.050	<0.0500	<0.0500	<0.0500	<0.0500
Selenium	mg/L		0.005	<0.010	<0.0100	<0.0100	<0.0100	<0.0100
Silver	mg/L		0.00012	<0.020	<0.0200	<0.0200	<0.0200	<0.0200
Thallium	mg/L	0.011	0.04	<0.020	<0.0200	<0.0200	<0.0200	<0.0200
Zinc	mg/L		0.11	<0.020	<0.0200	<0.0200	<0.0200	<0.0200
GENERAL INORGANICS								
PARAMETERS	UNITS							
BOD	mg/L			NA	8.9	7.4	9.2	5.2
COD	mg/L			107	86	97	117	107
Cyanide total	mg/L			<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Nitrogen, Ammonia	mg/L			10.4	8.39	9.13	8.8	5.4
Nitrogen, Kjeldahl	mg/L			14.1	10.5	12.1	10.8	5.4
Nitrogen, Nitrate	mg/L			NA	NA	NA	NA	NA
Nitrogen, Nitrite	mg/L			NA	NA	NA	NA	NA
Nitrogen, Nitrite, and Nitrate	mg/L			<0.10	<0.10	<0.10	<0.10	<0.10
Organic Carbon total	mg/L			28.6	26.4	38	31.9	18.3
pH	s.u.			NA	7.66	7.6	7.77	7.8
Phosphate Ortho-	mg/L			NA	0.762	0.81	0.79	0.26
Phosphorus total	mg/L			0.959	0.92	0.705	1.07	0.522
TDS	mg/L			1500	1480	1440	1480	1350
TSS	mg/L			<12	<12	<12	<12	<12
Turbidity	NTU			NA	10.8	7.92	7.93	2.22

Notes:
NA = Not analyzed
Laboratory analysis by Lancaster Laboratories in Lancaster, PA.

Table 3: Summary of Settlement Monument Elevations

MONUMENT	2000 ELEV.	2001 ELEV.	CHANGE
SM-01	613.79	613.62	0.17
SM-02	619.41	619.25	0.16
SM-03	624.83	624.67	0.16
SM-04	625.47	625.33	0.14
SM-05	630.77	630.62	0.15
SM-06	634.15	634.00	0.15
SM-07	N/A	644.57	N/A
SM-08	N/A	639.44	N/A
SM-09	637.03	636.88	0.15
SM-10	634.37	634.18	0.19
SM-11	628.58	628.43	0.15
SM-12	614.24	614.10	0.14
SM-13	599.68	599.52	0.16
SM-14	616.89	616.74	0.15
SM-15	631.17	631.01	0.16
SM-16	638.51	638.36	0.15
SM-17	644.65	644.51	0.14
SM-18	652.47	652.37	0.10
SM-19	659.75	659.63	0.12
SM-20	668.84	668.75	0.09
SM-21	664.20	664.07	0.13
SM-22	652.24	652.10	0.14
SM-23	628.97	628.81	0.16
SM-24	641.04	640.88	0.16
SM-25	616.48	616.33	0.15
SM-26	601.34	601.21	0.13
SM-27	601.34	601.21	0.13
SM-28	612.75	612.60	0.15
SM-29	626.99	626.86	0.13
SM-30	644.81	644.65	0.16
SM-31	661.68	661.53	0.15
SM-32	674.40	674.29	0.11
SM-33	673.32	673.22	0.10
SM-34	652.33	652.16	0.17
SM-35	633.78	633.61	0.17
SM-36	612.24	612.10	0.14
SM-37	600.02	599.86	0.16
SM-38	620.03	619.86	0.17
SM-39	641.52	641.33	0.19
SM-40	664.02	663.88	0.14
SM-41	675.33	675.19	0.14
SM-42	687.57	687.44	0.13
SM-43	662.51	662.32	0.19
SM-44	660.32	660.13	0.19
SM-45	650.73	650.58	0.15

MONUMENT	2000 ELEV.	2001 ELEV.	CHANGE
MON-A	559.99	559.94	0.05
MON-B	538.75	538.75	0.00
MON-C	526.04	526.04	0.00
N-D STAMPED 728	728.42	728.37	0.05
MON-E	605.03	605.02	0.01
MON-F	614.26	614.26	0.00
TRV DISK #37	631.26	631.14	0.12
TRV DISK#3	N/A	624.33	N/A

MONUMENT	2000 ELEV.	2001 ELEV.	CHANGE	MONUMENT	2000 ELEV.	2001 ELEV.	CHANGE	MONUMENT	2000 ELEV.	2001 ELEV.	CHANGE
16001	715.96	715.83	0.13	16051	624.01	623.99	0.02	16101	637.06	636.90	0.16
16002	713.01	712.91	0.10	16052	630.26	630.17	0.09	16102	640.10	639.95	0.15
16003	702.87	702.79	0.08	16053	632.53	632.43	0.10	16103	646.13	646.03	0.10
16004	704.72	704.66	0.06	16054	608.06	608.01	0.05	16104	630.39	630.29	0.10
16005	706.77	706.62	0.15	16055	617.34	617.26	0.08	16105	629.50	629.35	0.15
16006	704.34	704.22	0.12	16056	604.45	604.39	0.06	16106	627.85	627.61	0.24
16007	694.46	694.36	0.10	16057	615.30	615.23	0.07	16107	628.53	628.41	0.12
16008	693.36	693.27	0.09	16058	636.15	636.07	0.08	16108	630.69	630.55	0.14
16009	682.77	682.68	0.09	16059	567.71	567.67	0.04	16109	625.53	625.39	0.14
16010	685.9	685.76	0.14	16060	587.77	587.73	0.04	16110	624.96	624.86	0.10
16011	712.12	712.00	0.12	16061	609.45	609.41	0.04	16111	623.82	623.62	0.20
16012	700.91	700.81	0.10	16062	600.98	600.96	0.02	16112	625.46	625.29	0.17
16013	687.34	687.20	0.14	16063	582.20	MISSING	N/A	16113	625.96	625.86	0.10
16014	678.37	678.23	0.14	16064	647.17	647.12	0.05	16114	623.44	623.35	0.09
16015	678.12	678.03	0.09	16065	647.09	646.94	0.15	16115	622.80	622.72	0.08
16016	675.06	674.98	0.08	16066	642.09	642.03	0.06	16116	621.70	621.51	0.19
16017	669.75	669.69	0.06	16067	618.04	618.04	0.00	16117	621.55	621.38	0.17
16018	663.83	663.78	0.05	16068	617.05	616.97	0.08	16118	622.43	622.35	0.08
16019	663.88	663.80	0.08	16069	606.41	606.38	0.03	16119	618.50	618.35	0.15
16020	675.06	674.92	0.14	16070	578.40	578.34	0.06	16120	615.77	615.70	0.07
16021	679.07	679.06	0.01	16071	583.55	583.44	0.11	16121	612.31	612.25	0.06
16022	675.12	675.04	0.08	16072	601.63	601.55	0.08	16122	612.49	612.46	0.03
16023	667.41	667.27	0.14	16073	581.27	581.19	0.08	16123	611.99	611.99	0.00
16024	684.36	684.27	0.09	16074	559.88	559.86	0.02	16124	607.70	607.69	0.01
16025	659.9	659.78	0.12	16075	566.47	566.45	0.02	16125	602.13	602.12	0.01
16026	657.44	657.33	0.11	16076	599.15	599.04	0.11	16126	593.94	593.92	0.02
16027	657.27	657.22	0.05	16077	599.31	599.27	0.04	16127	586.05	586.05	0.00
16028	684.26	684.19	0.07	16078	610.76	610.70	0.06	16128	566.13	566.16	-0.03
16029	683.8	683.75	0.05	16079	616.06	615.99	0.07	16129	545.51	545.50	0.01
16030	658.29	658.23	0.06	16080	619.42	619.35	0.07	16130	580.19	580.13	0.06
16031	657.31	657.28	0.03	16081	613.41	613.36	0.05	16131	593.34	593.32	0.02
16032	661.61	661.58	0.03	16082	616.44	616.40	0.04	16132	598.20	598.17	0.03
16033	656.11	656.05	0.06	16083	622.88	622.79	0.09	16133	605.62	605.60	0.02
16034	649.98	649.87	0.11	16084	626.84	626.75	0.09	16134	602.73	602.68	0.05
16035	653.19	653.07	0.12	16085	621.62	621.51	0.11	16135	584.43	584.43	0.00
16036	652.47	652.38	0.09	16086	631.48	631.36	0.12	16136	593.94	593.85	0.09
16037	651.72	651.63	0.09	16087	639.85	639.63	0.22	16137	594.82	594.85	-0.03
16038	653.4	653.27	0.13	16088	531.94	561.91	0.03	16138	610.61	610.60	0.01
16039	658.26	658.14	0.12	16089	560.53	560.50	0.03	16139	610.26	610.20	0.06
16040	652.76	652.68	0.08	16090	564.82	564.83	-0.01	16140	617.45	617.39	0.06
16041	649.28	649.14	0.12	16091	585.85	585.85	0.00	16141	619.00	618.94	0.06
16042	664.15	664.04	0.11	16092	559.78	559.80	-0.02	16142	621.13	621.04	0.09
16043	662.28	662.29	-0.01	16093	578.98	579.00	-0.02	16143	620.13	620.04	0.09
16044	655.37	655.28	0.09	16094	596.30	586.26	0.04	16144	619.12	618.88	0.24
16045	648.64	648.52	0.12	16095	546.51	546.47	0.04	16145	618.29	618.16	0.13
16046	644.47	644.39	0.08	16096	645.90	645.77	0.13	16146	615.07	614.94	0.13
16047	640.15	640.05	0.10	16097	646.81	646.71	0.10	16147	609.39	609.32	0.07
16048	640.01	639.97	0.04	16098	648.47	648.36	0.11	16148	615.97	615.88	0.09
16049	642.26	642.25	0.01	16099	639.88	639.77	0.11	16149	617.96	617.86	0.10
16050	646.48	646.48	0.00	16100	637.62	637.46	0.16	16150	616.41	616.37	0.04

Prepared by: J. Ross
Checked by: R Bocarro

Table 4: Groundwater Monitoring Well Sampling Results

DATE COLLECTED:		OP UNIT ONE - DECEMBER 5, 2001											IP UNIT TWO JUNE 27, 2001							OP UNIT TWO - DECEMBER 13, 2001						
SAMPLE ID:		MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-11	MW-12	MW-13	MW-14	MW-15	MW-25	MW-26	MW-27	MW-28	MW-29	MW-30	BG-1	MW-25	MW-26	MW-27	MW-28	MW-29	MW-30	BG-1
VOLATILE ORGANIC COMPOUNDS																										
PARAMETERS	UNITS																									
1,1-Dichloroethene	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	ND	ND	ND	ND	ND	ND	3	ND
1,1-Dichloroethene	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene (total)	ug/L	ND	ND	ND	ND	ND	ND	510	ND	ND	ND	11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ug/L	ND	ND	ND	ND	ND	ND	830	ND	ND	ND	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SEMI-VOLATILE ORGANIC COMPOUNDS																										
PARAMETERS	UNITS																									
Caprolactam	ug/L	ND	ND	ND	ND	340	390	330	1100	360	1500	230	3	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
METALS																										
PARAMETERS	UNITS																									
Aluminum	ug/L	406	ND	799	46700	58.9	176	2830	699	278	ND	41.6	15200	30700	4370	19800	2010	471	227	30600	29500	ND	1060	9320	380	124
Antimony	ug/L	5.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.7	ND	ND	ND	ND	ND	ND
Arsenic	ug/L	ND	ND	ND	15.7	ND	ND	ND	ND	4.9	ND	ND	9.4	20.7	ND	7	ND	ND	ND	27.7	21.3	ND	ND	6.1	ND	ND
Barium	ug/L	27	9	33.4	395	32.6	14.7	10.8	21.8	29.4	20.5	30.8	903	110	38.7	89.5	29.2	2.3	18.5	1670	114	ND	47.4	75.3	13.3	0.2
Beryllium	ug/L	ND	ND	ND	2.2	ND	ND	0.25	ND	ND	ND	ND	0.98	1.9	0.45	1.6	0.37	0.3	0.33	1.6	1.3	ND	ND	0.67	0.27	0.17
Cadmium	ug/L	0.74	ND	ND	ND	ND	ND	ND	ND	1.9	ND	ND	ND	1.0	ND	27.9	0.43	1.45	ND	ND	0.58	ND	30.2	ND	ND	ND
Calcium	ug/L	17700	56400	91000	33100	107000	69800	55600	16100	34600	56100	12400	186000	491000	114000	87800	359000	417000	17100	154000	485000	ND	78900	285000	467000	19600
Chromium	ug/L	699	1.4	56.7	87.7	ND	7.3	5.2	3.8	328	1.7	41.8	32.7	46.4	16.6	39.9	11.5	ND	2	80.7	44.3	ND	5.3	25.4	ND	ND
Cobalt	ug/L	4	ND	ND	31.3	2.1	ND	4.8	ND	10.8	ND	2.7	25.4	103	5.4	31.4	7.1	ND	17.3	43.5	71.5	ND	ND	18	ND	7.2
Copper	ug/L	20	ND	6.3	128	1.4	3.7	8.6	3.6	37.9	1.9	0.98	54.5	91	19.2	85.4	15.1	ND	ND	89.8	54.8	ND	7.7	33.8	5.5	1.5
Iron	ug/L	2999	102	2190	84000	333	462	7940	1570	81900	337	328	71000	65600	8250	40300	4470	386	434	129000	63200	ND	2180	24500	876	104
Lead	ug/L	ND	ND	ND	69.4	ND	ND	3.5	2.4	8.1	ND	ND	13.6	27.2	ND	23.3	ND	ND	ND	24	13.4	ND	ND	ND	ND	ND
Magnesium	ug/L	12900	56100	77200	27100	67700	43800	61500	16500	19300	30300	27000	132000	721000	473000	105000	438000	731000	48500	126000	701000	ND	69100	352000	762000	42600
Manganese	ug/L	92.1	51.9	48.2	2020	2370	85.1	166	79.8	447	32.9	255	3584	9339	90.4	2180	582	ND	1180	3710	8140	ND	51.3	780	ND	7.7
Mercury	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.038	0.063	ND	ND	ND	ND	ND
Nickel	ug/L	618	8.3	64.2	109	35.1	12.3	15.6	8.1	71.8	36.3	32.3	84	782	43.4	146	24.4	5.1	53.2	150	616	ND	82.4	46.8	9.9	40.5
Potassium	ug/L	3339	7730	9820	16000	8940	8150	7830	2950	3810	5630	2330	22400	39300	9270	10500	12300	11700	1680	25500	39300	ND	7120	14100	22200	2850
Selenium	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.9	4.9	ND	ND	ND	ND	ND
Silver	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	ug/L	23500	93000	171000	18000	65300	54700	77500	20300	27000	53300	110000	112000	492000	402000	69300	413000	467000	52700	121000	481000	ND	58400	378000	435000	62200
Thallium	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	ug/L	5.4	ND	2.3	89.2	1.1	1.2	5.8	2.2	2.2	ND	ND	28.1	56.6	8.3	36.1	4.4	2.4	ND	59.7	52.8	ND	2.5	18	0.9	ND
Zinc	ug/L	28.7	60.3	89.2	426	42.5	58.1	54.3	103	357	47.8	66.3	220	375	132	12200	70	104	142	329	338	ND	18900	97.4	22.2	14.5
Cyanide	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
ND = Not detected above laboratory detection limits listed on laboratory data sheets
NA = Not analyzed
Laboratory analysis by Lancaster Laboratories in Lancaster, PA.

TABLES

Table 1: Summary of Treated Leachate Volume - Operable Units One and Two

	Plant Discharge Totals	OU-2 Extraction Wells Discharge Totals				OU-2 Leachate Collection Trench	OU-1 Tanks Discharge Totals		Monthly Rainfall
Month		MW-1	MW-2	MW-3	MW-4	Estimated Discharge Totals	North Tank	South Tank	Inches
JAN	89744	4760	1579	40	856	76361	1981	4167	4.66
FEB	100850	5242	1216	60	1173	83182	0	9977	1.46
MAR	116259	4460	635	40	1766	98821	2373	8164	7.74
APR	128184	5857	587	38	1355	107599	1954	10794	6.31
MAY	140807	5678	327	20	1077	120527	1568	11610	6.86
JUN	62293	2891	257	12	8	55425	2887	813	3.71
JUL	99873	4872	312	23	597	89991	2776	1302	0.99
AUG	76676	4236	271	10	618	70493	0	1048	0.82
SEP	85502	4217	210	10	532	79477	0	1056	7.84
OCT	87680	2881	155	9	957	79329	0	4349	5.24
NOV	106829	3776	172	11	151	91200	4209	7310	2.55
DEC	104999	4103	204	12	0	85353	3256	12071	7.11
TOTALS	1199696	52973	5925	285	9090	1037758	21004	72661	55.29

NOTES:
All discharge volumes in gallons.
Volume of gallons per month dropped in MW-2 Extraction Well
Due to corrosive chemicals being present in MW-4 Extraction Well, caused reduced totalizer readings in some months

Prepared by: E Taylor
Checked by:

Table 2: Treatment Plant Quarterly Effluent Sampling Results 2002

SAMPLE MONTH:		ROD	KPDES	April	JUNE	SEPT	DEC
DATE COLLECTED:		Effluent Requirements	Effluent Requirements	4/1/2002	6/12/2002	9/13/2002	12/11/2002
VOLATILE ORGANIC COMPOUNDS BY SW8260							
PARAMETERS	UNITS						
Acetone	ug/L			<50	<50	<50	<50
Benzene	ug/L		5	<5	<5	<5	<5
Bromodichloromethane	ug/L			<5	<5	<5	<5
Bromoform	ug/L			<5	<5	<5	<5
Bromomethane	ug/L			<10	<10	<10	<10
2-Butanone	ug/L			<50	<50	<50	<50
Carbon Disulfide	ug/L			<10	<10	<10	<10
Carbon Tetrachloride	ug/L			<5	<5	<5	<5
Chlorobenzene	ug/L			<5	<5	<5	<5
Chloroethane	ug/L			<10	<10	<10	<10
Chloroform	ug/L			<5	<5	<5	<5
Chloromethane	ug/L			<10	<10	<10	<10
Dibromochloromethane	ug/L			<5	<5	<5	<5
1,2-Dichlorobenzene	ug/L			NA	NA	NA	NA
1,4-Dichlorobenzene	ug/L			NA	NA	NA	NA
1,3-Dichlorobenzene	ug/L			NA	NA	NA	NA
1,2-Dichloroethane	ug/L		5	<5	<5	<5	<5
1,1-Dichloroethane	ug/L		5	<5	<5	<5	<5
cis-1,2-Dichloroethene	ug/L			<5	<5	<5	<5
Tran-1,2-Dichloroethene	ug/L			<5	<5	<5	<5
total 1,2-Dichloroethene	ug/L			NA	NA	NA	NA
1,1-Dichloroethene	ug/L		5	<5	<5	<5	<5
1,2-Dichloropropane	ug/L		5	<5	<5	<5	<5
trans-1,3-Dichloropropene	ug/L			<5	<5	<5	<5
cis-1,3-Dichloropropene	ug/L			<5	<5	<5	<5
Ethyl benzene	ug/L		6	<5	<5	<5	<5
2-Hexanone	ug/L			<10	<10	<10	<10
4-Methyl-2-pentanone	ug/L			<50	<50	<50	<50
Methylene chloride	ug/L	5870	5	<10	<10	<10	<10
Styrene	ug/L			<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	ug/L			<5	<5	<5	<5
Tetrachloroethene	ug/L		5	<5	<5	<5	<5
Toluene	ug/L		5	<5	<5	<5	<5
1,1,2-Trichloroethane	ug/L		5	<5	<5	<5	<5
1,1,1-Trichloroethane	ug/L			<5	<5	<5	<5
Trichloroethene	ug/L		5	<5	<5	<5	<5
Vinyl Chloride	ug/L			<5	<5	<5	<5
Xylenes total	ug/L			<5	<5	<5	<5
SEMI-VOLATILE ORGANIC COMPOUNDS BY SW8270							
Acenaphthene	ug/L			<10	<10	<10	<10
Acenaphthylene	ug/L			<10	<10	<10	<10
Anthracene	ug/L			<10	<10	<10	<10
Benzaldehyde	ug/L			NA	NA	NA	<10
Benzo (A) Anthracene	ug/L			<10	<10	<10	<10
Benzo (A) Pyrene	ug/L			<10	<10	<10	<10
Benzo (B) Flouranthene	ug/L			<10	<10	<10	<10
Benzo(g,h,i)perylene	ug/L			<10	NA	<10	<10
Benzo(k)fluoranthene	ug/L			<10	<10	<10	<10
4-Bromophenyl-phenylether	ug/L			<10	<10	<10	<10
Butyl Benzyl Phthalate	ug/L		10	<10	<10	<10	<10
Carbazole	ug/L			<10	<10	<10	<10
4-Chloro-3-methylphenol	ug/L			<10	<10	<10	<10
4-Chloroaniline	ug/L			<10	<10	<10	<10
bis(2-Chloroethoxy)methane	ug/L			<10	<10	<10	<10
bis (2-Chloroethyl) Ether	ug/L			<10	<10	<10	<10
bis(2-Chloroisopropyl) ether	ug/L			<10	<10	<10	<10
bis (2-Ethylhexyl) phthalate	ug/L			<10	<10	<10	<10
2-Chloronaphthalene	ug/L			<10	<10	<10	<10
2-Chlorophenol	ug/L	23		<10	<10	<10	<10
4-Chlorophenyl-phenyl ether	ug/L			<10	<10	<10	<10
Chrysene	ug/L			<10	<10	<10	<10
Di-n-butyl phthalate	ug/L			<10	<10	<10	<10
4-Chloro-3-methylphenol	ug/L			<10	<10	<10	<10
4-Chloroaniline	ug/L			<10	<10	<10	<10
bis(2-Chloroethoxy)methane	ug/L			<10	<10	<10	<10
bis (2-Chloroethyl) Ether	ug/L			<10	<10	<10	<10
bis(2-Chloroisopropyl) ether	ug/L			<10	<10	<10	<10
bis (2-Ethylhexyl) phthalate	ug/L			<10	<10	<10	<10

Prepared by: E Taylor
Checked by:

Table 2: Treatment Plant Quarterly Effluent Sampling Results continued...

SAMPLE MONTH:		ROD	KPDES	April	June	Sept	Dec
DATE COLLECTED:		Effluent Requirements	Effluent Requirements	4/1/2002	6/12/2002	9/13/2002	12/11/2002
SEMI-VOLATILE ORGANIC COMPOUNDS BY SW8270 continued...							
2-Chloronaphthalene	ug/L			<10	<10	<10	<10
2-Chlorophenol	ug/L	23		<10	<10	<10	<10
4-Chlorophenyl-phenyl ether	ug/L			<10	<10	<10	<10
Chrysene	ug/L			<10	<10	<10	<10
Di-n-butyl phthalate	ug/L			<10	<10	<10	<10
Di-n-octyl phthalate	ug/L			<10	<10	<10	<10
Dibenz(a,h)anthracene	ug/L			<10	<10	<10	<10
Dibenzofuran	ug/L			<10	<10	<10	<10
1,4-Dichlorobenzene	ug/L		5	<10	<10	<10	<10
1,3-Dichlorobenzene	ug/L			<10	<10	<10	<10
1,2-Dichlorobenzene	ug/L		5	<10	<10	<10	<10
3,3'-Dichlorobenzidine	ug/L			<10	<10	<10	<10
2,4-Dichlorophenol	ug/L			<10	<10	<10	<10
Diethyl Phthalate	ug/L			<10	<10	<10	<10
Dimethyl Phthalate	ug/L			<10	<10	<10	<10
2,4-Dimethylphenol	ug/L	4570	10	<10	<10	<10	<10
4,6-Dinitro-2-methylphenol	ug/L			<10	<10	<10	<10
2,4-Dinitrophenol	ug/L			<10	<10	<10	<10
2,4-Dinitrotoluene	ug/L			<10	<10	<10	<10
2,6-Dinitrotoluene	ug/L			<10	<10	<10	<10
Di-n-octylphthalate	ug/L			<10	<10	<10	<10
Fluoranthene	ug/L			<10	<10	<10	<10
Fluorene	ug/L			<10	<10	<10	<10
Hexachlorobenzene	ug/L			<10	<10	<10	<10
Hexachlorobutadiene	ug/L			<10	<10	<10	<10
Hexachlorocyclopentadiene	ug/L			<10	<10	<10	<10
Hexachloroethane	ug/L			<10	<10	<10	<10
Indeno(1,2,3-cd)pyrene	ug/L			<10	<10	<10	<10
Isophorone	ug/L			<10	<10	<10	<10
2-Methylnaphthalene	ug/L			<10	<10	<10	<10
2-Methylphenol	ug/L			<10	<10	<10	<10
4-Methylphenol	ug/L			<10	<10	<10	<10
N-Nitroso-di-n-propylamine	ug/L	11		<10	<10	<10	<10
N-Nitrosodiphenylamine	ug/L			<10	<10	<10	<10
Naphthalene	ug/L			<10	<10	<10	<10
4-Nitroaniline	ug/L			<50	<50	<10	<10
3-Nitroaniline	ug/L			<50	<50	<10	<10
2-Nitroaniline	ug/L			<50	<50	<10	<10
Nitrobenzene	ug/L	250		<10	<10	<10	<10
4-Nitrophenol	ug/L			<10	<10	<10	<10
2-Nitrophenol	ug/L			<10	<10	<10	<10
2,2-oxybis (1-Chloropropane)	ug/L			<10	<10	<10	<10
Pentachlorophenol	ug/L			<10	<10	<10	<10
Phenantrene	ug/L			<10	<10	<10	<10
Phenol	ug/L	365000	10	<10	<10	<10	<10
Pyrene	ug/L			<10	<10	<10	<10
1,2,4-Trichlorobenzene	ug/L			<10	<10	<10	<10
2,4,5-Trichlorophenol	ug/L			<10	<10	<10	<10
2,4,6-Trichlorophenol	ug/L			<10	<10	<10	<10
METALS							
PARAMETERS	UNITS						
Antimony	mg/L	0.062	1.6	<0.1	<0.1	<0.01	<0.01
Arsenic	mg/L	0.011	0.05	<0.1	<0.1	<0.01	<0.01
Barium	mg/L	0.231		0.2	0.1	0.15	0.11
Beryllium	mg/L		0.0053	<0.1	<0.1	<0.01	<0.01
Cadmium	mg/L		0.0011	<0.1	<0.1	<0.01	<0.01
Calcium	mg/L			120	110	120	110
Chromium	mg/L	0.011	0.011	<0.1	<0.1	<0.01	<0.01
Copper	mg/L		0.012	0.3	0.5	<0.01	<0.01
Iron	mg/L		1	0.4	0.6	0.21	0.43
Lead	mg/L		0.0032	<0.1	<0.1	<0.1	<0.01
Magnesium	mg/L			92	100	118	79
Manganese	mg/L			0.4	0.6	0.82	0.3
Mercury	mg/L		0.000012	<0.0001	<0.0001	<0.0001	<0.0002
Nickel	mg/L		0.16	<0.1	<0.1	0.02	0.01
Selenium	mg/L		0.005	<0.1	<0.1	<0.01	<0.1
Silver	mg/L		0.00012	<01	<01	<0.01	<01
Thallium	mg/L	0.011	0.04	<0.1	<0.1	<0.01	<0.1
Zinc	mg/L		0.11	<0.1	<0.1	0.04	<.01

Prepared by: E Taylor
Checked by:

Table 2: Treatment Plant Quarterly Effluent Sampling Results continued...

SAMPLE MONTH:		ROD	KPDES	APRIL	June	Sept	DEC
DATE COLLECTED:		Effluent Requirements	Effluent Requirements	4/1/2002	6/12/2002	9/13/2002	12/11/2002
GENERAL INORGANICS							
PARAMETERS	UNITS						
BOD	mg/L			<5	5	<5	<5
COD	mg/L			55	61	67	57
Cyanide total	mg/L			0.02	<.01	<0.01	<.01
Nitrogen, Ammonia	mg/l			3	14	4	4
Nitrogen, Kjeldahl	mg/L			4.2	14.6	6	<0.5
Nitrogen, Nitrate	mg/L			2.8	0.75	<0.5	0.5
Nitrogen, Nitrite	mg/L			0.2	<.05	<0.5	0.06
Nitrogen, Nitrite, and Nitrate	mg/L			3	0.75	<0.5	0.5
Organic Carbon total	mg/L			34	48	28.5	20
pH	s.u.			7.31	7.38	7.21	7.71
Phosphate Ortho-	mg/L			<1.0	0.18	<0.1	<0.1
Phosphorus total	mg/L			<1	<1	0.27	<0.1
TDS	mg/L			1470	1160	1680	1100
TSS	mg/L			<5	22	<5	<5
Turbidity	NTU			0.25	0.3	1.9	3.5

Notes:
NA = Not analyzed
Laboratory analysis by Microbac Labs Louisville,Ky

Prepared by: E Taylor
Checked by:

Table 3: Treatment Plant Bi-Annual Influent Sampling Results 2002

SAMPLE MONTH:		ROD	KPDES	June	DEC
DATE COLLECTED:		Requirements	Requirements	6/12/2002	12/11/2002
VOLATILE ORGANIC COMPOUNDS BY SW8260					
PARAMETERS	UNITS				
Acetone	ug/L			1840	4100
Benzene	ug/L		5	5	8
Bromodichloromethane	ug/L			<5	8
Bromoform	ug/L			<5	<5
Bromomethane	ug/L			<10	34
2-Butanone	ug/L			7	2070
Carbon Disulfide	ug/L			<10	16
Carbon Tetrachloride	ug/L			<5	<5
Chlorobenzene	ug/L			<5	<5
Chloroethane	ug/L			<10	<10
Chloroform	ug/L			<5	178
Chloromethane	ug/L			<10	18
Dibromochloromethane	ug/L			<5	<5
1,2-Dichlorobenzene	ug/L			<5	<5
1,4-Dichlorobenzene	ug/L			<5	
1,3-Dichlorobenzene	ug/L			<5	<5
1,2-Dichloroethane	ug/L		5	<5	<5
1,1-Dichloroethane	ug/L		5	<5	71
cis-1,2-Dichloroethene	ug/L			7	<5
Tran-1,2-Dichloroethene	ug/L			<5	<5
total 1,2-Dichloroethene	ug/L			N/A	N/A
1,1-Dichloroethene	ug/L		5	<5	7
1,2-Dichloropropane	ug/L		5	<5	<5
trans-1,3-Dichloropropene	ug/L			<5	<5
cis-1,3-Dichloropropene	ug/L			<5	<5
Ethyl benzene	ug/L		5	6	<10
2-Hexanone	ug/L			<10	<10
4-Methyl-2-pentanone	ug/L			260	604
Methylene chloride	ug/L	5870	5	450	924
Styrene	ug/L			<5	<5
1,1,2,2-Tetrachloroethane	ug/L			68	84
Tetrachloroethane	ug/L		5	12	6
Toluene	ug/L		5	<5	55
1,1,2-Trichloroethane	ug/L		5	139	178
1,1,1-Trichloroethane	ug/L			13	15
Trichloroethene	ug/L		5	12	26
Vinyl Chloride	ug/L			<2	<2
Xylenes total	ug/L				
SEMI-VOLATILE ORGANIC COMPOUNDS BY SW8270					
Acenaphthene	ug/L			<10	<10
Acenaphthylene	ug/L			<10	<10
Anthracene	ug/L			<10	<10
Benzaldehyde	ug/L			<10	<10
Benzo (A) Anthracene	ug/L			<10	<10
Benzo (A) Pyrene	ug/L			<10	<10
Benzo (B) Flouranthene	ug/L			<10	<10
Benzo(g,h,i)perylene	ug/L			<10	<10
Benzo(k)fluoranthene	ug/L			<10	<10
4-Bromophenyl-phenylether	ug/L			<10	<10
Butyl Benzyl Phthalate	ug/L		10	<10	<10
Carbazole	ug/L			<10	<10
4-Chloro-3-methylphenol	ug/L			<10	<10
4-Chloroaniline	ug/L			<10	<10
bis(2-Chloroethoxy)methane	ug/L			<10	<10
bis (2-Chloroethyl) Ether	ug/L			<10	<10
bis(2-Chloroisopropyl) ether	ug/L			<10	<10
bis (2-Ethylhexyl) phthalate	ug/L			<10	<10
2-Chloronaphthalene	ug/L			<10	<10
2-Chlorophenol	ug/L	23		<10	<10
4-Chlorophenyl-phenyl ether	ug/L			<10	<10
Chrysene	ug/L			<10	<10
Di-n-butyl phthalate	ug/L			<10	<10
Di-n-octyl phthalate	ug/L			<10	<10
Dibenz(a,h)anthracene	ug/L			<10	<10
Dibenzofuran	ug/L			<10	<10
1,4-Dichlorobenzene	ug/L		5	<10	<10
1,3-Dichlorobenzene	ug/L			<10	<10
1,2-Dichlorobenzene	ug/L		5	<10	<10
3,3'-Dichlorobenzidine	ug/L			<10	<10
2,4-Dichlorophenol	ug/L			20	<10
Diethyl Phthalate	ug/L			<10	<10
Dimethyl Phthalate	ug/L			<10	<10

Prepared by: E Taylor
Checked by:

Table 3: Treatment Plant Bi-Annual Influent Sampling Results continued...

SAMPLE MONTH:		ROD	KPDES	June	Dec
DATE COLLECTED:		Requirements	Requirements	6/12/2002	12/11/2002
SEMI-VOLATILE ORGANIC COMPOUNDS BY SW8270 continued...					
2,4-Dimethylphenol	ug/L	4570	10	<10	<10
4,6-Dinitro-2-methylphenol	ug/L			<10	<10
2,4-Dinitrophenol	ug/L			<10	<10
2,4-Dinitrotoluene	ug/L			<10	<10
2,6-Dinitrotoluene	ug/L			<10	<10
Di-n-octylphthalate	ug/L			<10	<10
Fluoranthene	ug/L			<10	<10
Fluorene	ug/L			<10	<10
Hexachlorobenzene	ug/L			<10	<10
Hexachlorobutadiene	ug/L			<10	<10
Hexachlorocyclopentadiene	ug/L			<10	<10
Hexachloroethane	ug/L			<10	<10
Indeno(1,2,3-cd)pyrene	ug/L			<10	<10
Isophorone	ug/L			50	60
2-Methylnaphthalene	ug/L			<10	<10
2-Methylphenol	ug/L			60	<10
4-Methylphenol	ug/L			<10	<10
N-Nitroso-di-n-propylamine	ug/L	11		<10	<10
N-Nitrosodiphenylamine	ug/L			<10	<10
Naphthalene	ug/L			<10	<10
4-Nitroaniline	ug/L			<50	<50
3-Nitroaniline	ug/L			<50	<50
2-Nitroaniline	ug/L			<50	<50
Nitrobenzene	ug/L	250		50	<10
4-Nitrophenol	ug/L			<10	<10
2-Nitrophenol	ug/L			<10	<10
2,2-oxybis (1-Chloropropane)	ug/L			<10	<10
Pentachlorophenol	ug/L			<10	<10
Phenantrene	ug/L			<10	<10
Phenol	ug/L	365000	10	290	400
Pyrene	ug/L			<10	<10
1,2,4-Trichlorobenzene	ug/L			<10	<10
2,4,5-Trichlorophenol	ug/L			<10	<10
2,4,6-Trichlorophenol	ug/L			<10	<10
METALS					
PARAMETERS	UNITS				
Antimony	mg/L	0.062	1.6	<0.1	<0.01
Arsenic	mg/L	0.011	0.05	<0.1	<0.01
Barium	mg/L	0.231		0.1	0.19
Beryllium	mg/L		0.0053	<0.1	<0.01
Cadmium	mg/L		0.0011	<0.1	<0.01
Calcium	mg/L			100	120
Chromium	mg/L	0.011	0.011	<0.1	<0.01
Copper	mg/L		0.012	0.6	<0.01
Iron	mg/L		1	4.3	8
Lead	mg/L		0.0032	<0.1	<0.01
Magnesium	mg/L			89	92
Manganese	mg/L			1.8	1.51
Mercury	mg/L		0.000012	0.0001	<0.0002
Nickel	mg/L		0.16	<0.1	0.02
Selenium	mg/L		0.005	<0.1	<0.01
Silver	mg/L		0.00012	<0.1	<0.01
Thallium	mg/L	0.011	0.04	<0.1	<0.01
Zinc	mg/L		0.11	<0.1	0.02
GENERAL INORGANICS					
PARAMETERS	UNITS				
BOD	mg/L			123	111
COD	mg/L			254	290
Cyanide total	mg/L			0.01	<0.01
Nitrogen, Ammonia	mg/L			9	8
Nitrogen, Kjeldahl	mg/L			9	10
Nitrogen, Nitrate	mg/L			0.55	<0.5
Nitrogen, Nitrite	mg/L			<0.05	<0.05
Nitrogen, Nitrite, and Nitrate	mg/L			0.55	0.5
Organic Carbon total	mg/L			120	55
pH	s.u.			6.8	7.82
Phosphate Ortho-	mg/L			<0.1	<0.1
Phosphorus total	mg/L			<1	0.1
TDS	mg/L			1280	1300
TSS	mg/L			42	10
Turbidity	NTU			54	300

Notes:
NA = Not analyzed
Laboratory analysis by Microbac Labs Louisville,Ky

Prepared by: E Taylor
Checked by:

Table 4: Summary of Settlement Monument Elevations

SMITH FARM LANDFILL SETTLEMENT

SUMMARY OPERABLE UNIT ONE

MONUMENT	2001 ELEV.	2002 ELEV.	CHANGE
SM-01	613.62	613.67	-0.05
SM-02	619.25	619.33	-0.08
SM-03	624.67	624.71	-0.04
SM-04	625.33	625.37	-0.04
SM-05	630.62	630.66	-0.04
SM-06	634.00	634.01	-0.01
SM-07	644.57	644.63	-0.06
SM-08	639.44	639.50	-0.06
SM-09	638.88	638.96	-0.08
SM-10	634.18	634.26	-0.08
SM-11	628.43	628.50	-0.07
SM-12	614.10	614.15	-0.05
SM-13	599.52	599.55	-0.03
SM-14	616.74	616.79	-0.05
SM-15	631.01	631.07	-0.06
SM-16	638.36	638.42	-0.06
SM-17	644.51	644.58	-0.07
SM-18	652.37	652.45	-0.08
SM-19	659.63	659.67	-0.04
SM-20	668.75	668.84	-0.09
SM-21	664.07	664.16	-0.09
SM-22	652.10	652.18	-0.08
SM-23	628.81	628.88	-0.07
SM-24	640.88	640.96	-0.08
SM-25	616.33	616.39	-0.06
SM-26	601.21	601.24	-0.03
SM-27	601.21	601.22	-0.01
SM-28	612.60	612.65	-0.05
SM-29	626.86	626.92	-0.06
SM-30	644.65	644.71	-0.06
SM-31	661.53	661.60	-0.07
SM-32	674.29	674.39	-0.10
SM-33	673.22	673.26	-0.04
SM-34	652.16	652.18	-0.02
SM-35	633.61	633.69	-0.08
SM-36	612.10	612.14	-0.04
SM-37	599.86	599.89	-0.03
SM-38	619.86	619.91	-0.05
SM-39	641.33	641.42	-0.09
SM-40	663.88	663.99	-0.11
SM-41	675.19	675.27	-0.08
SM-42	687.44	687.56	-0.12
SM-43	662.32	662.43	-0.11
SM-44	660.13	660.25	-0.12
SM-45	650.58	650.68	-0.10

MONUMENT	2001 ELEV.	2002 ELEV.	CHANGE
MON-A	559.94	559.94	0.00
MON-B	538.75	538.75	0.00
MON-C	526.04	526.02	0.02
MON-D	728.37	728.45	-0.08
MON-E	605.02	605.02	0.00
MON-F	814.26	N/A	#VALUE!
TRV DISK #37	831.14	N/A	#VALUE!
TRV DISK#3	624.33	624.42	-0.09

SMITH FARM LANDFILL

SETTLEMENT SUMMARY OPERABLE UNIT TWO

MONUMENT	2001 ELEV.	2002 ELEV.	CHANGE	MONUMENT	2001 ELEV.	2002 ELEV.	CHANGE	MONUMENT	2001 ELEV.	2002 ELEV.	CHANGE
16001	715.83	715.90	-0.07	16051	623.99	623.88	0.01	16101	636.90	636.85	0.05
16002	712.91	712.97	-0.06	16052	630.17	630.08	0.09	16102	639.95	639.91	0.04
16003	702.79	702.82	-0.03	16053	632.43	632.39	0.04	16103	646.03	646.03	0.00
16004	704.66	704.71	-0.05	16054	608.01	607.99	0.02	16104	630.29	630.28	0.01
16005	706.62	706.62	0.00	16055	617.26	617.21	0.05	16105	629.35	629.30	0.05
16006	704.22	704.28	-0.06	16056	604.38	604.37	0.02	16106	627.61	627.47	0.14
16007	694.36	694.37	-0.01	16057	615.23	615.22	0.01	16107	628.41	628.38	0.03
16008	693.27	693.30	-0.03	16058	636.07	636.01	0.06	16108	630.55	630.52	0.03
16009	682.68	682.60	0.08	16059	567.67	567.54	0.13	16109	625.39	625.36	0.03
16010	685.76	685.73	0.03	16060	587.73	587.68	0.05	16110	624.66	624.66	0.00
16011	712.00	712.09	-0.09	16061	609.41	609.37	0.04	16111	623.62	623.43	0.19
16012	700.81	700.90	-0.09	16062	600.96	600.78	0.18	16112	625.29	625.20	0.09
16013	687.20	687.24	-0.04	16063	MISSING	582.09	N/A	16113	625.86	625.86	0.00
16014	678.23	678.16	0.07	16064	647.12	647.09	0.03	16114	623.35	623.35	0.00
16015	678.03	678.04	-0.01	16065	646.94	646.86	0.08	16115	622.72	622.69	0.03
16016	674.98	674.97	0.01	16066	642.03	642.00	0.03	16116	621.51	621.36	0.15
16017	669.69	MISSING	N/A	16067	618.04	618.00	0.04	16117	621.38	621.27	0.11
16018	663.78	663.76	0.02	16068	616.97	616.94	0.03	16118	622.35	622.31	0.04
16019	663.80	663.78	0.02	16069	606.38	606.35	0.03	16119	618.35	618.15	0.20
16020	674.92	674.86	0.06	16070	578.34	578.28	0.06	16120	615.70	615.65	0.05
16021	679.06	679.04	0.02	16071	583.44	583.40	0.04	16121	612.25	612.18	0.07
16022	675.04	675.05	-0.01	16072	601.55	601.47	0.08	16122	612.46	612.42	0.04
16023	667.27	667.23	0.04	16073	581.19	581.12	0.07	16123	611.99	611.95	0.04
16024	664.27	664.27	0.00	16074	559.86	559.80	0.06	16124	607.69	607.64	0.05
16025	659.78	659.76	0.02	16075	566.45	566.38	0.07	16125	602.12	602.06	0.06
16026	657.33	657.25	0.08	16076	599.04	598.98	0.06	16126	593.92	593.79	0.13
16027	657.22	657.17	0.05	16077	599.27	599.24	0.03	16127	586.05	585.96	0.09
16028	684.19	684.21	-0.02	16078	610.70	610.66	0.04	16128	566.18	566.12	0.04
16029	683.75	683.77	-0.02	16079	615.99	615.94	0.05	16129	545.50	545.51	-0.01
16030	658.23	658.24	-0.01	16080	619.35	619.30	0.05	16130	580.13	580.05	0.08
16031	657.28	657.29	-0.01	16081	613.38	613.35	0.01	16131	593.32	593.23	0.09
16032	661.58	661.57	0.01	16082	616.40	616.35	0.05	16132	598.17	598.12	0.05
16033	656.05	656.02	0.03	16083	622.79	622.78	0.01	16133	605.80	605.56	0.04
16034	649.87	649.85	0.02	16084	626.75	626.69	0.06	16134	602.68	602.61	0.07
16035	653.07	653.02	0.05	16085	621.51	621.44	0.07	16135	584.43	584.39	0.04
16036	652.38	652.36	0.02	16086	631.36	631.30	0.06	16136	593.85	593.78	0.07
16037	651.63	651.62	0.01	16087	639.63	639.54	0.09	16137	594.85	594.82	0.03
16038	653.27	653.25	0.02	16088	561.91	561.86	0.05	16138	610.60	610.60	0.00
16039	658.14	658.11	0.03	16089	560.50	560.44	0.06	16139	610.20	610.21	-0.01
16040	652.68	652.68	0.00	16090	564.83	564.77	0.06	16140	617.39	617.40	-0.01
16041	649.14	649.10	0.04	16091	565.85	565.79	0.06	16141	618.94	618.95	-0.01
16042	664.04	664.03	0.01	16092	559.80	559.74	0.06	16142	621.04	621.04	0.00
16043	662.29	662.33	-0.04	16093	579.00	578.94	0.06	16143	620.04	619.96	0.08
16044	655.28	655.29	-0.01	16094	586.28	586.14	0.12	16144	618.88	618.70	0.18
16045	648.52	648.46	0.06	16095	546.47	546.40	0.07	16145	618.16	618.03	0.13
16046	644.39	644.37	0.02	16096	645.77	645.76	0.01	16146	614.94	614.84	0.10
16047	640.05	639.97	0.08	16097	646.71	646.72	-0.01	16147	609.32	609.27	0.05
16048	639.97	639.94	0.03	16098	648.36	648.31	0.05	16148	615.88	615.83	0.05
16049	642.25	642.24	0.01	16099	639.77	639.73	0.04	16149	617.86	617.63	0.23
16050	646.48	646.48	0.00	16100	637.46	637.46	0.16	16150	616.37	616.36	0.01

Monument-A Stamped	559.99	Monument-D Stamped	728.46
Monument-B Stamped	538.75	Monument-E Stamped	605.03
Monument-C Stamped	554.12	Monument- F Stamped	814.26

Table 5: Groundwater Monitoring Well Sampling Results 2002

DATE COLLECTED:		OP UNIT ONE - DECEMBER 6, 2002											OP UNIT TWO JUNE 19, 2002							OP UNIT TWO - DECEMBER 11, 2002						
SAMPLE ID:		MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-11	MW-12	MW-13	MW-14	MW-15	MW-25	MW-26	MW-27	MW-28	MW-29	MW-30	BG-1	MW-25	MW-26	MW-27	MW-28	MW-29	MW-30	BG-1
VOLATILE ORGANIC COMPOUNDS																										
PARAMETERS	UNITS																									
1,1-Dichloroethane	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	Nd	ND	ND	ND	ND	ND	ND	Nd	ND
1,1-Dichloroethene	ug/L	ND	ND	ND	ND	ND	ND	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	ND	ND	ND	ND	ND	ND	4	ND
1,2-Dichloroethene (total)	ug/L	ND	ND	ND	ND	ND	ND	820	ND	ND	ND	22	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2	ND
Toluene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ug/L	ND	ND	ND	ND	ND	ND	1000	ND	ND	ND	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylene (Total)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	Nd	ND	ND	ND	ND	ND	4	ND	ND	ND	ND	ND	ND
SEMI-VOLATILE ORGANIC COMPOUNDS																										
PARAMETERS	UNITS																									
Caprolactam	ug/l	ND	ND	3	3	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2	ND	ND	ND	ND	ND	ND	2	ND	ND
Naphthalene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
METALS																										
PARAMETERS	UNITS																									
Aluminum	ug/L	148	ND	907	19800	39.9	453	1350	677	244	2010	940	462	10800	9470	13800	6390	208	3320	178	1910	62000	5550	10700	829	101
Antimony	ug/L	ND	ND	ND	ND	ND	6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	ug/L	ND	ND	ND	9.6	ND	ND	ND	ND	ND	ND	ND	ND	10.1	7.3	9.4	8.4	ND	ND	ND	ND	34.2	ND	8.5	ND	ND
Barium	ug/L	27.2	9.6	21.5	304	59.8	32.5	9.3	15.3	15.4	36.6	32.6	39	35.6	62.2	59.5	44.8	10.4	26.3	20.9	14	241	36	73.6	14	12.8
Beryllium	ug/L	ND	ND	0.12	1.2	ND	ND	0.12	ND	ND	0.17	0.19	ND	0.94	0.64	0.74	0.45	ND	0.23	0.17	0.38	3	0.44	0.68	0.19	ND
Cadmium	ug/L	ND	ND	ND	Nd	ND	ND	ND	ND	73.4	ND	ND	ND	0.5	ND	33.1	ND	ND	ND	ND	1.8	1.8	25.8	0.82	ND	ND
Calcium	ug/L	36000	52200	78000	38300	102000	59800	51800	48800	25700	55800	10000	158000	441000	213000	140000	331900	453000	20000	150000	449000	136000	53300	352000	451000	15900
Chromium	ug/L	81.8	2.1	39.8	32.8	ND	8.5	2.3	7.1	21.7	9.2	69	3.3	18.8	21.9	26.6	21.4	3.4	11.4	4.8	46.4	91.1	14.4	40.1	ND	ND
Cobalt	ug/L	1.7	ND	1.7	18.3	47.8	ND	1.2	1.8	4.8	10.6	6.4	4.1	91.2	9.8	25.6	10.2	Nd	12.9	ND	55.3	42.2	13.5	21	2.1	3.0
Copper	ug/L	3.3	ND	10	78.3	ND	3.3	1.9	2.2	19.7	13.2	4.8	5.8	41.3	46.4	38.6	24.5	3	10.4	3.1	14.6	99.5	19.9	40.9	4	3
Iron	ug/L	551	35.4	1170	46500	4340	837	2340	2290	30500	4820	2510	3600	21100	18600	30700	15400	478	8380	638	4140	115000	11900	27700	1040	45
Lead	ug/L	ND	Nd	Nd	36.3	ND	2.2	ND	ND	ND	8.6	ND	ND	14.8	2.9	11.5	5.8	Nd	2.7	ND	5.4	48.3	8.4	8.5	ND	ND
Magnesium	ug/L	27900	53700	86500	24100	67700	35600	57500	45000	14300	31800	22500	119000	765000	328000	170000	418000	825000	44400	110000	685000	219000	169000	448000	722000	37100
Manganese	ug/L	87.5	16.3	118	2210	11000	102	116	120	508	264	554	1470	10400	199	1620	376	148	1250	1180	9480	949	744	694	124	506
Mercury	ug/L	ND	ND	Nd	0.04	ND	ND	0.04	ND	0.05	0.067	ND	ND	ND	ND	ND	ND	NC	ND	0.052	0.12	0.075	0.048	0.088	0.068	0.054
Nickel	ug/L	271	5.2	44.8	51.8	51.9	10.3	14	11.7	38.8	59.1	49.1	11.7	483	75.4	158	53.8	9.8	54.5	6.6	482	150	75.1	141	22.8	32.7
Potassium	ug/L	4460	7570	8160	11200	8400	7830	1540	4690	4230	6350	1750	15400	31200	7570	19800	10600	17900	3250	15800	30700	13900	1010	13100	19600	1750
Selenium	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NC	ND	ND	ND	ND	ND	NC	ND	ND
Silver	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	Nd	ND	ND	ND	ND	Nd	6.8	1.8	ND	5.1	5.4	ND
Sodium	ug/L	53700	84300	151000	16400	49300	50240	70900	53800	23700	49900	95600	106000	491000	348000	125000	425000	449000	57000	98700	478000	238000	82800	408000	425000	45200
Thallium	ug/L	ND	ND	ND	10	49	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	ug/L	1.1	ND	1.7	40.3	ND	1	2.8	1.1	ND	4.4	2.2	1.2	19.0	11.1	26.0	12.2	ND	7.8	ND	3.0	107	12.0	20.9	1.8	ND
Zinc	ug/L	4.5	6.2	8.2	129	8.4	6.8	27.3	24.8	220	60.4	54	24.7	164	96.2	31400	55	47.6	77.4	4	95.5	372	19200	90.3	18.1	38.9
Cyanide	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
ND = Not detected above laboratory detection limits listed on laboratory data sheets
NA = Not analyzed
Laboratory analysis by Lancaster Laboratories in Lancaster, PA.

Prepared by: E Taylor
Checked by:

Table 6: Groundwater Monitoring Well Sampling Quality Control Summary Results 2002

DATE COLLECTED:		OP UNIT ONE - DECEMBER 6 2002	OP UNIT TWO JUNE 19, 2002			OP UNIT TWO - DECEMBER 11, 2002		
SAMPLE ID:		OP UNIT ONE - TRIP BLANK	MW-00 Dup	Field Blank	Trip Blank	MW-00 Dup	Field Blank	Trip Blank
VOLATILE ORGANIC COMPOUNDS								
PARAMETERS	UNITS							
1,1-Dichbroethane	ug/L	ND	ND	ND	ND	ND	ND	ND
1,1-Dichbroethene	ug/L	ND	3	ND	ND	ND	ND	ND
1,2-Dichbroethene (total)	ug/L	ND	ND	ND	ND	ND	ND	ND
Tolune	ug/L	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ug/L	ND	ND	ND	ND	ND	ND	ND
Xylene (Total)		ND	ND	ND	ND	ND	ND	ND
SEMI-VOLATILE ORGANIC COMPOUNDS								
PARAMETERS	UNITS							
Caprolactam	ug/l	ND	ND	ND	ND	ND	ND	ND
Naphthalene	ug/L	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	ug/L	ND	ND	ND	ND	ND	ND	ND
METALS								
PARAMETERS	UNITS							
Aluminum	ug/L	ND	1900	ND	ND	1100	36.4	ND
Antimony	ug/L	ND	ND	ND	ND	ND	ND	ND
Arsenic	ug/L	ND	ND	ND	ND	ND	ND	ND
Barium	ug/L	ND	19.4	ND	ND	20.6	ND	ND
Beryllium	ug/L	ND	0.24	ND	ND	ND	ND	ND
Cadmium	ug/L	ND	ND	ND	ND	ND	ND	ND
Calcium	ug/L	ND	454000	64.5	ND	16300	ND	ND
Chromium	ug/L	ND	2.5	6.1	ND	5.7	ND	ND
Cobalt	ug/L	ND	3.8	ND	ND	5.6	ND	ND
Copper	ug/L	ND	6.9	2	ND	4.2	ND	ND
Iron	ug/L	ND	4530	ND	ND	1930	ND	ND
Lead	ug/L	ND	ND	ND	ND	ND	ND	ND
Magnesium	ug/L	ND	808000	ND	ND	39400	ND	ND
Manganese	ug/L	ND	399	0.3	ND	440	0.24	ND
Mercury	ug/L	ND	ND	ND	ND	0.022	0.078	ND
Nickel	ug/L	ND	14.5	ND	ND	33.1	ND	ND
Potassium	ug/L	ND	17700	112	ND	1970	ND	ND
Selenium	ug/L	ND	ND	ND	ND	ND	ND	ND
Silver	ug/L	ND	ND	ND	ND	ND	ND	ND
Sodium	ug/L	ND	463000	501	ND	40600	ND	ND
Thallium	ug/L	ND	ND	ND	ND	ND	ND	ND
Vanadium	ug/L	ND	4.4	ND	ND	2.9	ND	ND
Zinc	ug/L	ND	33.5	ND	ND	41.7	ND	ND
Cyanide	ug/L	ND	ND	ND	ND	ND	ND	ND

Notes:
ND = Not detected above laboratory detection limits listed on laboratory data sheets
NA = Not analyzed
Laboratory analysis by Lancaster Laboratories in Lancaster, PA.

MW-00 is a dup of MW-30 on 6-19-02
Dup-1 is a dup of 3G-1 on 12-11-02

Prepared by E Taylor
Checked by

Table 7 OU-2 EXTRACTION WELLS TOTAL GALLONS 2002

	MW-1 Meter Reading	MW-1 Gallons	MW-2 Meter Reading	MW-2 Gallons	MW-3 Meter Reading	MW-3 Gallons	MW-4 Meter Reading	MW-4 Gallons
January	1,299,418	4,760	98,049	1,579	201,356	40	856	856
February	1,304,660	5,242	99,265	1,216	201,416	60	2,029	1,173
March	1,309,120	4,460	99,900	635	201,456	40	3,795	1,766
April	1,314,977	5,857	100,487	587	201,494	38	5,150	1,355
May	1,320,655	5,678	100,814	327	201,514	20	6,227	1,077
June	1,323,546	2,891	101,071	257	201,526	12	6,235	8
July	1,328,418	4,872	101,383	312	201,549	23	6,832	597
August	1,332,654	4,236	101,654	271	201,559	10	7,450	618
September	1,336,871	4,217	101,864	210	201,569	10	7,982	532
October	1,339,752	2,881	102,001	155	201,578	9	8,939	957
November	1,343,528	3,776	102,173	172	201,589	11	9,090	151
December	1,347,631	4,103	102,377	204	201,601	12	9,090	0
Total Gallons		48,213		4,346		245		8,234

Prepared by: E. Taylor
Checked by:

Table 8 OU-1 2002 Pumping Record

NORTH TANK			
DATE	Dipstick Reading	Dipstick Reading	Gallons
1/4/2002	33 1/2		
1/9/2002	34 1/8	27 3/4	845
1/16/2002	29 3/4		
1/21/2002	30 7/8	21 7/8	1136
1/28/2002	27 3/8		
1/30/2002			
2/1/2002	32		
2/4/2002			
2/6/2002			
2/8/2002			
2/11/2002	38 7/8		
2/15/2002	39 7/8		
2/18/2002	40		
2/25/2002	43 1/2		
3/6/2002	47 1/2	38 1/2	1259
3/13/2002	43 3/4	35 3/4	1114
3/20/2002			
3/25/2002	48		
3/27/2002	50 7/8		
3/28/2002			
3/29/2002	53 7/8		
4/1/2002	58 1/4		
4/3/2002			
4/5/2002	60 1/4		
4/8/2002	61 1/2		
4/10/2002	61 1/2		
4/12/2002	63	55	1049
4/15/2002	56 3/8	49 5/8	905
4/17/2002	49 3/4		
4/22/2002	50 1/2		
4/29/2002	58 1/8		
5/1/2002	59 1/2		
5/2/2002			
5/6/2002	63 3/8	60 1/2	366
5/8/2002			
5/13/2002	66	56 1/2	1202
5/15/2002	60		
5/20/2002	63 5/8		
5/24/2002	65 7/8		
5/29/2002	67		
6/3/2002	67 1/4		
6/7/2002	69		
6/10/2002	69 1/8	58	1383
6/14/2002	58	53 3/4	672

SOUTH TANK			
DATE	Dipstick Reading	Dipstick Reading	Gallons
1/4/2002	35 3/8	23 3/4	1577
1/9/2002	25 7/8		
1/16/2002	30 3/4	26 1/4	583
1/21/2002	28 1/8		
1/28/2002	57 3/4	48 1/2	1266
1/30/2002	52	46 1/4	801
2/1/2002	57 3/8	49 3/8	1094
2/4/2002	69 3/8	57 3/8	1495
2/6/2002	60 3/4	50 3/4	1347
2/8/2002	54 1/2	44 1/4	1424
2/11/2002	46 3/8	40	893
2/15/2002	42 3/4	35 1/8	1059
2/18/2002	36 3/4	29 1/4	1110
2/25/2002	34 7/8	29 1/4	1555
3/6/2002	30 1/2		
3/13/2002	37 1/8		
3/20/2002	77 1/8	58 3/4	
3/25/2002	59	48 3/8	1448
3/27/2002	63 3/8	55 5/8	1012
3/28/2002	66 3/8	57 1/2	1128
3/29/2002	68 1/2	49 1/2	1275
4/1/2002	63 1/4	52 1/2	1423
4/3/2002	57 3/8	39 3/8	1592
4/5/2002	41 3/8	35 3/4	781
4/8/2002	37 3/8	29	1129
4/10/2002	29 3/4	24 1/8	716
4/12/2002	25 3/8		
4/15/2002	36 3/8		
4/17/2002	44 3/8	34 5/8	1354
4/22/2002	40	30 3/8	1313
4/29/2002	53 1/2	42 7/8	1480
5/1/2002	48	38 7/8	1262
5/2/2002	39 3/4	32 1/8	1045
5/6/2002	43 1/2	41 1/8	333
5/8/2002	45 5/8	35 3/8	1428
5/13/2002	46 3/4	38	1223
5/15/2002	52 1/2	40 1/4	1225
5/20/2002	48	34 1/2	2247
5/24/2002	35 1/4	32 3/8	390
5/29/2002	35	22 3/4	1587
6/3/2002	25 1/4		
6/7/2002	28 1/4		
6/10/2002	31 1/8		
6/14/2002	32	25 3/4	813

Prepared by: E Taylor
Checked by:

Table 8 OU-1 2002 Pumping Record

NORTH TANK			
DATE	Dipstick Reading	Dipstick Reading	Gallons
6/26/2002	53 3/4	47 3/4	832
7/1/2002	48 1/2	39 1/4	1295
7/3/2002	38 3/4	27 3/4	1481
7/8/2002			
7/29/2002	31 7/8		
8/26/2002	28 1/4		
8/30/2002	28 1/2		
9/16/2002	28		
9/18/2002	28 1/4		
10/2/2002	30 5/8		
10/4/2002			
10/21/2002	37		
10/25/2002	36 1/8		
10/30/2002	38 1/8		
11/1/2002			
11/4/2002	41 1/4		
11/6/2002	43 3/8		
11/8/2002	45 3/8	44 1/2	123
11/13/2002	49 1/2		
11/18/2002	51 1/8	40 1/8	1471
11/20/2002			
11/25/2002	41 1/2		
11/27/2002	43	21 1/2	2615
12/16/2002	28 1/4		
12/18/2002	28 1/4		
12/23/2002			
12/26/2002	44 1/8		
12/27/2002	45 1/2	21	3256
12/30/2002	24		
Total Gallons North Tank			21004

SOUTH TANK			
DATE	Dipstick Reading	Dipstick Reading	Gallons
6/26/2002			
7/1/2002	34 1/4		
7/3/2002			
7/8/2002	34 7/8	25	1302
7/29/2002	27 7/8		
8/26/2002	42		
8/30/2002	42	34 1/2	1048
9/16/2002	42		
9/18/2002	42 1/4	34 5/8	1056
10/2/2002	51	41 3/8	1346
10/4/2002	42 1/8	34 1/8	1107
10/21/2002	58 1/8	52 1/8	813
10/25/2002	51 1/2		
10/30/2002	59	51	1083
11/1/2002	55 5/8	45 1/2	1401
11/4/2002	46 7/8	41	823
11/6/2002	45 1/4	35 5/8	1341
11/8/2002			
11/13/2002	54 1/8	43 1/2	1478
11/18/2002	48 1/8		
11/20/2002	49 3/4	42	1085
11/25/2002	43 3/4	35 1/4	1182
11/27/2002			
12/16/2002	56 1/4	31	2486
12/18/2002	36 1/8	17	3094
12/23/2002	48	42 3/4	735
12/26/2002	53 7/8	45 1/2	1164
12/27/2002	47 1/2	25	3053
12/30/2002	32 3/8	19 1/4	1539
Total Gallons South Tank			72661

Prepared by: E Taylor
Checked by:

TABLES

Table 1

Summary of Treated Leachate Volume - Operable Units One and Two

	Plant Discharge Totals	OU-2 Extraction Wells Discharge Totals				OU-2 Leachate Collection Trench	OU-1 Tanks Discharge Totals		Monthly Rainfall
Month	Effluent	MW-1	MW-2	MW-3	MW-4	Estimated Discharge Totals	North Tank	South Tank	Inches
JAN	94459	3583	0	0	349	82386	1479	6662	1.09
FEB	94219	3576	174	27	378	83170	0	6894	4.9
MAR	89307	4210	156	23	394	73222	2809	8493	1.6
APR	95773	4010	261	29	228	88352	0	2893	6.4
MAY	132777	3593	253	19	0	122434	0	6478	6.45
JUN	69289	3500	194	12	472	62597	1232	1282	3.22
JUL	99290	3042	74	36	98	87971	5429	2640	2.95
AUG	95397	2578	194	24	0	89117	1628	1856	4.53
SEP	88209	569	144	29	689	83916	0	2862	6.1
OCT	103418	112	121	37	227	99548	1595	1778	3.33
NOV	86123	3476	117	26	815	78879	0	2810	5.69
DEC	106252	4177	120	17	889	88458	4396	8195	3.8
TOTALS	1154513	36426	1808	279	4539	1040050	18568	52843	50.06

NOTES:

All discharge volumes in gallons.
Volumes generated by MW-1 Extraction Well have decreased by 1,380 gallons per month since 2002
Volumes generated by MW-2 Extraction Well have decreased by 350 gallons per month since 2002
Volumes generated by MW-4 Extraction Well have decreased by 380 gallons since 2002.

Prepared by: E Taylor
Checked by:

Treatment Plant Quarterly Effluent Sampling Results 2003

SAMPLE MONTH: / DATE COLLECTED:		ROD Requirements	KPDES Requirements	April 3/26/2003	June 6/13/2003	Aug 8/29/2003	Dec 12/5/2003
VOLATILE ORGANIC COMPOUNDS BY SW8260							
PARAMETERS	UNITS						
DICHLORODIFLUOROMETHANE	ug/L			<5	<5	<5	<5
VINYL CHLORIDE	ug/L		5	<2	<2	<2	<2
CHLOROMETHANE	ug/L			<10	<10	<10	<10
BROMOMETHANE	ug/L			<10	<10	<10	<10
CHLOROETHANE	ug/L			<10	<10	<10	<10
TRICHLOROFLUOROMETHANE	ug/L			<5	<5	<5	<5
1,1-DICHLOROETHYLENE	ug/L			<5	<5	<5	<5
METHYLENE CHLORIDE	ug/L			<10	<10	<10	<10
ACETONE	ug/L			<50	<50	<50	<50
ACROLEIN	ug/L			<50	<50	<50	<50
IODOMETHANE	ug/L			<5	<5	<5	<5
CARBON DISULFIDE	ug/L			<10	<10	<10	<10
ACRYLONITRILE	ug/L			<50	<50	<50	<50
TRANS-1,2-DICHLOROETHYLENE	ug/L			<5	<5	<5	<5
1,1-DICHLOROETHANE	ug/L			<5	<5	<5	<5
VINYL ACETATE	ug/L			<50	<50	<50	<50
2-BUTANONE (MEK)	ug/L		5	<50	<50	<50	<50
CIS-1,2-DICHLOROETHYLENE	ug/L		5	<5	<5	<5	<5
BROMOCHLOROMETHANE	ug/L			<5	<5	<5	<5
CHLOROFORM	ug/L			<5	<5	<5	<5
2,2-DICHLOROPROPANE	ug/L			<5	<5	<5	<5
1,1,1-TRICHLOROETHANE	ug/L		5	<5	<5	<5	<5
1,1-DICHLOROPROPYLENE	ug/L		5	<5	<5	<5	<5
CARBON TETRACHLORIDE	ug/L			<5	<5	<5	<5
BENZENE	ug/L			<5	<5	<5	<5
1,2-DICHLOROETHANE	ug/L		5	<5	<5	<5	<5
TRICHLOROETHYLENE	ug/L			<5	<5	<5	<5
DIBROMOMETHANE	ug/L			<5	<5	<5	<5
1,2-DICHLOROPROPANE	ug/L	5870	5	<5	<5	<5	<5
BROMODICHLOROMETHANE	ug/L			<5	<5	<5	<5
2-CHLOROETHYL VINYL ETHER	ug/L			<10	<10	<10	<10
CIS-1,3-DICHLOROPROPYLENE	ug/L		5	<5	<5	<5	<5
4-METHYL-2-PENTANONE (MIBK)	ug/L		5	<50	<50	<50	<50
TOLUENE	ug/L		5	<5	<5	<5	<5
TRANS-1,3-DICHLOROPROPYLENE	ug/L			<5	<5	<5	<5
1,1,2-TRICHLOROETHANE	ug/L		5	<5	<5	<5	<5
1,3-DICHLOROPROPANE	ug/L			<5	<5	<5	<5
DIBROMOCHLOROMETHANE	ug/L			<5	<5	<5	<5
1,2-DIBROMOETHANE (EDB)	ug/L			<5	<5	<5	<5
TETRACHLOROETHYLENE	ug/L			<5	<5	<5	<5
2-HEXANONE	ug/L			<10	<10	<10	<10
1,1,1,2-TETRACHLOROETHANE	ug/L			<5	<5	<5	<5
CHLOROBENZENE	ug/L			<5	<5	<5	<5
1-CHLOROHEXANE	ug/L			<5	<5	<5	<5
ETHYLBENZENE	ug/L			<5	<5	<5	<5
M-XYLENE / P-XYLENE	ug/L			<10	<10	<10	<10
O-XYLENE	ug/L			<5	<5	<5	<5
STYRENE	ug/L			<5	<5	<5	<5
BROMOFORM	ug/L			<5	<5	<5	<5
1,2,3-TRICHLOROPROPANE	ug/L		10	<5	<5	<5	<5
ISOPROPYLBENZENE (CUMENE)	ug/L			<5	<5	<5	<5

Treatment Plant Quarterly Effluent Sampling Results continued...

SAMPLE MONTH: DATE COLLECTED:		ROD Requirements	KPDES Requirements	April 3/26/2003	June 6/13/2003	Aug 8/29/2003	Dec 12/5/2003
VOLATILE ORGANIC COMPOUNDS BY SW8260 continue...							
BROMOBENZENE	ug/L			<5	<5	<5	<5
TRANS-1,4-DICHLORO-2-BUTENE	ug/L			<10	<10	<10	<10
N-PROPYLBENZENE	ug/L			<5	<5	<5	<5
1,1,2,2-TETRACHLOROETHANE	ug/L			<5	<5	<5	62
2-CHLOROTOLUENE	ug/L			<5	<5	<5	<5
3-CHLOROTOLUENE	ug/L			<5	<5	<5	<5
4-CHLOROTOLUENE	ug/L			<5	<5	<5	<5
1,3,5-TRIMETHYLBENZENE	ug/L	23		<5	<5	<5	<5
TERT-BUTYLBENZENE	ug/L			<5	<5	<5	<5
1,2,4-TRIMETHYLBENZENE	ug/L			<5	<5	<5	<5
SEC-BUTYLBENZENE	ug/L			<5	<5	<5	<5
1,3-DICHLOROBENZENE	ug/L			<5	<5	<5	<5
1,4-DICHLOROBENZENE	ug/L			<5	<5	<5	<5
4-ISOPROPYLTOLUENE	ug/L			<5	<5	<5	<5
1,2-DICHLOROBENZENE	ug/L		5	<5	<5	<5	<5
N-BUTYLBENZENE	ug/L			<5	<5	<5	<5
1,2-DIBROMO-3-CHLOROPROPANE	ug/L		5	<5	<5	<5	<5
1,2,4-TRICHLOROBENZENE	ug/L			<5	<5	<5	<5
NAPHTHALENE	ug/L			<5	<5	<5	<5
HEXACHLOROBUTADIENE	ug/L			<5	<5	<5	<5
1,2,3-TRICHLOROBENZENE	ug/L			<5	<5	<5	<5
SEMI-VOLATILE ORGANIC COMPOUNDS BY SW8270							
PYRIDINE	ug/L			<10	<10	<10	<10
N-NITROSODIMETHYLAMINE	ug/L			<10	<10	<10	<10
BIS(2-CHLOROETHYL)ETHER	ug/L			<10	<10	<10	<10
PHENOL	ug/L			<10	<10	<10	<10
2-CHLOROPHENOL	ug/L			<10	<10	<10	<10
1,3-DICHLOROBENZENE	ug/L			<10	<10	<10	<10
1,4-DICHLOROBENZENE	ug/L			<10	<10	<10	<10
1,2-DICHLOROBENZENE	ug/L			<10	<10	<10	<10
BENZYL ALCOHOL	ug/L			<10	<10	<10	<10
BIS(2-CHLOROISOPROPYL)ETHER	ug/L			<10	<10	<10	<10
2-METHYLPHENOL	ug/L			<10	<10	<10	<10
HEXACHLOROETHANE	ug/L			<10	<10	<10	<10
N-NITROSODI-N-PROPYLAMINE	ug/L	11		<10	<10	<10	<10
3&4-METHYLPHENOL	ug/L			<10	<10	<10	<10
NITROBENZENE	ug/L			<10	<10	<10	<10
ISOPHORONE	ug/L			<10	<10	<10	<10
2-NITROPHENOL	ug/L			<10	<10	<10	<10
2,4-DIMETHYLPHENOL	ug/L			<10	<10	<10	<10
BIS(2-CHLOROETHOXY)METHANE	ug/L	250		<10	<10	<10	<10
2,4-DICHLOROPHENOL	ug/L			<10	<10	<10	<10
2,6-DICHLOROPHENOL	ug/L			<10	<10	<10	<10
1,2,4-TRICHLOROBENZENE	ug/L			<10	<10	<10	<10
NAPHTHALENE	ug/L			<10	<10	<10	<10
4-CHLOROANILINE	ug/L			<10	<10	<10	<10
HEXACHLOROBUTADIENE	ug/L	365000	10	<10	<10	<10	<10
4-CHLORO-3-METHYLPHENOL	ug/L			<10	<10	<10	<10

Tab [redacted]

Treatment Plant Quarterly Effluent Sampling Results continued...

SAMPLE MONTH:		ROD	KPDES	April	June	Aug	Dec
DATE COLLECTED:		Requirements	Requirements	3/26/2003	6/13/2003	8/29/2003	12/5/2003
SEMI-VOLATILE ORGANIC COMPOUNDS BY SW8270 continued...							
2-METHYLNAPHTHALENE	ug/L			<10	<10	<10	<10
HEXACHLOROCYCLOPENTADIENE	ug/L			<10	<10	<10	<10
2,4,6-TRICHLOROPHENOL	ug/L			<10	<10	<10	<10
2,4,5-TRICHLOROPHENOL	ug/L			<10	<10	<10	<10
2-CHLORONAPHTHALENE	ug/L			<10	<10	<10	<10
2-NITROANILINE	ug/L			<50	<50	<50	<50
DIMETHYL PHTHALATE	ug/L			<10	<10	<10	<10
ACENAPHTHYLENE	ug/L	23		<10	<10	<10	<10
2,6-DINITROTOLUENE	ug/L			<10	<10	<10	<10
ACENAPHTHENE	ug/L			<10	<10	<10	<10
3-NITROANILINE	ug/L			<50	<50	<50	<50
2,4-DINITROPHENOL	ug/L			<10	<10	<10	<10
4-NITROPHENOL	ug/L			<10	<10	<10	<10
DIBENZOFURAN	ug/L			<10	<10	<10	<10
2,4-DINITROTOLUENE	ug/L		5	<10	<10	<10	<10
FLUORENE	ug/L			<10	<10	<10	<10
DIETHYL PHTHALATE	ug/L		5	<10	<10	<10	<10
4-CHLOROPHENYL PHENYL ETHEF	ug/L			<10	<10	<10	<10
2-METHYL-4,6-DINITROPHENOL	ug/L			<10	<10	<10	<10
4-NITROANILINE	ug/L			<50	<50	<50	<50
N-NITROSO-DIPHENYLAMINE	ug/L			<10	<10	<10	<10
4-BROMOPHENYL PHENYL ETHER	ug/L	4570	10	<10	<10	<10	<10
HEXACHLOROBENZENE	ug/L			<10	<10	<10	<10
PENTACHLOROPHENOL	ug/L			<10	<10	<10	<10
ANTHRACENE	ug/L			<10	<10	<10	<10
PHENANTHRENE	ug/L			<10	<10	<10	<10
CARBAZOLE	ug/L			<10	<10	<10	<10
DI-N-BUTYL PHTHALATE	ug/L			<10	<10	<10	<10
FLUORANTHENE	ug/L			<10	<10	<10	<10
BENZIDINE	ug/L			<10	<10	<10	<10
PYRENE	ug/L			<10	<10	<10	<10
BENZYL BUTYL PHTHALATE	ug/L			<10	<10	<10	<10
BENZO(A)ANTHRACENE	ug/L			<10	<10	<10	<10
3,3'-DICHLOROBENZIDINE	ug/L			<10	<10	<10	<10
BIS(2-ETHYLHEXYL)PHTHALATE	ug/L			<10	<10	<10	<10
CHRYSENE	ug/L			<10	<10	<10	<10
DI-N-OCTYL PHTHALATE	ug/L			<10	<10	<10	<10
BENZO(B)FLUORANTHENE	ug/L			<10	<10	<10	<10
BENZO(K)FLUORANTHENE	ug/L	11		<10	<10	<10	<10
BENZO(A)PYRENE	ug/L			<10	<10	<10	<10
INDENO(1,2,3-C,D)PYRENE	ug/L			<10	<10	<10	<10
DIBENZO(A,H)ANTHRACENE	ug/L			<10	<10	<10	<10
BENZO(G,H,I)PERYLENE	ug/L			<10	<10	<10	<10

Treatment Plant Quarterly Effluent Sampling Results continued...

SAMPLE MONTH:		ROD	KPDES	April	June	Aug	Dec
DATE COLLECTED:		Requirements	Requirements	3/26/2003	6/13/2003	8/29/2003	12/5/2003
METALS Compound by SW846, 6010 / 7470							
PARAMETERS	UNITS						
Antimony	mg/L	0.062	1.6	<0.01	<0.01	<0.01	<0.01
Arsenic	mg/L	0.011	0.05	<0.01	<0.01	<0.01	<0.01
Barium	mg/L	0.231		0.05	0.1	0.05	0.08
Beryllium	mg/L		0.0053	<0.01	<0.01	<0.01	<0.01
Cadmium	mg/L		0.0011	<0.01	<0.01	<0.01	<0.01
Calcium	mg/L			140	110	140	110
Chromium	mg/L	0.011	0.011	<0.01	<0.01	<0.01	<0.01
Copper	mg/L		0.012	<0.01	<0.01	<0.01	<0.01
Iron	mg/L		1	0.54	0.13	0.12	0.07
Lead	mg/L		0.0032	<0.01	<0.01	<0.01	<0.01
Magnesium	mg/L			120	110	106	94.9
Manganese	mg/L			0.35	0.13	0.16	0.02
Mercury	mg/L		0.000012	0.02	0.02	<0.0002	<0.0002
Nickel	mg/L		0.16	<0.01	0.01	0.02	0.01
Selenium	mg/L		0.005	<0.01	<0.01	<0.01	0.03
Silver	mg/L		0.00012	<0.01	<0.01	<0.01	<0.01
Thallium	mg/L	0.011	0.04	<0.01	<0.01	<0.01	<0.01
Zinc	mg/L		0.11	0.02	0.02	0.04	<0.1
GENERAL INORGANICS							
PARAMETERS	UNITS						
BOD	mg/L			<5	<5	<5	<5
COD	mg/L			56	47	54	27
Cyanide total	mg/L			7	<0.01	<0.01	0.06
Nitrogen, Ammonia	mg/L			55	<1.0	1	<1.0
Nitrogen, Kjeldahl	mg/L			3.7	2.4	2.6	1
Nitrogen, Nitrate	mg/L			1.9	0.5	<0.5	2.05
Nitrogen, Nitrite	mg/L			<0.01	0.5	<0.02	<0.1
Nitrogen, Nitrite, and Nitrate	mg/L			1.9	0.518	<0.05	2.05
Organic Carbon total	mg/L			22	23	33	16
pH	s.u.			7.6	7.61	7.59	7.4
Phosphate Ortho-	mg/L			<0.5	0.12	0.15	<0.3
Phosphorus total	mg/L			0.2	0.1	0.2	0.11
TDS	mg/L			1540	1340	1330	1404
TSS	mg/L			7	<5	3	<5
Turbidity	NTU			1.7	0.37	0.31	0.7

Notes:
NA = Not analyzed
Laboratory analysis by Microbac Labs Louisville,Ky

Ta[redacted]

Treatment Plant Bi-Annual Influent Sampling Results 2003

SAMPLE MONTH:		ROD	KPDES	June	Dec	June	Dec
DATE COLLECTED:		Requirements	Requirements	6/12/2002	12/11/2002	6/13/2003	12/5/2003
VOLATILE ORGANIC COMPOUNDS BY SW8260							
PARAMETERS	UNITS						
DICHLORODIFLUOROMETHANE	ug/L			<5	<5	<25	<5
VINYL CHLORIDE	ug/L		5	<2	<2	<10	<2
CHLOROMETHANE	ug/L			<10	18	<50	<10
BROMOMETHANE	ug/L			<10	34	<50	<10
CHLOROETHANE	ug/L			<10	<10	<50	<10
TRICHLOROFLUOROMETHANE	ug/L			<5	<5	<25	<5
1,1-DICHLOROETHYLENE	ug/L			<5	7	<25	<5
METHYLENE CHLORIDE	ug/L			<10	924	800	640
ACETONE	ug/L			<50	4100	3040	4840
ACROLEIN	ug/L			<50	<50	<250	<50
IODOMETHANE	ug/L			<5	<5	<25	<5
CARBON DISULFIDE	ug/L			<10	16	<50	<10
ACRYLONITRILE	ug/L			<50	<50	<250	<50
TRANS-1,2-DICHLOROETHYLENE	ug/L			<5	<5	<25	<5
1,1-DICHLOROETHANE	ug/L			<5	71	<80	48
VINYL ACETATE	ug/L			<50	<50	<250	<50
2-BUTANONE (MEK)	ug/L		5	<50	2070	1390	1480
CIS-1,2-DICHLOROETHYLENE	ug/L		5	<5	<5	<25	<5
BROMOCHLOROMETHANE	ug/L			<5	8	<25	<5
CHLOROFORM	ug/L			<5	178	550	310
2,2-DICHLOROPROPANE	ug/L			<5	<5	<25	<5
1,1,1-TRICHLOROETHANE	ug/L		5	<5	15	70	21
1,1-DICHLOROPROPYLENE	ug/L		5	<5	<5	<25	<5
CARBON TETRACHLORIDE	ug/L			<5	<5	<25	<5
BENZENE	ug/L			<5	8	<25	<5
1,2-DICHLOROETHANE	ug/L		5	<5	5	<25	<5
TRICHLOROETHYLENE	ug/L			<5	26	50	24
DIBROMOMETHANE	ug/L			<5	<5	<25	<5
1,2-DICHLOROPROPANE	ug/L	5870	5	<5	<5	<25	<5
BROMODICHLOROMETHANE	ug/L			<5	<5	<25	<5
2-CHLOROETHYL VINYL ETHER	ug/L			<10	140	<50	<10
CIS-1,3-DICHLOROPROPYLENE	ug/L		5	<5	<5	<25	<5
4-METHYL-2-PENTANONE (MIBK)	ug/L		5	<50	604	<250	520
TOLUENE	ug/L		5	<5	55	<50	39
TRANS-1,3-DICHLOROPROPYLENE	ug/L			<5	<5	<25	<5
1,1,2-TRICHLOROETHANE	ug/L		5	<5	178	140	99
1,3-DICHLOROPROPANE	ug/L			<5	<5	<25	<5
DIBROMOCHLOROMETHANE	ug/L			<5	<5	<25	<5
1,2-DIBROMOETHANE (EDB)	ug/L			<5	<5	<25	<5
TETRACHLOROETHYLENE	ug/L			<5	6	<25	7
2-HEXANONE	ug/L			<10	<10	<50	17
1,1,1,2-TETRACHLOROETHANE	ug/L			<5	8	100	9
CHLOROBENZENE	ug/L			<5	<5	<25	<5
1-CHLOROHEXANE	ug/L			<5	<5	<25	<5
ETHYLBENZENE	ug/L			<5	10	<25	<5
M-XYLENE / P-XYLENE	ug/L			<10	43	<25	15
O-XYLENE	ug/L			<5	11	<25	5
STYRENE	ug/L			<5	<5	<25	<5
BROMOFORM	ug/L			<5	<5	<25	<5
1,2,3-TRICHLOROPROPANE	ug/L		10	<5	<5	<25	<5
ISOPROPYLBENZENE (CUMENE)	ug/L			<5	<5	<25	<5

Prepared by: J. Taylor
Checked by

Treatment Plant Bi-Annual Influent Sampling Results continued...

SAMPLE MONTH:		ROD	KPDES	June	Dec	June	Dec
DATE COLLECTED:		Requirements	Requirements	6/12/2002	12/11/2002	6/13/2003	12/5/2003
VOLATILE ORGANIC COMPOUNDS BY SW8260 continue...							
BROMOBENZENE	ug/L			<5	<5	<25	<5
TRANS-1,4-DICHLORO-2-BUTENE	ug/L			<10	<10	<50	<10
N-PROPYLBENZENE	ug/L			<5	<5	<25	<5
1,1,2,2-TETRACHLOROETHANE	ug/L			<5	84	100	62
2-CHLOROTOLUENE	ug/L			<5	<5	<25	<5
3-CHLOROTOLUENE	ug/L			<5	<5	<25	<5
4-CHLOROTOLUENE	ug/L			<5	<5	<25	<5
1,3,5-TRIMETHYLBENZENE	ug/L	23		<5	<5	<25	<5
TERT-BUTYLBENZENE	ug/L			<5	<5	<25	<5
1,2,4-TRIMETHYLBENZENE	ug/L			<5	<5	<25	<5
SEC-BUTYLBENZENE	ug/L			<5	<5	<25	<5
1,3-DICHLOROBENZENE	ug/L			<5	<5	<25	<5
1,4-DICHLOROBENZENE	ug/L			<5	<5	<25	<5
4-ISOPROPYLTOLUENE	ug/L			<5	<5	<25	<5
1,2-DICHLOROBENZENE	ug/L		5	<5	<5	<25	<5
N-BUTYLBENZENE	ug/L			<5	<5	<25	<5
1,2-DIBROMO-3-CHLOROPROPANE	ug/L		5	<5	<5	<25	<5
1,2,4-TRICHLOROBENZENE	ug/L			<5	<5	<25	<5
NAPHTHALENE	ug/L			<5	<5	<25	<5
HEXACHLOROBUTADIENE	ug/L			<5	<5	<25	<5
1,2,3-TRICHLOROBENZENE	ug/L			<25	<5	<25	<5
SEMI-VOLATILE ORGANIC COMPOUNDS BY SW8270							
PYRIDINE	ug/L			<10	<10	<10	<10
N-NITROSODIMETHYLAMINE	ug/L			<10	<10	<10	<10
BIS(2-CHLOROETHYL)ETHER	ug/L			<10	<10	<10	<10
PHENOL	ug/L			<10	400	320	400
2-CHLOROPHENOL	ug/L			<10	<10	<10	<10
1,3-DICHLOROBENZENE	ug/L			<10	<10	<10	<10
1,4-DICHLOROBENZENE	ug/L			<10	<10	<10	<10
1,2-DICHLOROBENZENE	ug/L			<10	<10	<10	<10
BENZYL ALCOHOL	ug/L			<10	<10	<10	<10
BIS(2-CHLOROISOPROPYL)ETHER	ug/L			<10	<10	<10	<10
2-METHYLPHENOL	ug/L			<10	<10	<10	<10
HEXACHLOROETHANE	ug/L			<10	<10	<10	<10
N-NITROSODI-N-PROPYLAMINE	ug/L	11		<10	<10	<10	<10
3&4-METHYLPHENOL	ug/L			<10	120	150	120
NITROBENZENE	ug/L			<10	<10	<10	<10
ISOPHORONE	ug/L			<10	60	580	60
2-NITROPHENOL	ug/L			<10	<10	<10	<10
2,4-DIMETHYLPHENOL	ug/L			<10	<10	<10	<10
BIS(2-CHLOROETHOXY)METHANE	ug/L	250		<10	<10	<10	<10
2,4-DICHLOROPHENOL	ug/L			<10	<10	<10	<10
2,6-DICHLOROPHENOL	ug/L			<10	<10	<10	<10
1,2,4-TRICHLOROBENZENE	ug/L			<10	<10	<10	<10
NAPHTHALENE	ug/L			<10	<10	<10	<10
4-CHLOROANILINE	ug/L			<10	<10	<10	<10
HEXACHLOROBUTADIENE	ug/L	365000	10	<10	<10	<10	<10
4-CHLORO-3-METHYLPHENOL	ug/L			<10	<10	<10	<10

Ta[illegible]

Treatment Plant Bi-Annual Influent Sampling Results continued...

SAMPLE MONTH:		ROD	KPDES	June	Dec	June	Dec
DATE COLLECTED:		Requirements	Requirements	6/12/2002	12/11/2002	6/13/2003	12/5/2003
SEMI-VOLATILE ORGANIC COMPOUNDS BY SW8270 continued...							
2-METHYLNAPHTHALENE	ug/L			<10	<10	<10	<10
HEXACHLOROCYCLOPENTADIENE	ug/L			<10	<10	<10	<10
2,4,6-TRICHLOROPHENOL	ug/L			<10	<10	<10	<10
2,4,5-TRICHLOROPHENOL	ug/L			<10	<10	<10	<10
2-CHLORONAPHTHALENE	ug/L			<10	<10	<10	<10
2-NITROANILINE	ug/L			<50	<50	<50	<50
DIMETHYL PHTHALATE	ug/L			<10	<10	<10	<10
ACENAPHTHYLENE	ug/L	23		<10	<10	<10	<10
2,6-DINITROTOLUENE	ug/L			<10	<10	<10	<10
ACENAPHTHENE	ug/L			<10	<10	<10	<10
3-NITROANILINE	ug/L			<50	<50	<50	<50
2,4-DINITROPHENOL	ug/L			<10	<10	<10	<10
4-NITROPHENOL	ug/L			<10	<10	<10	<10
DIBENZOFURAN	ug/L			<10	<10	<10	<10
2,4-DINITROTOLUENE	ug/L		5	<10	<10	<10	<10
FLUORENE	ug/L			<10	<10	<10	<10
DIETHYL PHTHALATE	ug/L		5	<10	<10	<10	<10
4-CHLOROPHENYL PHENYL ETHER	ug/L			<10	<10	<10	<10
2-METHYL-4,6-DINITROPHENOL	ug/L			<10	<10	<10	<10
4-NITROANILINE	ug/L			<50	<50	<50	<50
N-NITROSO-DIPHENYLAMINE	ug/L			<10	<10	<10	<10
4-BROMOPHENYL PHENYL ETHER	ug/L	4570	10	<10	<10	<10	<10
HEXACHLOROBENZENE	ug/L			<10	<10	<10	<10
PENTACHLOROPHENOL	ug/L			<10	<10	<10	<10
ANTHRACENE	ug/L			<10	<10	<10	<10
PHENANTHRENE	ug/L			<10	<10	<10	<10
CARBAZOLE	ug/L			<10	<10	<10	<10
DI-N-BUTYL PHTHALATE	ug/L			<10	<10	<10	<10
FLUORANTHENE	ug/L			<10	<10	<10	<10
BENZIDINE	ug/L			<10	<10	<10	<10
PYRENE	ug/L			<10	<10	<10	<10
BENZYL BUTYL PHTHALATE	ug/L			<10	<10	<10	<10
BENZO(A)ANTHRACENE	ug/L			<10	<10	<10	<10
3,3'-DICHLOROBENZIDINE	ug/L			<10	<10	<10	<10
BIS(2-ETHYLHEXYL)PHTHALATE	ug/L			<10	<10	<10	<10
CHRYSENE	ug/L			<10	<10	<10	<10
DI-N-OCTYL PHTHALATE	ug/L			<10	<10	<10	<10
BENZO(B)FLUORANTHENE	ug/L			<10	<10	<10	<10
BENZO(K)FLUORANTHENE	ug/L	11		<10	<10	<10	<10
BENZO(A)PYRENE	ug/L			<10	<10	<10	<10
INDENO(1,2,3-C,D)PYRENE	ug/L			<10	<10	<10	<10
DIBENZO(A,H)ANTHRACENE	ug/L			<10	<10	<10	<10
BENZO(G,H,I)PERYLENE	ug/L			<10	<10	<10	<10
[Surrogate Rec. - B/N]	ug/L						
NITROBENZENE-D5	ug/L	250		105	81	26	81
2-FLUOROBIPHENYL	ug/L			85	102	23	102
P-TERPHENYL	ug/L			107	85	37	85
[Surrogate Rec. - Acids]	ug/L						
2-FLUOROPHENOL	ug/L			68	49	12	49
PHENOL-D6	ug/L			44	39	17	39
2,4,6-TRIBROMOPHENOL	ug/L	365000	10	61	97	40	97

Prepared by: E Taylor
Checked by

Treatment Plant Bi-Annual Influent Sampling Results continued...

SAMPLE MONTH:		ROD	KPDES	June	Dec	June	Dec
DATE COLLECTED:		Requirements	Requirements	6/12/2002	12/11/2002	6/13/2003	12/5/2003
METALS Compound by SW846, 6010 / 7470							
PARAMETERS	UNITS						
Antimony	mg/L	0.062	1.6	<0.1	<0.01	<0.1	<0.01
Arsenic	mg/L	0.011	0.05	<0.1	<0.01	<0.01	<0.01
Barium	mg/L	0.231		0.1	0.19	0.12	0.09
Beryllium	mg/L		0.0053	<0.1	<0.01	<0.1	<0.01
Cadmium	mg/L		0.0011	<0.1	<0.01	<0.1	<0.01
Calcium	mg/L			100	120	110	110
Chromium	mg/L	0.011	0.011	<0.1	<0.01	<0.1	<0.01
Copper	mg/L		0.012	0.6	<0.01	<0.01	<0.01
Iron	mg/L		1	4.3	8	5.98	9.18
Lead	mg/L		0.0032	<0.1	<0.01	<0.1	<0.01
Magnesium	mg/L			89	92	120	96.7
Manganese	mg/L			1.8	1.51	1.69	1.4
Mercury	mg/L		0.000012	0.0001	<0.0002	0.0001	<0.0002
Nickel	mg/L		0.16	<0.1	0.02	0.03	0.03
Selenium	mg/L		0.005	<0.1	<0.01	<0.1	<0.01
Silver	mg/L		0.00012	<0.1	<0.01	<0.1	<0.01
Thallium	mg/L	0.011	0.04	<0.1	<0.01	<0.1	<0.01
Zinc	mg/L		0.11	<0.1	0.02	0.05	0.03
GENERAL INORGANICS							
PARAMETERS	UNITS						
BOD	mg/L			123	111	81	47
COD	mg/L			254	290	197	120
Cyanide total	mg/L			0.01	<0.01	0.01	0.04
Nitrogen, Ammonia	mg/L			9	8	6.9	6
Nitrogen, Kjeldahl	mg/L			9	10	7.9	6
Nitrogen, Nitrate	mg/L			0.55	<0.5	<0.5	<0.01
Nitrogen, Nitrite	mg/L			<0.05	<0.05	0.007	<0.01
Nitrogen, Nitrite, and Nitrate	mg/L			0.55	0.5	0.007	<0.01
Organic Carbon total	mg/L			120	55	49.3	42
pH	s.u.			6.8	7.82	6.67	7
Phosphate Ortho-	mg/L			<0.1	<0.1	0.1	<0.3
Phosphorus total	mg/L			<1	0.1	<0.1	0.09
TDS	mg/L			1290	1300	1310	1424
TSS	mg/L			42	10	11	10
Turbidity	NTU			54	300	100	36.6

Notes:
NA = Not analyzed
Laboratory analysis by Microbac Labs Louisville,Ky

OP Unit One Summary of Settlement Monuments and Elevations

SMITH FARM LANDFILL SETTLEMENT SUMMARY OPERABLE UNIT ONE			
MONUMENT	2002 ELEV.	2003 ELEV.	CHANGE
SM-01	613.67	613.65	0.02
SM-02	619.33	619.27	0.06
SM-03	624.71	624.69	0.02
SM-04	625.37	625.35	0.02
SM-05	630.66	630.63	0.03
SM-06	634.01	634.04	-0.03
SM-07	644.63	644.59	0.04
SM-08	639.50	639.47	0.03
SM-09	636.96	636.89	0.07
SM-10	634.26	634.21	0.05
SM-11	628.50	628.45	0.05
SM-12	614.15	614.13	0.02
SM-13	599.55	MISSING	N/A
SM-14	616.79	616.78	0.01
SM-15	631.07	631.04	0.03
SM-16	638.42	638.39	0.03
SM-17	644.58	644.54	0.04
SM-18	652.45	652.41	0.04
SM-19	659.67	659.62	0.05
SM-20	668.84	668.78	0.06
SM-21	664.16	664.11	0.05
SM-22	652.18	652.14	0.04
SM-23	628.88	628.85	0.03

SMITH FARM LANDFILL SETTLEMENT SUMMARY OPERABLE UNIT ONE			
MONUMENT	2002 ELEV.	2003 ELEV.	CHANGE
SM-24	640.96	640.91	0.05
SM-25	616.39	616.37	0.02
SM-26	601.24	601.22	0.02
SM-27	601.22	601.21	0.01
SM-28	612.65	612.63	0.02
SM-29	626.92	626.88	0.04
SM-30	644.71	644.67	0.04
SM-31	661.60	661.55	0.05
SM-32	674.39	674.35	0.04
SM-33	673.26	673.25	0.01
SM-34	652.18	652.12	0.06
SM-35	633.69	633.65	0.04
SM-36	612.14	612.11	0.03
SM-37	599.89	599.85	0.04
SM-38	619.91	619.88	0.03
SM-39	641.42	641.37	0.05
SM-40	663.99	663.96	0.03
SM-41	675.27	675.22	0.05
SM-42	687.56	687.52	0.04
SM-43	662.43	662.40	0.03
SM-44	660.25	660.19	0.06
SM-45	650.68	650.63	0.05

CONTROL DATA			
MONUMENT	Northing	Easting	ELEVATION
Benchmark # 46	200955.9	1573166	569.09
TRV PK # 52	199942.9	1573417	558.74
TRV PK # 53	198889.1	1573002	537.82
TRV PK # 202	199622	1573329	552.38
TRV PK # 203	200313.7	1573404	562.61
TRV PK # 404	200923.6	1573282	568.87
TRV MON # 1002	198404.6	1572163	614.56
TRV MON # 1003	198182.9	1572706	526.45
TRV MON # 1004	198928.2	1573070	538.93
TRV MON # 1005	199968.5	1573441	560.6
TRV MON # 1006	201153.4	1573103	573.82
TRV MON # 1009	202126.5	1572485	710.19
TRV MON # 1010	201834.4	1572317	659.75
TRV MON # 1011	198788.5	1571920	605.31

Survey performed by Mindell Scott Associates, Inc Louisville,Ky

Prepared by E Taylo
Check by

OP Unit One Groundwater Monitoring Wells Sampling Results 2003

DATE COLLECTED:		OP UNIT ONE - NOVEMBER 19, 2003										
SAMPLE ID:		MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-11	MW-12	MW-13	MW-14	MW-1
LE ORGANIC COMPOUNDS												
ETERS	UNITS											
	ug/L	ND	ND	ND	10	ND	ND	ND	ND	ND	ND	ND
oroethane	ug/L	ND	ND	ND	ND	ND	ND	4	ND	ND	ND	ND
oroethene	ug/L	ND	ND	ND	ND	ND	ND	2	ND	ND	ND	ND
oroethene (total)	ug/L	ND	ND	ND	ND	ND	ND	1100	ND	ND	ND	38
	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ethene	ug/L	ND	ND	ND	ND	ND	ND	1300	ND	ND	ND	3
Total)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
OLATILE ORGANIC COMPOUNDS												
ETERS	UNITS											
(ethylhexyl) phthalate	ug/L	ND	ND	ND	ND	2	ND	2	ND	ND	ND	ND
ium	ug/L	ND	ND	ND	69	19	ND	8	ND	ND	ND	ND
ene	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
chloroethane	ug/L	ND	ND	ND	ND	ND	ND	2	ND	ND	ND	ND
S												
ETERS	UNITS											
m	ug/L	1250	1920	6900	81600	1580	7870	17300	147	43.9	94	1820
y	ug/L	ND	ND	ND	9.9	6.4	ND	ND	ND	ND	ND	ND
	ug/L	ND	6.5	4.2	28.3	12.5	6.2	9.8	ND	ND	ND	ND
	ug/L	33.3	14.2	50	989	72.2	66.1	37.7	18.1	17.2	23.2	66.8
n	ug/L	ND	ND	ND	3.8	ND	ND	0.6	ND	ND	ND	ND
	ug/L	ND	ND	ND	ND	ND	1.1	ND	ND	5.8	1.1	ND
	ug/L	22000	48200	93900	78100	12300	61100	54200	125000	26200	34600	10400
m	ug/L	772	7.9	51.4	181	5.1	151	42.4	ND	6.8	20.2	117
	ug/L	4.8	3.7	7.5	71.9	13.7	11.4	23.4	ND	2.4	25.8	27.3
	ug/L	29.4	6.5	25.9	193	12.8	43.4	53.4	ND	7.3	20.2	10.2
	ug/L	5240	4210	14200	221000	19400	17100	37800	1770	44100	3150	4620
	ug/L	3.1	2.8	3.7	121	4.6	16.4	12	ND	2.1	2.7	3.6
um	ug/L	16400	50300	77700	6900	21400	39300	68800	10100	15300	20300	2450
ese	ug/L	116	106	272	4820	6230	1680	1380	297	455	432	1280
	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.11	ND
	ug/L	270	14.7	52.2	22.5	32.2	174	84.4	ND	14.3	300	52.6
m	ug/L	4410	7520	10600	33200	9620	10200	11200	9350	3840	4720	2820
	ug/L	2.5	2.4	ND	9.3	ND	ND	4.5	ND	ND	ND	ND
	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	ug/L	26600	82200	16100	35300	69800	51500	72600	119000	25300	35100	10200
	ug/L	ND	10	ND	18.1	ND	12.3	30.9	ND	ND	ND	ND
m	ug/L	7	3.7	12.7	15.2	1	17.8	230	ND	ND	ND	4.7
	ug/L	23	34	61.4	540	32.9	94.9	27.3	3.8	70	127	13.5
	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

t detected above laboratory detection limits listed on laboratory data sheets
t analyzed
y analysis by Lancaster Laboratories in Lancaster, PA.

OP Unit Two Groundwater Montoring Wells Sampling Results 2003

DATE COLLECTED		OP UNIT TWO - JUNE 11, 2003							OP UNIT TWO - NOVEMBER 20, 2003						
SAMPLE ID		MW-25	MW-26	MW-27	MW-28	MW-29	MW-30	BG-1	MW-25	MW-26	MW-27	MW-28	MW-29	MW-30	BG-
VOLATILE ORGANIC COMPOUNDS															
PARAMETERS	UNITS														
1,1-Dichloroethane	ug/L	ND	ND	ND	ND	ND	3	ND	ND	ND	NA	ND	ND	4	ND
1,1-Dichloroethene	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND
1,2-Dichloroethene (total)	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND
Toluene	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	2	ND
Trichloroethene	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	3	ND
Xylene (Total)	ug/L	8	7	2	3	2	1	ND	ND	ND	NA	ND	ND	ND	ND
SEMI-VOLATILE ORGANIC COMPOUNDS															
PARAMETERS	UNITS														
bis(2-Ethylhexyl) phthalate	ug/L	9	2	30	ND	4	ND	ND	ND	ND	NA	ND	ND	ND	ND
Diethylphthalate	ug/l	3	2	2	2	1	1	ND	NA	ND	NA	ND	1	ND	ND
Naphthalene	ug/l	2	ND	5	2	2	1	ND	NA	ND	NA	ND	ND	ND	ND
2-Methylnaphthalene	ug/l	1	ND	2	ND	ND	ND	ND	NA	ND	NA	ND	ND	ND	ND
METALS															
PARAMETERS	UNITS														
Aluminum	ug/L	166	4770	1490	795	690	1780	920	ND	46.1	NA	317	510	7270	10
Antimony	ug/L	ND	ND	ND	ND	5	4.8	ND	ND	ND	NA	ND	ND	ND	ND
Arsenic	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND
Barium	ug/L	27.2	25.2	22.4	17.2	14.5	16.5	20.9	20.4	10.5	NA	18.9	14.7	29.7	12
Beryllium	ug/L	0.21	0.63	0.43	0.28	0.29	5.3	0.26	ND	ND	NA	ND	ND	0.3	ND
Cadmium	ug/L	ND	0.74	ND	1.68	ND	ND	ND	ND	ND	NA	7.5	ND	ND	ND
Calcium	ug/L	142000	478000	270000	97700	226000	478000	207000	148000	468000	NA	56300	259000	468000	173
Chromium	ug/L	ND	9.9	4.1	5.8	6.5	5.5	6	2.8	ND	NA	3.6	3	11.1	ND
Cobalt	ug/L	2	11.5	1.8	20.5	ND	1.1	3.3	2.4	56.6	NA	17.8	6.8	8.4	8.6
Copper	ug/L	ND	19.6	8.9	14.3	7	7.3	3.6	ND	4.1	NA	5.8	4	15.6	6.5
Iron	ug/L	1440	11600	2670	3130	2250	4020	2410	208	182	NA	820	1900	15200	10
Lead	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	3.5	NA	ND	ND	2.7	ND
Magnesium	ug/L	50900	68500	377000	112000	262000	707000	42000	118000	678000	NA	64200	284000	734000	382
Manganese	ug/L	877	1120	21.1	1550	85.5	61.8	704	1130	1130	NA	1030	273	227	86
Mercury	ug/L	ND	ND	ND	ND	ND	ND	ND	0.13	ND	NA	ND	0.12	ND	ND
Nickel	ug/L	4.4	450	18.6	74.6	92	15.5	49.8	4.9	385	NA	51.8	88.9	26.8	40
Potassium	ug/L	12400	25600	6790	7740	43760	16600	2670	17100	28000	NA	5210	6790	20200	230
Selenium	ug/L	ND	ND	ND	ND	4.9	ND	ND	ND	ND	NA	ND	ND	ND	ND
Silver	ug/L	ND	ND	2.4	ND	ND	2	ND	ND	ND	NA	ND	ND	ND	ND
Sodium	ug/L	88200	462000	332000	100000	282000	410000	55200	111000	514000	NA	63000	326000	160000	451
Thallium	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	8.5	NA	ND	ND	ND	ND
Vanadium	ug/L	1.1	8.9	2.3	2.6	1.2	4.9	3.5	ND	ND	NA	ND	ND	13.5	ND
Zinc	ug/L	7.8	127	34	14900	30.1	22	35.2	ND	60.7	NA	14300	13.8	56.2	63
Cyanide	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes

ND = Not detected above laboratory detection limits listed on laboratory data sheets

NA = Not analyzed

Laboratory analysis by Lancaster Laboratories in Lancaster PA

Quality Control Summary of Groundwater Monitoring Well Sampling Results 2003

DATE COLLECTED:		OP Unit Two June, 11 20003				OP Unit One Nov 19 2003			OP Unit Two November 20 2003	
SAMPLE ID:		Dup	Trip	Equip		Dup	Trip		Equip	Trip
VOLATILE ORGANIC COMPOUNDS		Sampl	Blank	Blank		Sampl	Blank		Blank	Blank
PARAMETERS	UNITS									
1,1-Dichloroethane	ug/L	ND	ND	ND		ND	ND		ND	ND
1,1-Dichloroethene	ug/L	ND	ND	ND		ND	ND		ND	ND
1,2-Dichloroethene (total)	ug/L	ND	ND	ND		39	ND		ND	ND
Tolune	ug/L	ND	ND	ND		ND	ND		ND	ND
Trichloroethene	ug/L	ND	ND	ND		3	ND		ND	ND
Xylene (Total)	ug/L	1	ND	ND		ND	ND		ND	ND
SEMI-VOLATILE ORGANIC COMPOUNDS										
PARAMETERS	UNITS									
Caprolactam	ug/l	ND	ND	ND		ND	ND		ND	ND
Naphthalene	ug/L	1	ND	ND		ND	ND		ND	ND
2-Methylnaphthalene	ug/L	ND	ND	ND		ND	ND		ND	ND
METALS										
PARAMETERS	UNITS									
Aluminum	ug/L	878	NA	ND		167	NA		ND	NA
Antimony	ug/L	ND	NA	ND		ND	NA		ND	NA
Arsenic	ug/L	ND	NA	ND		ND	NA		ND	NA
Barium	ug/L	13.9	NA	ND		28 4	NA		ND	NA
Beryllium	ug/L	0.47	NA	ND		ND	NA		ND	NA
Cadmium	ug/L	ND	NA	ND		ND	NA		ND	NA
Calcium	ug/L	485000	NA	ND		10500	NA		44.9	NA
Chromium	ug/L	3.2	NA	ND		10.8	NA		ND	NA
Cobalt	ug/L	1.2	NA	ND		25.6	NA		ND	NA
Copper	ug/L	7.8	NA	ND		3.3	NA		ND	NA
Iron	ug/L	1930	NA	ND		519	NA		ND	NA
Lead	ug/L	ND	NA	ND		ND	NA		ND	NA
Magnesium	ug/L	683000	NA	ND		23900	NA		ND	NA
Manganese	ug/L	106	NA	ND		1240	NA		ND	NA
Mercury	ug/L	ND	NA	ND		0.14	NA		ND	NA
Nickel	ug/L	18.3	NA	ND		43	NA		ND	NA
Potassium	ug/L	14900	NA	ND		2380	NA		121	NA
Selenium	ug/L	ND	NA	ND		ND	NA		ND	NA
Silver	ug/L	1.5	NA	ND		ND	NA		ND	NA
Sodium	ug/L	444000	NA	ND		10000	NA		324	NA
Thallium	ug/L	ND	NA	ND		ND	NA		ND	NA
Vanadium	ug/L	4	NA	ND		ND	NA		ND	NA
Zinc	ug/L	23.9	NA	ND		98	NA		ND	NA
Cyanide	ug/L	ND	NA	ND		ND	NA		ND	NA

Notes:

ND = Not detected above laboratory detection limits listed on laboratory data sheets

NA = Not analyzed

Laboratory analysis by Lancaster Laboratories in Lancaster, PA.

MW-00 is a dup of MW-30 on 6-19-02

MW-00 is a dup of MW-15 on 11-19-03

OU-2 EXTRACTION WELLS TOTAL GALLONS 2003

Month[1]	MW-1 Meter Reading	MW-1 Gallons	MW-2[2] Meter Reading	MW-2 Gallons	MW-3[2] Meter Reading	MW-3 Gallons	MW-4[3] Meter Reading	MW-4 Gallons
December	1347631.0		102377.0		201601.0		9090.0	
January	1351213.5	3,583	100.0	0	2751.1	0	9439.1	349
February	1354789.2	3,576	273.5	174	2778.3	27	9817.3	378
March	1358999.2	4,210	429.0	156	2801.5	23	10211.4	394
April	1363009.2	4,010	690.3	261	2830.8	29	10439.8	228
May	1366601.8	3,593	943.7	253	2849.7	19	10439.8	0
June	1370101.4	3,500	1138.1	194	2861.8	12	10911.5	472
July	1373143.8	3,042	1211.9	74	2897.7	36	11009.1	98
August	1375722.1	2,578	1405.6	194	2921.8	24	11009.1	0
September	1376291.1	569	1549.8	144	2950.9	29	11697.6	689
October	1376403.5	112	1670.9	121	2987.4	37	11924.8	227
November	1379879.2	3,476	1788.1	117	3013.0	26	12739.8	815
December	1384056.3	4,177	1908.2	120	3030.4	17	13628.5	889
Total Gallons		36,426		1,808		279		4,539

Notes:

1 The meter is read on the last day of each month, or on first working day after month end.

2 The meters of MW-2 and MW-3 were replaced in January 2003.

3 Toluene or other similar chemicals leaves residue in pump. Some down time occurred due to cleaning of pump in May and August.

Prepare by E Taylor
Check By

OU-1 NORTH TANK 2003

DATE	Dipstick Reading	Dipstick Reading	Pump Gallons
01/03/03	33 3/4	measurement only	
01/13/03	41 3/4	measurement only	
01/22/03	42	measurement only	
01/26/03	42	32	1476
02/05/03	32 3/8	17 1/2	1833
02/17/03	20 3/8	measurement only	
02/21/03	32 3/8	measurement only	
02/24/03	41 3/4	measurement only	
03/03/03	49 1/8	measurement only	
03/05/03	51 5/8	measurement only	
03/12/03	53 1/8	42 3/8	1499
03/17/03	42 3/8	measurement only	
03/24/03	47	37 5/8	1310
03/31/03	39 1/8	measurement only	
04/09/03	41	measurement only	
04/21/03	44 3/4	measurement only	
04/30/03	56 1/4	measurement only	
05/07/03	58 3/4	measurement only	
05/12/03	64 3/8	measurement only	
05/19/03	69 1/4	measurement only	
05/28/03	74 3/8	measurement only	
06/06/03	78	measurement only	
06/17/03	84	70 1/4	1232
06/27/03	76 1/8	measurement only	
07/07/03	77 3/4	48	3635
07/16/03	51	measurement only	
07/23/03	51 5/8	measurement only	
07/30/03	52 5/8	39 5/8	1794
08/06/03	43 1/8	31 1/4	1634
08/13/03	32 1/8	measurement only	
08/18/03	33	20	1628
09/10/03	31 1/4	measurement only	
09/17/03	32 5/8	measurement only	
09/22/03	31 1/4	measurement only	
10/01/03	34 7/8	measurement only	
10/15/03	35 1/2	23 1/4	1595
11/05/03	27	measurement only	
11/20/03	31 3/8	measurement only	
12/01/03	34 1/4	measurement only	
12/03/03	35 1/4	measurement only	
12/08/03		measurement only	
12/18/03		measurement only	
12/22/03	56	27 1/8	3957
12/24/03	27 1/2	24	439
Total Gallons North Tank			22032.0

OU-1 SOUTH TANK 2003

DATE	Dipstick Reading	Dipstick Reading	Pump Gallons
01/03/03	49 3/8	41 3/4	1068
01/06/03	52 3/8	42 3/4	1343
01/06/03	42 3/4	37 3/8	798
01/08/03	40 1/2	34 1/8	880
01/13/03	39 3/8	29 1/2	1341
01/22/03	33 1/2	24	1232
01/26/03	26 3/8	measurement only	
02/05/03	28 3/4	measurement only	
02/17/03	35 3/8	27 1/4	1076
02/19/03	54 1/8	47 1/4	953
02/21/03	55 3/4	46	1348
02/24/03	78	49	3517
03/03/03	69 3/4	45 1/8	3225
03/05/03	49 3/4	40	1364
03/07/03	41 1/2	33 3/8	1129
03/12/03	36 5/8	measurement only	
03/17/03	39 3/4	28 1/8	1572
03/24/03	39 3/8	measurement only	
03/31/03	45	36 3/8	1203
04/09/03	42 1/2	35 5/8	956
04/11/03	39 1/4	32 1/2	925
04/21/03	48 1/2	37 1/2	1012
04/30/03	53	measurement only	
05/02/03	55 1/4	47 1/8	1123
05/07/03	52 1/4	43 1/2	1221
05/12/03	49	40 1/4	1225
05/19/03	48 5/8	36 5/8	1676
05/28/03	43 7/8	35	1233
06/06/03	38 1/4	28 3/4	1282
06/17/03	34	measurement only	
06/27/03	39 7/8	measurement only	
07/07/03	43	measurement only	
07/16/03	43 1/4	37 1/8	854
07/23/03	41 5/8	28 1/2	1786
07/30/03	31 1/8	measurement only	
08/06/03	35 3/8	measurement only	
08/13/03	38 1/2	24 1/2	1856
08/18/03	26 1/8	measurement only	
09/10/03	47 3/8	measurement only	
09/17/03	50 1/4	41	1294
09/22/03	43 1/8	31 3/4	1568
10/01/03	36 7/8	23 1/4	1778
10/15/03	28 1/4	measurement only	
11/05/03	38	27 1/2	1410
11/20/03	49 1/2	39 1/2	1400
12/01/03	57 1/4	45 3/4	1655
12/03/03	47 1/2	38 1/4	1294
12/08/03	41 1/2	29 3/4	1639
12/18/03	48	35 1/2	1743
12/22/03	38 1/4	measurement only	
12/24/03	39	25	1864
Total Gallons South Tank			52843.0

Prepare by E Taylor
Check by

TABLES

Table 1: Summary of Treated Leachate Volume - Operable Units One and Two

	Plant Discharge Totals	OU-2 Extraction Wells Discharge Totals				OU-2 Leachate Collection Trench	OU-1 Tanks Discharge Totals		Monthly Rainfall
Month	Effluent	MW-1	MW-2	MW-3	MW-4	Estimated Discharge Totals	North Tank	South Tank	(Inches)
JAN	100,385		49	0	349	90,899	1,306	7,782	3.29
FEB	87,534	2,410	49	0	350	78,588	1,281	4,856	1.83
MAR	90,394	1,948	44	0	239	72,399	4,114	11,650	3.65
APR	138,066	2,241	5	9	266	130,859	0	4,686	5.94
MAY	96,953	1,070	79	8	174	87,888	3,517	4,217	7.57
JUN	100,729	69	25	10	117	96,018	0	4,490	7.39
JUL	73,969	73	32	4	150	71,923	0	1,787	5.60
AUG	85,218	0	28	4	95	81,899	1,564	1,628	6.42
SEP	73,657	0	28	9	174	73,446	0	0	0.75
OCT	95,018	0	47	46	115	93,075	0	1,735	7.60
NOV	98,393	0	124	9	231	89,976	1,537	6,516	7.95
DEC	111,815	334	79	12	69	105,144	0	6,177	6.15
TOTALS	1,152,131	8,145	589	111	2,329	1,072,114	13,319	55,524	64.14

NOTES:
All discharge volumes in gallons.

Prepared by: E Taylor
Checked by: R Bocarro

Table 2: Treatment Plant Quarterly Effluent Sampling Resul

SAMPLE MONTH: DATE COLLECTED:		ROD Requirements	KPDES Requirements	March 3/12/2004	June 6/3/2004	Sept 9/22/2004	Dec 12/15/2004
VOLATILE ORGANIC COMPOUNDS BY SW8260							
PARAMETERS	UNITS						
DICHLORODIFLUOROMETHANE	ug/L			<5	<5	<5	<5
VINYL CHLORIDE	ug/L		5	<5	<5	<5	<5
CHLOROMETHANE	ug/L			<5	<5	<5	<5
BROMOMETHANE	ug/L			<5	<5	<5	<5
CHLOROETHANE	ug/L			<5	<5	<5	<5
TRICHLOROFLUOROMETHANE	ug/L			<5	<5	<5	<5
1,1-DICHLOROETHYLENE	ug/L			<5	<5	<5	<5
METHYLENE CHLORIDE	ug/L			<5	<10	<10	<5
ACETONE	ug/L			<5	<25	<25	<25
ACROLEIN	ug/L			<5	<25	<25	<25
IODOMETHANE	ug/L			<5	<5	<5	<5
CARBON DISULFIDE	ug/L			<5	<5	<5	<5
ACRYLONITRILE	ug/L			<5	<5	<5	<5
TRANS-1,2-DICHLOROETHYLENE	ug/L			<5	<5	<5	<5
1,1-DICHLOROETHANE	ug/L			<5	<5	<5	<5
VINYL ACETATE	ug/L			<5	<5	<5	<5
2-BUTANONE (MEK)	ug/L		5	<50	<5	<5	<5
CIS-1,2-DICHLOROETHYLENE	ug/L		5	<5	<5	<5	<5
BROMOCHLOROMETHANE	ug/L			<5	<5	<5	<5
CHLOROFORM	ug/L			<5	<5	<5	<5
2,2-DICHLOROPROPANE	ug/L			<5	<5	<5	<5
1,1,1-TRICHLOROETHANE	ug/L		5	<5	<5	<5	<5
1,1-DICHLOROPROPYLENE	ug/L		5	12	<5	<5	<5
CARBON TETRACHLORIDE	ug/L			<5	<5	<5	<5
BENZENE	ug/L			<5	<5	<5	<5
1,2-DICHLOROETHANE	ug/L		5	<5	<5	<5	<5
TRICHLOROETHYLENE	ug/L			<5	<5	<5	<5
DIBROMOMETHANE	ug/L			<5	<5	<5	<5
1,2-DICHLOROPROPANE	ug/L	5870	5	<5	<5	<5	<5
BROMODICHLOROMETHANE	ug/L			<5	<5	<5	<5
2-CHLOROETHYL VINYL ETHER	ug/L			<5	<5	<10	<10
CIS-1,3-DICHLOROPROPYLENE	ug/L		5	<5	<5	<5	<5
4-METHYL-2-PENTANONE (MIBK)	ug/L		5	16	<25	<25	<25
TOLUENE	ug/L		5	<5	<5	<5	<5
TRANS-1,3-DICHLOROPROPYLENE	ug/L			<5	<5	<5	<5
1,1,2-TRICHLOROETHANE	ug/L		5	<5	<5	<5	<5
1,3-DICHLOROPROPANE	ug/L			<5	<5	<5	<5
DIBROMOCHLOROMETHANE	ug/L			<5	<5	<5	<5
1,2-DIBROMOETHANE (EDB)	ug/L			<5	<5	<5	<5
TETRACHLOROETHYLENE	ug/L			<5	<5	<5	<5
2-HEXANONE	ug/L			21	<25	<5	<5
1,1,1,2-TETRACHLOROETHANE	ug/L			<5	<5	<5	<5
CHLOROBENZENE	ug/L			<5	<5	<5	<5
1-CHLOROHEXANE	ug/L			<5	<5	<5	<5
ETHYLBENZENE	ug/L			<5	<5	<5	<5
M-XYLENE / P-XYLENE	ug/L			<10	<10	<10	<10
O-XYLENE	ug/L			<5	<5	<5	<5
STYRENE	ug/L			<5	<5	<5	<5
BROMOFORM	ug/L			<5	<5	<5	<5
1,2,3-TRICHLOROPROPANE	ug/L		10	<5	<5	<5	<5
ISOPROPYLBENZENE (CUMENE)	ug/L			<5	<5	<5	<5

Table 2: Treatment Plant Quarterly Effluent Sampling Results

SAMPLE MONTH:		ROD	KPDES	MARCH	JUNE	SEPT	DEC
DATE COLLECTED:		*Requirements*	*Requirements*	3/12/2004	6/3/2004	9/22/2004	12/15/2004
VOLATILE ORGANIC COMPOUNDS BY SW8260							
BROMOBENZENE	ug/L			<5	<5	<5	<5
TRANS-1,4-DICHLORO-2-BUTENE	ug/L			<5	<5	<5	<5
N-PROPYLBENZENE	ug/L			<5	<5	<5	<5
1,1,2,2-TETRACHLOROETHANE	ug/L			<5	<5	<5	<5
2-CHLOROTOLUENE	ug/L			<5	<5	<5	<5
3-CHLOROTOLUENE	ug/L			<5	<5	<5	<5
4-CHLOROTOLUENE	ug/L			<5	<5	<5	<5
1,3,5-TRIMETHYLBENZENE	ug/L	23		<5	<5	<5	<5
TERT-BUTYLBENZENE	ug/L			<5	<5	<5	<5
1,2,4-TRIMETHYLBENZENE	ug/L			<5	<5	<5	<5
SEC-BUTYLBENZENE	ug/L			<5	<5	<5	<5
1,3-DICHLOROBENZENE	ug/L			<5	<5	<5	<5
1,4-DICHLOROBENZENE	ug/L			<5	<5	<5	<5
4-ISOPROPYLTOLUENE	ug/L			<5	<5	<5	<5
1,2-DICHLOROBENZENE	ug/L		5	<5	<5	<5	<5
N-BUTYLBENZENE	ug/L			<5	<5	<5	<5
1,2-DIBROMO-3-CHLOROPROPANE	ug/L		5	<5	<5	<5	<5
1,2,4-TRICHLOROBENZENE	ug/L			<5	<5	<5	<5
NAPHTHALENE	ug/L			<5	<5	<5	<5
HEXACHLOROBUTADIENE	ug/L			<5	<5	<5	<5
1,2,3-TRICHLOROBENZENE	ug/L			<5	<5	<5	<5
DCA SURROGATE RECOVERY	ug/L	4570	10	85%	80%	98%	96%
TOL-D8 SURROGATE RECOVERY	ug/L			87%	97%	113%	84%
BFB SURROGATE RECOVERY	ug/L			87%	86%	107%	92%
SEMI-VOLATILE ORGANIC COMPOUNDS BY SW8270							
PYRIDINE	ug/L			ND	ND	<10	<10
N-NITROSODIMETHYLAMINE	ug/L			ND	ND	<10	<10
BIS(2-CHLOROETHYL)ETHER	ug/L			<20	<20	<10	<10
PHENOL	ug/L			<10	<10	<10	<10
2-CHLOROPHENOL	ug/L			<10	<10	<10	<10
1,3-DICHLOROBENZENE	ug/L			<10	<10	<10	<10
1,4-DICHLOROBENZENE	ug/L			<10	<10	<10	<10
1,2-DICHLOROBENZENE	ug/L			<10	<10	<10	<10
BENZYL ALCOHOL	ug/L			<10	<10	<10	<10
BIS(2-CHLOROISOPROPYL)ETHER	ug/L			<10	<10	<10	<10
2-METHYLPHENOL	ug/L			<10	<10	<10	<10
HEXACHLOROETHANE	ug/L			<10	<10	<10	<10
N-NITROSODI-N-PROPYLAMINE	ug/L	11		<20	<10	<10	<10
3&4-METHYLPHENOL	ug/L			<10	<10	<10	<10
NITROBENZENE	ug/L			<10	<10	<10	<10
ISOPHORONE	ug/L			<10	<10	<10	<10
2-NITROPHENOL	ug/L			<10	<10	<10	<10
2,4-DIMETHYLPHENOL	ug/L			<10	<10	<10	<10
BIS(2-CHLOROETHOXY)METHANE	ug/L	250		<10	<10	<10	<10
2,4-DICHLOROPHENOL	ug/L			<10	<10	<10	<10
2,6-DICHLOROPHENOL	ug/L			<10	<10	<10	<10
1,2,4-TRICHLOROBENZENE	ug/L			<10	<10	<10	<10
NAPHTHALENE	ug/L			<10	<10	<10	<10
4-CHLOROANILINE	ug/L			<10	<10	<10	<10
HEXACHLOROBUTADIENE	ug/L	365000	10	ND	<10	<10	<10
4-CHLORO-3-METHYLPHENOL	ug/L			<10	<10	<10	<10

Table 2: Treatment Plant Quarterly Effluent Sampling Results

SAMPLE MONTH:		ROD	KPDES	MARCH	JUNE	SEPT	DEC
DATE COLLECTED:		Requirements	Requirements	3/12/2004	6/3/2004	9/22/2004	12/15/2004
SEMI-VOLATILE ORGANIC COMPOUNDS BY SW8270 continued...							
2-METHYLNAPHTHALENE	ug/L			<10	<10	<10	<10
HEXACHLOROCYCLOPENTADIENE	ug/L			<10	<10	<10	<10
2,4,6-TRICHLOROPHENOL	ug/L			<10	<10	<10	<10
2,4,5-TRICHLOROPHENOL	ug/L			<10	<10	<10	<10
2-CHLORONAPHTHALENE	ug/L			<10	<10	<10	<10
2-NITROANILINE	ug/L			<50	<50	<50	<50
DIMETHYL PHTHALATE	ug/L			<10	<10	<10	<10
ACENAPHTHYLENE	ug/L	23		<10	<10	<10	<10
2,6-DINITROTOLUENE	ug/L			<10	<10	<10	<10
ACENAPHTHENE	ug/L			<10	<10	<10	<10
3-NITROANILINE	ug/L			<50	<50	<50	<50
2,4-DINITROPHENOL	ug/L			<10	<10	<10	<10
4-NITROPHENOL	ug/L			<10	<10	<10	<10
DIBENZOFURAN	ug/L			<10	<10	<10	<10
2,4-DINITROTOLUENE	ug/L		5	<10	<10	<10	<10
FLUORENE	ug/L			<10	<10	<10	<10
DIETHYL PHTHALATE	ug/L		5	<10	<10	<10	<10
4-CHLOROPHENYL PHENYL ETHER	ug/L			<10	<10	<10	<10
2-METHYL-4,6-DINITROPHENOL	ug/L			<10	<10	<10	<10
4-NITROANILINE	ug/L			<50	<50	<50	<50
N-NITROSO-DIPHENYLAMINE	ug/L			<10	<10	<10	<10
4-BROMOPHENYL PHENYL ETHER	ug/L	4570	10	<10	<10	<10	<10
HEXACHLOROBENZENE	ug/L			<10	<10	<10	<10
PENTACHLOROPHENOL	ug/L			<50	<10	<10	<10
ANTHRACENE	ug/L			<10	<10	<10	<10
PHENANTHRENE	ug/L			<10	<10	<10	<10
CARBAZOLE	ug/L			<10	<10	<10	<10
DI-N-BUTYL PHTHALATE	ug/L			<10	<10	<10	<10
FLUORANTHENE	ug/L			<10	<10	<10	<10
BENZIDINE	ug/L			<10	<10	<10	<10
PYRENE	ug/L			<10	<10	<10	<10
BENZYL BUTYL PHTHALATE	ug/L			<10	<10	<10	<10
BENZO(A)ANTHRACENE	ug/L			<10	<10	<10	<10
3,3'-DICHLOROBENZIDINE	ug/L			<10	<10	<10	<10
BIS(2-ETHYLHEXYL)PHTHALATE	ug/L			<10	<10	<10	<10
CHRYSENE	ug/L			<10	<10	<10	<10
DI-N-OCTYL PHTHALATE	ug/L			<10	<10	<10	<10
BENZO(B)FLUORANTHENE	ug/L			<10	<10	<10	<10
BENZO(K)FLUORANTHENE	ug/L	11		<10	<10	<10	<10
BENZO(A)PYRENE	ug/L			<10	<10	<10	<10
INDENO(1,2,3-C,D)PYRENE	ug/L			<10	<10	<10	<10
DIBENZO(A,H)ANTHRACENE	ug/L			<10	<10	<10	<10
BENZO(G,H,I)PERYLENE	ug/L			<10	<10	<10	<10
[Surrogate Rec. - B/N]	ug/L						
NITROBENZENE-D5	ug/L	250		29%	74%	64%	68.00%
2-FLUOROBIPHENYL	ug/L			64%	80%	64%	62.00%
P-TERPHENYL	ug/L			130%	92%	112%	88.00%
[Surrogate Rec. - Acids]	ug/L						
2-FLUOROPHENOL	ug/L			30%	44%	30%	37.00%
PHENOL-D6	ug/L			16%	26%	38%	11.00%
2,4,6-TRIBROMOPHENOL	ug/L	365000	10	69%	106%	80%	80.00%

Table 2: Treatment Plant Quarterly Effluent Sampling Results

SAMPLE MONTH DATE COLLECTED:		ROD Requirements	KPDES Requirements	MARCH 3/12/2004	JUNE 6/3/2004	SEPT 9/22/2004	DEC 12/16/2004
METALS Compound by SW846, 6010 / 7470							
PARAMETERS	UNITS						
Antimony	mg/L	0.062	1.6	<0.01	<0.01	<0.01	<0.01
Arsenic	mg/L	0.011	0.05	<0.01	<0.01	<0.01	<0.01
Barium	mg/L	0.231		0.075	0.06	0.05	0.08
Beryllium	mg/L		0.0053	<0.01	<0.01	<0.01	<0.01
Cadmium	mg/L		0.0011	<0.01	<0.01	<0.01	<0.01
Calcium	mg/L			130	120	140	110
Chromium	mg/L	0.011	0.011	<0.01	<0.01	<0.01	<0.01
Copper	mg/L		0.012	<0.01	<0.01	<0.01	<0.01
Iron	mg/L		1	0.11	0.13	0.12	0.07
Lead	mg/L		0.0032	<0.01	<0.01	<0.01	<0.01
Magnesium	mg/L			120	110	106	94.9
Manganese	mg/L			0.02	0.13	0.16	0.02
Mercury	mg/L		0.000012	<0.0002	<0.0002	<0.0002	<0.0002
Nickel	mg/L		0.16	<0.01	0.01	0.02	0.01
Selenium	mg/L		0.005	<0.05	<0.01	<0.01	0.03
Silver	mg/L		0.00012	<0.01	<0.01	<0.01	<0.01
Thallium	mg/L	0.011	0.04	<0.01	<0.01	<0.01	<0.01
Zinc	mg/L		0.11	0.02	0.02	0.04	<0.1
GENERAL INORGANICS							
PARAMETERS	UNITS						
BOD	mg/L			<5	<5	<5	<5
COD	mg/L			23	21	22	<10
Cyanide total	mg/L			<0.01	<0.01	<0.01	<0.01
Nitrogen, Ammonia	mg/L			<1.0	<1.0	1	<1.0
Nitrogen, Kjeldahl	mg/L			2.3	2.4	2.6	1
Nitrogen, Nitrate	mg/L			<0.1	0.5	<0.5	1.36
Nitrogen, Nitrite	mg/L			0.66	0.5	<0.02	<0.1
Nitrogen, Nitrite, and Nitrate	mg/L			0.66	0.518	<0.05	2.05
Organic Carbon total	mg/L			15.7	23	12.2	16
pH	s.u.			7.5	7.61	7.7	7.9
Phosphate Ortho-	mg/L			<0.2	0.12	0.15	<0.3
Phosphorus total	mg/L			0.1	0.1	0.2	0.11
TDS	mg/L			1800	1340	1440	1200
TSS	mg/L			<5	<5	3	<5
Turbidity	NTU			0.46	0.37	0.5	0.7

Notes:
NA = Not analyzed
Laboratory analysis by Microbac Labs Louisville,Ky

Table 3: Treatment Plant Semi-Annual Influent Sampling Results

SAMPLE MONTH: / DATE COLLECTED:		ROD Requirements	KPDES Requirements	June 6/12/2002	DEC 12/11/2002	June 6/13/2003	DEC 12/5/2003	June 6/3/2004	DEC 12/15/2004
VOLATILE ORGANIC COMPOUNDS BY SW8260									
PARAMETERS	UNITS								
DICHLORODIFLUOROMETHANE	ug/L			<5	<5	<25	<5	<50	<5
VINYL CHLORIDE	ug/L		5	<2	<2	<10	<2	<50	<5
CHLOROMETHANE	ug/L			<10	18	<50	<10	<50	<5
BROMOMETHANE	ug/L			<10	34	<50	<10	<50	<5
CHLOROETHANE	ug/L			<10	<10	<50	<10	<50	<5
TRICHLOROFLUOROMETHANE	ug/L			<5	<5	<25	<5	<50	7
1,1-DICHLOROETHYLENE	ug/L			<5	7	<25	<5	<50	14
METHYLENE CHLORIDE	ug/L			<10	924	800	640	1390	2930
ACETONE	ug/L			<50	4100	3040	4840	2130	6690
ACROLEIN	ug/L			<50	<50	<250	<50	<250	<25
IODOMETHANE	ug/L			<5	<5	<25	<5	<50	<5
CARBON DISULFIDE	ug/L			<10	16	<50	<10	<50	14
ACRYLONITRILE	ug/L			<50	<50	<250	<50	<50	<5
TRANS-1,2-DICHLOROETHYLENE	ug/L			<5	<5	<25	<5	<50	<5
1,1-DICHLOROETHANE	ug/L			<5	71	<80	48	68	148
VINYL ACETATE	ug/L			<50	<50	<250	<50	<50	<5
2-BUTANONE (MEK)	ug/L		5	<50	2070	1390	1480	883	4060
CIS-1,2-DICHLOROETHYLENE	ug/L		5	<5	<5	<25	<5	<50	8
BROMOCHLOROMETHANE	ug/L			<5	8	<25	<5	<50	<5
CHLOROFORM	ug/L			<5	178	550	310	422	1230
2,2-DICHLOROPROPANE	ug/L			<5	<5	<25	<5	<50	<5
1,1,1-TRICHLOROETHANE	ug/L		5	<5	15	70	21	<50	43
1,1-DICHLOROPROPYLENE	ug/L		5	<5	<5	<25	<5	<50	<5
CARBON TETRACHLORIDE	ug/L			<5	<5	<25	<5	<50	<5
BENZENE	ug/L			<5	8	<25	<5	<50	14
1,2-DICHLOROETHANE	ug/L		5	<5	5	<25	<5	<50	<5
TRICHLOROETHYLENE	ug/L			<5	26	50	24	50	64
DIBROMOMETHANE	ug/L			<5	<5	<25	<5	<50	<5
1,2-DICHLOROPROPANE	ug/L	5870	5	<5	<5	<25	<5	<50	<5
BROMODICHLOROMETHANE	ug/L			<5	<5	<25	<5	<50	<5
2-CHLOROETHYL VINYL ETHER	ug/L			<10	140	<50	<10	ND	<5
CIS-1,3-DICHLOROPROPYLENE	ug/L		5	<5	<5	<25	<5	<50	<5
4-METHYL-2-PENTANONE (MIBK)	ug/L		5	<50	604	<250	520	221	1050
TOLUENE	ug/L		5	<5	55	<50	39	<50	112
TRANS-1,3-DICHLOROPROPYLENE	ug/L			<5	<5	<25	<5	<50	<5
1,1,2-TRICHLOROETHANE	ug/L		5	<5	178	140	99	160	500
1,3-DICHLOROPROPANE	ug/L			<5	<5	<25	<5	<50	<5
DIBROMOCHLOROMETHANE	ug/L			<5	<5	<25	<5	<50	<5
1,2-DIBROMOETHANE (EDB)	ug/L			<5	<5	<25	<5	<50	<5
TETRACHLOROETHYLENE	ug/L			<5	6	<25	7	<50	16
2-HEXANONE	ug/L			<10	<10	<50	17	<250	<5
1,1,1,2-TETRACHLOROETHANE	ug/L			<5	8	100	9	100	28
CHLOROBENZENE	ug/L			<5	<5	<25	<5	<50	<5
1-CHLOROHEXANE	ug/L			<5	<5	<25	<5	<50	
ETHYLBENZENE	ug/L			<5	10	<25	<5	<50	14
M-XYLENE / P-XYLENE	ug/L			<10	43	<25	15	<100	38
O-XYLENE	ug/L			<5	11	<25	5	<50	14
STYRENE	ug/L			<5	<5	<25	<5	<50	<5
BROMOFORM	ug/L			<5	<5	<25	<5	<50	<5
1,2,3-TRICHLOROPROPANE	ug/L		10	<5	<5	<25	<5	<50	<5
ISOPROPYLBENZENE (CUMENE)	ug/L			<5	<5	<25	<5	<50	<5

Prepared by: E Taylor
Checked by: R Bocarro

Table 3: Treatment Plant Semi-Annual Influent Sampling Results

SAMPLE MONTH:		ROD	KPDES	June	Dec	June	Dec	June	Dec
DATE COLLECTED:		Requirements	Requirements	6/12/2002	12/11/2002	6/13/2003	12/5/2003	6/3/2004	12/16/2004
VOLATILE ORGANIC COMPOUNDS BY SW8260									
BROMOBENZENE	ug/L			<5	<5	<25	<5	<50	<5
TRANS-1,4-DICHLORO-2-BUTENE	ug/L			<10	<10	<50	<10	<50	<5
N-PROPYLBENZENE	ug/L			<5	<5	<25	<5	<50	<5
1,1,2,2-TETRACHLOROETHANE	ug/L			<5	84	100	62	<50	238
2-CHLOROTOLUENE	ug/L			<5	<5	<25	<5	<50	<5
3-CHLOROTOLUENE	ug/L			<5	<5	<25	<5	<50	<5
4-CHLOROTOLUENE	ug/L			<5	<5	<25	<5	<50	<5
1,3,5-TRIMETHYLBENZENE	ug/L	23		<5	<5	<25	<5	<50	<5
TERT-BUTYLBENZENE	ug/L			<5	<5	<25	<5	<50	<5
1,2,4-TRIMETHYLBENZENE	ug/L			<5	<5	<25	<5	<50	<5
SEC-BUTYLBENZENE	ug/L			<5	<5	<25	<5	<50	<5
1,3-DICHLOROBENZENE	ug/L			<5	<5	<25	<5	<50	<5
1,4-DICHLOROBENZENE	ug/L			<5	<5	<25	<5	<50	<5
4-ISOPROPYLTOLUENE	ug/L			<5	<5	<25	<5	<50	<5
1,2-DICHLOROBENZENE	ug/L		5	<5	<5	<25	<5	<50	<5
N-BUTYLBENZENE	ug/L			<5	<5	<25	<5	<50	<5
1,2-DIBROMO-3-CHLOROPROPANE	ug/L		5	<5	<5	<25	<5	<50	<5
1,2,4-TRICHLOROBENZENE	ug/L			<5	<5	<25	<5	<50	<5
NAPHTHALENE	ug/L			<5	<5	<25	<5	<50	<5
HEXACHLOROBUTADIENE	ug/L			<5	<5	<25	<5	<50	<5
1,2,3-TRICHLOROBENZENE	ug/L			<25	<5	<25	<5	<50	<5
DCA SURROGATE RECOVERY	%	4570	10	102%	90	102%	95%	95%	93%
TOL-D8 SURROGATE RECOVERY	%			93%	95	93%	92%	98%	82%
BFB SURROGATE RECOVERY	%			105%	100	105%	95%	87%	91%
DBFM SURROGATE RECOVERY	%							87	92%
SEMI-VOLATILE ORGANIC COMPOUNDS BY SW8270									
PYRIDINE	ug/L			<10	<10	<10	<10	<10	<10
N-NITROSODIMETHYLAMINE	ug/L			<10	<10	<10	<10	<10	<10
BIS(2-CHLOROETHYL)ETHER	ug/L			<10	<10	<10	<10	<10	<10
PHENOL	ug/L			<10	400	320	400	140	100
2-CHLOROPHENOL	ug/L			<10	<10	<10	<10	<10	<10
1,3-DICHLOROBENZENE	ug/L			<10	<10	<10	<10	<10	<10
1,4-DICHLOROBENZENE	ug/L			<10	<10	<10	<10	<10	<10
1,2-DICHLOROBENZENE	ug/L			<10	<10	<10	<10	<10	<10
BENZYL ALCOHOL	ug/L			<10	<10	<10	<10	<10	<10
BIS(2-CHLOROISOPROPYL)ETHER	ug/L			<10	<10	<10	<10	<10	<10
2-METHYLPHENOL	ug/L			<10	<10	<10	<10	50	<10
HEXACHLOROETHANE	ug/L			<10	<10	<10	<10	<10	<10
N-NITROSODI-N-PROPYLAMINE	ug/L	11		<10	<10	<10	<10	<10	<10
3&4-METHYLPHENOL	ug/L			<10	120	150	120	60	115
NITROBENZENE	ug/L			<10	<10	<10	<10	<10	<10
ISOPHORONE	ug/L			<10	60	580	60	60	136
2-NITROPHENOL	ug/L			<10	<10	<10	<10	<10	<10
2,4-DIMETHYLPHENOL	ug/L			<10	<10	<10	<10	<10	<10
BIS(2-CHLOROETHOXY)METHANE	ug/L	250		<10	<10	<10	<10	<10	<10
2,4-DICHLOROPHENOL	ug/L			<10	<10	<10	<10	<10	<10
2,6-DICHLOROPHENOL	ug/L			<10	<10	<10	<10	<10	<10
1,2,4-TRICHLOROBENZENE	ug/L			<10	<10	<10	<10	<10	<10
NAPHTHALENE	ug/L			<10	<10	<10	<10	<10	<10
4-CHLOROANILINE	ug/L			<10	<10	<10	<10	<10	<10
HEXACHLOROBUTADIENE	ug/L	365000	10	<10	<10	<10	<10	<10	<10
4-CHLORO-3-METHYLPHENOL	ug/L			<10	<10	<10	<10	<10	<10

Prepared by: E Taylor
Checked by: R Bocarro

Table 3: Treatment Plant Semi-Annual Influent Sampling Results

SAMPLE MONTH:		ROD	KPDES	June	Dec	June	Dec	June	Dec
DATE COLLECTED:		Requirements	Requirements	6/12/2002	12/11/2002	6/13/2003	12/5/2003	6/3/2004	12/15/2004
SEMI-VOLATILE ORGANIC COMPOUNDS BY SW8270 continued...									
2-METHYLNAPHTHALENE	ug/L			<10	<10	<10	<10	<10	<10
HEXACHLOROCYCLOPENTADIENE	ug/L			<10	<10	<10	<10	<10	<10
2,4,6-TRICHLOROPHENOL	ug/L			<10	<10	<10	<10	<10	<10
2,4,5-TRICHLOROPHENOL	ug/L			<10	<10	<10	<10	<10	<10
2-CHLORONAPHTHALENE	ug/L			<10	<10	<10	<10	<10	<10
2-NITROANILINE	ug/L			<50	<50	<50	<50	<10	<10
DIMETHYL PHTHALATE	ug/L			<10	<10	<10	<10	<10	<10
ACENAPHTHYLENE	ug/L	23		<10	<10	<10	<10	<10	<10
2,6-DINITROTOLUENE	ug/L			<10	<10	<10	<10	<10	<10
ACENAPHTHENE	ug/L			<10	<10	<10	<10	<10	<10
3-NITROANILINE	ug/L			<50	<50	<50	<50	<10	<10
2,4-DINITROPHENOL	ug/L			<10	<10	<10	<10	<10	<10
4-NITROPHENOL	ug/L			<10	<10	<10	<10	<10	<10
DIBENZOFURAN	ug/L			<10	<10	<10	<10	<10	<10
2,4-DINITROTOLUENE	ug/L		5	<10	<10	<10	<10	<10	<10
FLUORENE	ug/L			<10	<10	<10	<10	<10	<10
DIETHYL PHTHALATE	ug/L		5	<10	<10	<10	<10	<10	<10
4-CHLOROPHENYL PHENYL ETHEI	ug/L			<10	<10	<10	<10	<10	<10
2-METHYL-4,6-DINITROPHENOL	ug/L			<10	<10	<10	<10	<10	<10
4-NITROANILINE	ug/L			<50	<50	<50	<50	<10	<10
N-NITROSO-DIPHENYLAMINE	ug/L			<10	<10	<10	<10	<10	<10
4-BROMOPHENYL PHENYL ETHER	ug/L	4570	10	<10	<10	<10	<10	<10	<10
HEXACHLOROBENZENE	ug/L			<10	<10	<10	<10	<10	<10
PENTACHLOROPHENOL	ug/L			<10	<10	<10	<10	<10	<10
ANTHRACENE	ug/L			<10	<10	<10	<10	<10	<10
PHENANTHRENE	ug/L			<10	<10	<10	<10	<10	<10
CARBAZOLE	ug/L			<10	<10	<10	<10	<10	<10
DI-N-BUTYL PHTHALATE	ug/L			<10	<10	<10	<10	<10	<10
FLUORANTHENE	ug/L			<10	<10	<10	<10	<10	<10
BENZIDINE	ug/L			<10	<10	<10	<10	<10	<10
PYRENE	ug/L			<10	<10	<10	<10	<10	<10
BENZYL BUTYL PHTHALATE	ug/L			<10	<10	<10	<10	<10	<10
BENZO(A)ANTHRACENE	ug/L			<10	<10	<10	<10	<10	<10
3,3'-DICHLOROBENZIDINE	ug/L			<10	<10	<10	<10	<10	<10
BIS(2-ETHYLHEXYL)PHTHALATE	ug/L			<10	<10	<10	<10	<10	<10
CHRYSENE	ug/L			<10	<10	<10	<10	<10	<10
DI-N-OCTYL PHTHALATE	ug/L			<10	<10	<10	<10	<10	<10
BENZO(B)FLUORANTHENE	ug/L			<10	<10	<10	<10	<10	<10
BENZO(K)FLUORANTHENE	ug/L	11		<10	<10	<10	<10	<10	<10
BENZO(A)PYRENE	ug/L			<10	<10	<10	<10	<10	<10
INDENO(1,2,3-C,D)PYRENE	ug/L			<10	<10	<10	<10	<10	<10
DIBENZO(A,H)ANTHRACENE	ug/L			<10	<10	<10	<10	<10	<10
BENZO(G,H,I)PERYLENE	ug/L			<10	<10	<10	<10	<10	<10
[Surrogate Rec. - B/N]	ug/L								
NITROBENZENE-D5	ug/L	250		105	81	26	81	68%	38%
2-FLUOROBIPHENYL	ug/L			85	102	23	102	76%	31%
P-TERPHENYL	ug/L			107	85	37	85	93%	112%
[Surrogate Rec. - Acids]	ug/L								
2-FLUOROPHENOL	ug/L			68	49	12	49	45%	114%
PHENOL-D6	ug/L			44	39	17	39	0%	1%
2,4,6-TRIBROMOPHENOL	ug/L	365000	10	61	97	40	97	104%	96%

Table 3: Treatment Plant Semi-Annual Influent Sampling Results

SAMPLE MONTH:		ROD	KPDES	June	Dec	June	Dec	June	Dec
DATE COLLECTED:		Requirements	Requirements	6/12/2002	12/11/2002	6/13/2003	12/5/2003	6/3/2004	12/15/2004
METALS Compound by SW846, 6010 / 7470									
PARAMETERS	UNITS								
Antimony	mg/L	0.062	1.6	<0.1	<0.01	<0.1	<0.01	<0.05	<0.05
Arsenic	mg/L	0.011	0.05	<0.1	<0.01	<0.01	<0.01	<0.01	<0.02
Barium	mg/L	0.231		0.1	0.19	0.12	0.09	0.12	0.8
Beryllium	mg/L		0.0053	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01
Cadmium	mg/L		0.0011	<0.1	<0.01	<0.1	<0.01	<0.05	<0.01
Calcium	mg/L			100	120	110	110	124	127
Chromium	mg/L	0.011	0.011	<0.1	<0.01	<0.1	<0.01	<0.05	<0.01
Copper	mg/L		0.012	0.6	<0.01	<0.01	<0.01	<0.05	<0.02
Iron	mg/L		1	4.3	8	5.98	9.18	7.5	51.6
Lead	mg/L		0.0032	<0.1	<0.01	<0.1	<0.01	<0.05	<0.02
Magnesium	mg/L			89	92	120	96.7	119	110
Manganese	mg/L			1.8	1.51	1.69	1.4	1.71	1.57
Mercury	mg/L		0.000012	0.0001	<0.0002	0.0001	<0.0002	0.0002	<0.0002
Nickel	mg/L		0.16	<0.1	0.02	0.03	0.03	0.03	0.09
Selenium	mg/L		0.005	<0.1	<0.01	<0.1	<0.01	<0.05	<0.05
Silver	mg/L		0.00012	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01
Thallium	mg/L	0.011	0.04	<0.1	<0.01	<0.1	<0.01	<0.05	<0.05
Zinc	mg/L		0.11	<0.1	0.02	0.05	0.03	<0.05	0.14
GENERAL INORGANICS									
PARAMETERS	UNITS								
BOD	mg/L			123	111	81	47	104	220
COD	mg/L			254	290	197	120	254	340
Cyanide total	mg/L			0.01	<0.01	0.01	0.04	<0.01	<0.01
Nitrogen, Ammonia	mg/L			9	8	6.9	6	4	5.9
Nitrogen, Kjeldahl	mg/L			9	10	7.9	6	6.4	7.6
Nitrogen, Nitrate	mg/L			0.55	<0.5	<0.5	<0.01	0.4	0.41
Nitrogen, Nitrite	mg/L			<0.05	<0.05	0.007	<0.01	<0.15	0.6
Nitrogen, Nitrite, and Nitrate	mg/L			0.55	0.5	0.007	<0.01	0.4	<1.0
Organic Carbon total	mg/L			120	55	49.3	42	75.9	166.2
PH	s.u.			6.8	7.82	6.67	7	6.6	7.4
Phosphate Ortho-	mg/L			<0.1	<0.1	0.1	<0.3	<0.2	<0.64
Phosphorus total	mg/L			<1	0.1	<0.1	0.09	<0.1	0.3
TDS	mg/L			1290	1300	1310	1424	1480	1500
TSS	mg/L			42	10	11	10	29	<5
Turbidity	NTU			54	300	100	36.6	5.1	2.8

Notes:
NA = Not analyzed
Laboratory analysis by Microbac Labs Louisville,Ky

Table 4: Summary of Settlement Monuments and Elevations

SMITH FARM LANDFILL SETTLEMENT SUMMARY OPERABLE UNIT ONE			
MONUMENT	2003 ELEV	2004 ELEV	CHANGE
SM-01	613.65	613.65	0.00
SM-02	619.27	619.29	-0.02
SM-03	624.69	624.71	-0.02
SM-04	625.35	625.37	-0.02
SM-05	630.63	630.70	-0.07
SM-06	634.04	634.10	-0.06
SM-07	644.59	644.66	-0.07
SM-08	639.47	639.52	-0.05
SM-09	636.89	636.95	-0.06
SM-10	634.21	634.25	-0.04
SM-11	628.45	628.46	-0.01
SM-12	614.13	614.14	-0.01
SM-13	MISSING	0.00	N/A
SM-14	616.78	616.78	0.00
SM-15	631.04	631.05	-0.01
SM-16	638.39	638.44	-0.05
SM-17	644.54	644.60	-0.06
SM-18	652.41	652.47	-0.06
SM-19	659.62	659.68	-0.06
SM-20	668.78	668.82	-0.04
SM-21	664.11	664.14	-0.03
SM-22	652.14	652.19	-0.05
SM-23	628.85	628.87	-0.02

SMITH FARM LANDFILL SETTLEMENT SUMMARY OPERABLE UNIT ONE			
MONUMENT	2003 ELEV.	2004 ELEV	CHANGE
SM-24	640.91	640.97	-0.06
SM-25	616.37	616.39	-0.02
SM-26	601.22	601.22	0.00
SM-27	601.21	601.20	0.01
SM-28	612.63	612.67	-0.04
SM-29	626.88	626.87	0.01
SM-30	644.67	644.71	-0.04
SM-31	661.55	661.59	-0.04
SM-32	674.35	674.37	-0.02
SM-33	673.25	673.29	-0.04
SM-34	652.12	652.15	-0.03
SM-35	633.65	633.69	-0.04
SM-36	612.11	612.14	-0.03
SM-37	599.85	599.88	-0.03
SM-38	619.88	619.94	-0.06
SM-39	641.37	641.42	-0.05
SM-40	663.96	664.00	-0.04
SM-41	675.22	675.26	-0.04
SM-42	687.52	687.56	-0.04
SM-43	662.40	662.42	-0.02
SM-44	650.19	650.23	-0.04
SM-45	650.63	650.68	-0.05

Table 5: Op Unit Two Groundwater Monitoring Wells Sampling Results

DATE COLLECTED		OP UNIT TWO - JUNE 17, 2004							OP UNIT TWO - DECEMBER 8, 2004						
SAMPLE ID		MW-25	MW-26	MW-27	MW-28	MW-29	MW-30	BG-1	MW-25	MW-26	MW-27	MW-28	MW-29	MW-30	BG-1
VOLATILE ORGANIC COMPOUNDS															
PARAMETERS	UNITS														
1,1-Dichloroethane	ug/L	ND	ND	ND	ND	ND	4	ND	ND	ND	NA	ND	ND	4	ND
1,1-Dichloroethene	ug/L	ND	ND	ND	ND	ND	1	ND	ND	ND	NA	ND	ND	ND	ND
1,2-Dichloroethene (total)	ug/L	ND	ND	ND	ND	ND	2	ND	ND	ND	NA	ND	ND	4	ND
Toluene	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	2	ND
Trichloroethene	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	3	ND
Xylene (Total)	ug/L	ND	ND	ND	ND	ND	3	ND	ND	ND	NA	ND	ND	5	ND
SEMI-VOLATILE ORGANIC COMPOUNDS															
PARAMETERS	UNITS														
bis(2-Ethylhexyl)phthalate	ug/L	ND	2	30	ND	8	ND	ND	ND	ND	NA	ND	ND	ND	ND
Diethylphthalate	ug/L	19	2	ND	1	3	ND	2	NA	ND	NA	ND	1	ND	ND
Naphthalene	ug/L	5	ND	ND	ND	ND	ND	ND	1	ND	NA	ND	ND	ND	ND
2-Methylnaphthalene	ug/L	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	ND	ND	ND
METALS															
PARAMETERS	UNITS														
Aluminum	ug/L	30	2630	3500	1740	30.8	39.9	3500	98.4	2360	NA	11800	93.5	464	694
Antimony	ug/L	2.9	2.9	2.9	2.9	2.9	2.9	2.9	4.6	4.6	NA	4.6	4.6	4.6	4.6
Arsenic	ug/L	4.6	4.6	4.6	4.6	4.6	4.6	4.6	5.7	5.7	NA	6	5.7	5.7	5.7
Barium	ug/L	16.3	17.7	20.6	26.7	10.5	9.1	25.3	18.8	17.7	NA	69.2	10.6	11.2	16.1
Beryllium	ug/L	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.39	NA	1.1	0.28	0.28	0.31
Cadmium	ug/L	0.64	0.64	0.64	30.5	0.64	0.64	0.64	0.56	0.56	NA	11.6	0.56	0.56	0.56
Calcium	ug/L	146000	445000	205000	96300	197000	437000	1700	11700	44100	NA	57700	22000	42500	13800
Chromium	ug/L	2.5	9	9.1	4.3	8.2	2.5	8.9	1.4	4.7	NA	62.8	1.3	1.3	3.3
Cobalt	ug/L	1.4	110	5.5	5.6	1.4	1.4	9.8	2.4	42.7	NA	14.9	4.5	2.4	5.1
Copper	ug/L	1.7	9.9	12.4	4.4	2	1.1	6.3	2.1	2.1	NA	19.3	2.1	2.1	2.1
Iron	ug/L	106	3880	78300	22	36.1	36.1	5850	233	4910	NA	20600	217	514	1030
Lead	ug/L	2.4	2.4	3.5	2.4	2.4	2.4	2.4	2.9	2.9	NA	9	2.9	2.9	2.9
Magnesium	ug/L	97400	266000	28500	10400	23200	72700	5790	74500	66700	NA	6400	25600	21800	3100
Manganese	ug/L	777	12400	918	261	11.1	0.13	0.45	731	10500	NA	563	244	0.15	535
Mercury	ug/L	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.074	0.074	NA	0.074	0.074	0.074	0.074
Nickel	ug/L	4.6	431	23.4	87.8	16.5	5.4	65.8	7.7	7.7	NA	91.8	69.2	4.2	32.1
Potassium	ug/L	13300	28700	7320	7150	3770	18300	3480	12300	26600	NA	7760	6220	17300	1760
Selenium	ug/L	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.7	4.7	NA	4.7	4.7	4.7	4.7
Silver	ug/L	1.1	1.1	1.1	1.1	1.1	1.1	1.1	2.9	2	NA	2.6	1.9	2.5	2.1
Sodium	ug/L	83600	482000	314000	50300	25500	416000	56600	76900	91300	NA	57300	29600	41000	3290
Thallium	ug/L	3.8	3.8	3.8	3.9	3.8	3.8	3.8	8.5	8.5	NA	8.5	8.5	8.5	8.5
Vanadium	ug/L	2.2	5.6	6	4.5	2.2	2.2	9.1	1.6	4.8	NA	25.6	1.6	1.6	1.7
Zinc	ug/L	1.4	29.8	1.4	11100	1.4	7	48.6	1.8	11.4	NA	5860	1.8	9	42.7
Cyanide	ug/L	4	4	N/A	4	4	4	4	4	4	NA	4	4	4	4

Notes:

ND = Not detected above laboratory detection limits listed on laboratory data sheets

NA = Not analyzed

Laboratory Analysis by Lancaster Laboratories in Lancaster, PA

Prepared by: E Taylor
Checked by: R Decarlo

Table 6: Summary of Groundwater Monitoring Well Sampling Quality Control Results

DATE COLLECTED:		OP Unit Two June, 17 2004			OP Unit One Nov 30 2004		OP Unit Two December 8 2004	
SAMPLE ID:		Dup	Trip	Equip	Dup	Trip	Equip	Trip
VOLATILE ORGANIC COMPOUNDS		Sampl	Blank	Blank	Sampl	Blank	Blank	Blank
PARAMETERS	UNITS							
1,1-Dichloroethane	ug/L	4	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ug/L	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene (total)	ug/L	2	ND	ND	39	ND	ND	ND
Toluna	ug/L	1	ND	ND	ND	ND	ND	ND
Trichloroethene	ug/L	3	ND	ND	3	ND	ND	ND
Xylene (Total)	ug/L	ND	ND	ND	ND	ND	ND	ND
SEMI-VOLATILE ORGANIC COMPOUNDS								
PARAMETERS	UNITS							
Caprolactam	ug/l	ND	ND	ND	ND	ND	ND	ND
Naphthalene	ug/L	1	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	ug/L	ND	ND	ND	ND	ND	ND	ND
METALS								
PARAMETERS	UNITS							
Aluminum	ug/L	2820	NA	30	862	NA	61.4	NA
Antimony	ug/L	2.9	NA	2.9	13.7	NA	4.6	NA
Arsenic	ug/L	4.6	NA	4.6	9.9	NA	5.7	NA
Barium	ug/L	18.6	NA	5.7	28.4	NA	0.18	NA
Beryllium	ug/L	0.28	NA	0.28	39.6	NA	0.28	NA
Cadmium	ug/L	0.84	NA	0.84	0.2	NA	0.56	NA
Calcium	ug/L	44700	NA	393	0.67	NA	42.1	NA
Chromium	ug/L	5	NA	2.5	7850	NA	1.3	NA
Cobalt	ug/L	3.1	NA	1.4	108	NA	2.4	NA
Copper	ug/L	2.7	NA	4.9	26	NA	2.1	NA
Iron	ug/L	3230	NA	43.5	7.1	NA	28.5	NA
Lead	ug/L	2.4	NA	2.4	2530	NA	2.9	NA
Magnesium	ug/L	73500	NA	41.3	2.6	NA	30.8	NA
Manganese	ug/L	24.1	NA	7.4	22300	NA	0.27	NA
Mercury	ug/L	0.042	NA	0.042	1350	NA	0.074	NA
Nickel	ug/L	8.4	NA	2.6	1074	NA	2.9	NA
Potassium	ug/L	18700	NA	150	128	NA	46.4	NA
Selenium	ug/L	4.1	NA	4.1	2700	NA	4.7	NA
Silver	ug/L	1.1	NA	1.1	4.7	NA	2.3	NA
Sodium	ug/L	44900	NA	377	304	NA	250	NA
Thallium	ug/L	3.8	NA	3.8	98200	NA	8.5	NA
Vanadium	ug/L	4.7	NA	2.2	7.4	NA	1.6	NA
Zinc	ug/L	7	NA	9.1	2.7	NA	10.9	NA
Cyanide	ug/L	4	NA	4	90.6	NA	4	NA

Notes:

ND = Not detected above laboratory detection limits listed on laboratory data sheets

NA = Not analyzed

Laboratory analysis by Lancaster Laboratories in Lancaster, PA.

OU-2 MW-00 is a dup of MW-30 on 6-17-04

OU-1 MW-00 is a dup of MW-15 on 11-30-04

Table 7: Summary of Volumes Pumped from Op Unit Two Extraction Wells

	MW-1 Meter Reading	MW-1 Gallons	MW-2 Meter Reading	MW-2 Gallons	MW-3 Meter Reading	MW-3 Gallons	MW-4 Meter Reading	MW-4 Gallons
January	1384056.3		1908.2	49	3030.4	0	13628.5	349
February	1386466.2	2.410	1957.0	49	3030.4	0	13978.8	350
March	1388414.6	1,948	2001.2	44	3030.4	0	14217.6	239
April	1390656.0	2,241	2006.0	5	3039.7	9	14483.9	266
May	1391726.1	1,070	2084.6	79	3048.1	8	14658.0	174
June	1391794.9	69	2109.1	25	3057.8	10	14775.1	117
July	1391868.2	73	2141.5	32	3061.3	4	14925.3	150
August	1391868.2	0	2169.1	28	3065.4	4	15019.9	95
September	1391868.2	0	2197.0	28	3074.1	9	15194.0	174
October	1391868.3	0	2243.9	47	3120.0	46	15308.8	115
November	1391868.3	0	2367.8	124	3129.1	9	15539.5	231
December	1392202.2	334	2447.1	79	3140.8	12	15608.8	69
Total Gallons		8,145		589		111		2,329

Table 8: Op Unit One Pumping Record Data

OU-1 NORTH TANK 2004			
Date	Dipstick Reading	Dipstick Reading	Pump Gallons
01/07/04	45 7/8	Measurement only	
01/14/04	49 1/2	Measurement only	
01/16/04	52 1/2	Measurement only	
01/21/04	53 1/4	Measurement only	
01/28/04	56 3/4	Measurement only	
02/02/04	57	47 1/2	1,306
02/04/04	51 1/8	Measurement only	
02/18/04	61	Measurement only	
02/27/04	61 3/4	Measurement only	
03/01/04	62	Measurement only	
03/03/04	62	Measurement only	
03/05/04	63	53 1/4	1,281
03/15/04	59 1/8	Measurement only	
03/19/04	59	Measurement only	
03/22/04	60 1/2	Measurement only	
03/29/04	60 1/2	32 1/2	4,114
04/28/04	42 1/2	Measurement only	
05/17/04	47 3/4	Measurement only	
06/02/04	55 1/2	30	3,517
06/16/04	32 7/8	Measurement only	
06/23/04	33 1/4	Measurement only	
07/12/04	34 1/2	Measurement only	
08/02/04	37 7/8	Measurement only	
08/11/04	40 1/4	Measurement only	
08/20/04	40 1/2	Measurement only	
08/27/04	40 1/2	measurement only	
09/08/04	51 5/8	29	1,564
09/29/04	29	Measurement only	
10/25/04	30	Measurement only	
11/10/04	35 1/2	Measurement only	
11/15/04	35 1/2	Measurement only	
11/19/04	39	Measurement only	
11/29/04	45	Measurement only	
12/01/04	46 3/4	Measurement only	
12/06/04	48 1/2	37 1/2	1,537
12/08/04	39	Measurement only	
12/10/04	40 1/4	Measurement only	
11/20/03	31 3/8	Measurement only	
12/01/03	34 1/4	Measurement only	
12/03/03	35 1/4	Measurement only	
12/08/03	39	Measurement only	
12/10/04	40 1/4	Measurement only	
Total Gallons North Tank			13,319

OU-1 SOUTH TANK 2004			
Date	Dipstick Reading	Dipstick Reading	Pump Gallons
01/07/04	76 3/4	63 1/2	1,465
01/14/04	76 1/4	61 3/4	1,640
01/16/04	67 1/2	53 3/4	1,767
01/21/04	56 3/4	46	1,483
01/28/04	53 3/4	43 1/2	1,427
02/02/04	54 1/2	Measurement only	
02/04/04	62 1/4	50 3/4	1,539
02/18/04	84	62 3/4	2,126
02/27/04	69 3/4	60	1,191
03/01/04	64 3/4	56	1,132
03/03/04	58	46 1/2	1,579
03/05/04	49 1/2		
03/15/04	72 3/8	62	1,219
03/19/04	64 1/2	56 1/8	1,084
03/22/04	59 1/2	5 1/2	6,636
03/29/04	28 1/2	Measurement only	
04/28/04	64 1/2	30	4,686
05/17/04	55 1/2	24 1/2	4,217
06/02/04	48 1/2	Measurement only	
06/09/04	56	42 3/4	1,837
06/16/04	46	33 1/2	1,735
06/23/04	36 1/4	29 1/2	918
07/12/04	38	24 1/2	1,787
08/02/04	35 1/2	Measurement only	
08/11/04	41 1/4	Measurement only	
08/20/04	44 3/4	33	1,628
08/27/04	35 1/2	Measurement only	
09/08/04	39 1/2	Measurement only	
09/29/04	46	33 1/2	1,735
10/25/04	43	Measurement only	
11/10/04	62 1/2	49 3/4	1,709
11/15/04	61	51	1,352
11/19/04	54 1/4	42	1,706
11/29/04	63 3/8	50 1/4	1,749
12/01/04	58 1/4	40	2,523
12/06/04	49 1/2	Measurement only	
12/08/04	54 1/2	41 1/4	1,812
12/10/04	47 1/4	34	1,842
Total Gallons South Tank			55,524

Prepared by: E Taylor
Checked by: R Bocarro

TABLES

Table 1: Summary of Treated Leachate Volume - Operable Units One and Two

	Plant Discharge Totals	OU-2 Extraction Wells Discharge Totals				OU-2 Leachate Collection Trench	OU-1 Tanks Discharge Totals		Monthly Rainfall
Month	Effluent	MW-1	MW-2	MW-3	MW-4	Estimated Discharge Totals	North Tank	South Tank	Inches
JAN	101462	665	14	0	211	79455	6136	14981	4.6
FEB	95528	0	0	0	0	86814	1618	7096	3.36
MAR	79239	0	0	0	0	74086	1467	3686	2.41
APR	111043	0	0	0	0	102589	3344	5110	4.88
MAY	85489	1349	65	0	377.6	79676.4	0	4021	3.91
JUN	76692	1017	85	0	301	75645	1644	0	2.25
JUL	48643	887	59	0	246	47451	0	0	5.05
AUG	47533	684	76	0	179	42870	0	3724	1.49
SEP	82388	542.6	73	0	151	81621.4	0	0	7.27
OCT	59411	573	80	0	289	56631	0	1838	1.71
NOV	52915	742	89	0	412	51672	0	0	1.87
DEC	69604	1231	121	0	603	62060	1620	3969	1.9
TOTALS	909947	7690.6	662	0	2769.6	838570.8	15829	44425	40.7

NOTES:
All discharge volumes in gallons.

Prepared by: E Tayl
Checked by: H Pot[redacted]

Table 2: Treatment Plant Quarterly Effluent Sampling Results 2005

SAMPLE MONTH:		ROD	KPDES	March	June	Sept	Jan
DATE COLLECTED:		Requirements	Requirements	3/4/2005	6/24/2005	9/8/2005	1/4/2006
VOLATILE ORGANIC COMPOUNDS BY SW8260							
PARAMETERS	UNITS						
DICHLORODIFLUOROMETHANE	ug/L			<5	<5	<5	<5
VINYL CHLORIDE	ug/L		5	<2	<2	<5	<5
CHLOROMETHANE	ug/L			<5	<5	<5	<5
BROMOMETHANE	ug/L			<5	<5	<5	<5
CHLOROETHANE	ug/L			<5	<5	<5	<5
TRICHLOROFLUOROMETHANE	ug/L			<5	<5	<5	<5
1,1-DICHLOROETHYLENE	ug/L			<5	<5	<5	<5
METHYLENE CHLORIDE	ug/L			<10	<10	<10	<10
ACETONE	ug/L			<25	66	310	<25
ACROLEIN	ug/L			<25	<25	<25	<25
IODOMETHANE	ug/L			<5	<5	<5	<5
CARBON DISULFIDE	ug/L			<5	<5	<5	<5
ACRYLONITRILE	ug/L			<5	<5	<5	<5
TRANS-1,2-DICHLOROETHYLENE	ug/L			<5	<5	<5	<5
1,1-DICHLOROETHANE	ug/L			<5	<5	<5	<5
VINYL ACETATE	ug/L			<5	<5	<5	<5
2-BUTANONE (MEK)	ug/L		5	<25	<5	560	<25
CIS-1,2-DICHLOROETHYLENE	ug/L		5	<5	<5	<5	<5
BROMOCHLOROMETHANE	ug/L			<5	<5	<5	<5
CHLOROFORM	ug/L			<5	6	<5	<5
2,2-DICHLOROPROPANE	ug/L			<5	<5	<5	<5
1,1,1-TRICHLOROETHANE	ug/L		5	<5	<5	<5	<5
1,1-DICHLOROPROPYLENE	ug/L		5	<5	<5	<5	<5
CARBON TETRACHLORIDE	ug/L			<5	<5	<5	<5
BENZENE	ug/L			<5	<5	<5	<5
1,2-DICHLOROETHANE	ug/L		5	<5	<5	<5	<5
TRICHLOROETHYLENE	ug/L			<5	<5	<5	<5
DIBROMOMETHANE	ug/L			<5	<5	<5	<5
1,2-DICHLOROPROPANE	ug/L	5870	5	<5	<5	<5	<5
BROMODICHLOROMETHANE	ug/L			<5	<5	<5	<5
2-CHLOROETHYL VINYL ETHER	ug/L			<5	<5	<5	<5
CIS-1,3-DICHLOROPROPYLENE	ug/L		5	<5	<5	<5	<5
4-METHYL-2-PENTANONE (MIBK)	ug/L		5	<25	<25	<25	<25
TOLUENE	ug/L		5	<5	<5	<5	<5
TRANS-1,3-DICHLOROPROPYLENE	ug/L			<5	<5	<5	<5
1,1,2-TRICHLOROETHANE	ug/L		5	<5	<5	<5	<5
1,3-DICHLOROPROPANE	ug/L			<5	<5	<5	<5
DIBROMOCHLOROMETHANE	ug/L			<5	<5	<5	<5
1,2-DIBROMOETHANE (EDB)	ug/L			<5	<5	<5	<5
TETRACHLOROETHYLENE	ug/L			<5	<5	<5	<5
2-HEXANONE	ug/L			21	<25	<5	<25
1,1,1,2-TETRACHLOROETHANE	ug/L			<5	<5	<5	<5
CHLOROBENZENE	ug/L			<5	<5	<5	<5
1-CHLOROHEXANE	ug/L			<5	<5	<5	<5
ETHYLBENZENE	ug/L			<5	<5	14	<5
M-XYLENE / P-XYLENE	ug/L			<10	<10	<10	<10
O-XYLENE	ug/L			<5	<5	<5	<5
STYRENE	ug/L			<5	<5	<5	<5
BROMOFORM	ug/L			<5	<5	<5	<5
1,2,3-TRICHLOROPROPANE	ug/L		10	<5	<5	<5	<5
ISOPROPYLBENZENE (CUMENE)	ug/L			<5	<5	<5	<5

Table 2: Treatment Plant Quarterly Effluent Sampling Results 2005

SAMPLE MONTH: / DATE COLLECTED:		ROD Requirements	KPDES Requirements	March 3/4/2005	June 6/24/2005	Sept. 9/9/2005	Jan 1/4/2006
VOLATILE ORGANIC COMPOUNDS BY SW8260 continued...							
BROMOBENZENE	ug/L			<5	<5	<5	<5
TRANS-1,4-DICHLORO-2-BUTENE	ug/L			<5	<5	<5	<5
N-PROPYLBENZENE	ug/L			<5	<5	<5	<5
1,1,2,2-TETRACHLOROETHANE	ug/L			<5	<5	<5	<5
2-CHLOROTOLUENE	ug/L			<5	<5	<5	<5
3-CHLOROTOLUENE	ug/L			<5	<5	<5	<5
4-CHLOROTOLUENE	ug/L			<5	<5	<5	<5
1,3,5-TRIMETHYLBENZENE	ug/L	23		<5	<5	<5	<5
TERT-BUTYLBENZENE	ug/L			<5	<5	<5	<5
1,2,4-TRIMETHYLBENZENE	ug/L			<5	<5	<5	<5
SEC-BUTYLBENZENE	ug/L			<5	<5	<5	<5
1,3-DICHLOROBENZENE	ug/L			<5	<5	<5	<5
1,4-DICHLOROBENZENE	ug/L			<5	<5	<5	<5
4-ISOPROPYLTOLUENE	ug/L			<5	<5	<5	<5
1,2-DICHLOROBENZENE	ug/L		5	<5	<5	<5	<5
N-BUTYLBENZENE	ug/L			<5	<5	<5	<5
1,2-DIBROMO-3-CHLOROPROPANE	ug/L		5	<5	<5	<5	<5
1,2,4-TRICHLOROBENZENE	ug/L			<5	<5	<5	<5
NAPHTHALENE	ug/L			<5	11	<5	<5
HEXACHLOROBUTADIENE	ug/L			<5	<5	<5	<5
1,2,3-TRICHLOROBENZENE	ug/L			<5	9	<5	<5
DCA SURROGATE RECOVERY	ug/L	4570	10	86%	89%	130%	116%
TOL-D8 SURROGATE RECOVERY	ug/L			106%	94%	91%	99%
BFB SURROGATE RECOVERY	ug/L			100%	102%	100%	106%
SEMI-VOLATILE ORGANIC COMPOUNDS BY SW8270							
PYRIDINE	ug/L			<10	<10	<10	<10
N-NITROSODIMETHYLAMINE	ug/L			<10	<10	<10	<10
BIS(2-CHLOROETHYL)ETHER	ug/L			<10	<10	<10	<10
PHENOL	ug/L			<10	<10	<10	<10
2-CHLOROPHENOL	ug/L			<10	<10	<10	<10
1,3-DICHLOROBENZENE	ug/L			<10	<10	<10	<10
1,4-DICHLOROBENZENE	ug/L			<10	<10	<10	<10
1,2-DICHLOROBENZENE	ug/L			<10	<10	<10	<10
BENZYL ALCOHOL	ug/L			<10	<10	<10	<10
BIS(2-CHLOROISOPROPYL)ETHER	ug/L			<10	<10	<10	<10
2-METHYLPHENOL	ug/L			<10	<10	<10	<10
HEXACHLOROETHANE	ug/L			<10	<10	<10	<10
N-NITROSODI-N-PROPYLAMINE	ug/L	11		<10	<10	<10	<10
3&4-METHYLPHENOL	ug/L			<10	<10	<10	<10
NITROBENZENE	ug/L			<10	<10	<10	<10
ISOPHORONE	ug/L			<10	<10	<10	<10
2-NITROPHENOL	ug/L			<10	<10	<10	<10
2,4-DIMETHYLPHENOL	ug/L			<10	<10	<10	<10
BIS(2-CHLOROETHOXY)METHANE	ug/L	250		<10	<10	<10	<10
2,4-DICHLOROPHENOL	ug/L			<10	<10	<10	<10
2,6-DICHLOROPHENOL	ug/L			<10	<10	<10	<10
1,2,4-TRICHLOROBENZENE	ug/L			<10	<10	<10	<10
NAPHTHALENE	ug/L			<10	<10	<10	<10
4-CHLOROANILINE	ug/L			<10	<10	<10	<10
HEXACHLOROBUTADIENE	ug/L	365000	10	<10	<10	<10	<10
4-CHLORO-3-METHYLPHENOL	ug/L			<10	<10	<10	<10
2-METHYLNAPHTHALENE	ug/L			<10	<10	<10	<10

Prepared by: E Ti
Checked by: H Pe

Table 2: Treatment Plant Quarterly Effluent Sampling Results 2005

SAMPLE MONTH:		ROD	KPDES	March	June	Sept	Jan
DATE COLLECTED:		Requirements	Requirements	3/4/2005	6/24/2005	9/9/2005	1/4/2006
SEMI-VOLATILE ORGANIC COMPOUNDS BY SW8270 continued...							
HEXACHLOROCYCLOPENTADIENE	ug/L			<10	<10	<10	<10
2,4,6-TRICHLOROPHENOL	ug/L			<10	<10	<10	<10
2,4,5-TRICHLOROPHENOL	ug/L			<10	<10	<10	<10
2-CHLORONAPHTHALENE	ug/L			<10	<10	<10	<10
2-NITROANILINE	ug/L			<10	<10	<50	<50
DIMETHYL PHTHALATE	ug/L			<10	<10	<10	<10
ACENAPHTHYLENE	ug/L	23		<10	<10	<10	<10
2,6-DINITROTOLUENE	ug/L			<10	<10	<10	<10
ACENAPHTHENE	ug/L			<10	<10	<10	<10
3-NITROANILINE	ug/L			<10	<10	<50	<50
2,4-DINITROPHENOL	ug/L			<10	<10	<10	<10
4-NITROPHENOL	ug/L			<10	<10	<10	<10
DIBENZOFURAN	ug/L			<10	<10	<10	<10
2,4-DINITROTOLUENE	ug/L		5	<10	<10	<10	<10
FLUORENE	ug/L			<10	<10	<10	<10
DIETHYL PHTHALATE	ug/L		5	<10	<10	<10	<10
4-CHLOROPHENYL PHENYL ETHER	ug/L			<10	<10	<10	<10
2-METHYL-4,6-DINITROPHENOL	ug/L			<10	<10	<10	<10
4-NITROANILINE	ug/L			<10	<10	<50	<50
N-NITROSO-DIPHENYLAMINE	ug/L			<10	<10	<10	<10
4-BROMOPHENYL PHENYL ETHER	ug/L	4570	10	<10	<10	<10	<10
HEXACHLOROBENZENE	ug/L			<10	<10	<10	<10
PENTACHLOROPHENOL	ug/L			<10	<10	<10	<10
ANTHRACENE	ug/L			<10	<10	<10	<10
PHENANTHRENE	ug/L			<10	<10	<10	<10
CARBAZOLE	ug/L			<10	<10	<10	<10
DI-N-BUTYL PHTHALATE	ug/L			<10	<10	<10	<10
FLUORANTHENE	ug/L			<10	<10	<10	<10
BENZIDINE	ug/L			<10	<10	<10	<10
PYRENE	ug/L			<10	<10	<10	<10
BENZYL BUTYL PHTHALATE	ug/L			<10	<10	<10	<10
BENZO(A)ANTHRACENE	ug/L			<10	<10	<10	<10
3,3'-DICHLOROBENZIDINE	ug/L			<10	<10	<10	<10
BIS(2-ETHYLHEXYL)PHTHALATE	ug/L			<10	<10	<10	<10
CHRYSENE	ug/L			<10	<10	<10	<10
DI-N-OCTYL PHTHALATE	ug/L			<10	<10	<10	<10
BENZO(B)FLUORANTHENE	ug/L			<10	<10	<10	<10
BENZO(K)FLUORANTHENE	ug/L	11		<10	<10	<10	<10
BENZO(A)PYRENE	ug/L			<10	<10	<10	<10
INDENO(1,2,3-C,D)PYRENE	ug/L			<10	<10	<10	<10
DIBENZO(A,H)ANTHRACENE	ug/L			<10	<10	<10	<10
BENZO(G,H,I)PERYLENE	ug/L			<10	<10	<10	<10
[Surrogate Rec. - B/N]	ug/L						
NITROBENZENE-D5	ug/L	250		62%	26%	51%	66.40%
2-FLUOROBIPHENYL	ug/L			56%	22%	66%	76.40%
P-TERPHENYL	ug/L			54%	39%	49%	68.00%
[Surrogate Rec. - Acids]	ug/L						
2-FLUOROPHENOL	ug/L			26%	10%	27%	30.00%
PHENOL-D6	ug/L			20%	7%	14%	25.50%
2,4,6-TRIBROMOPHENOL	ug/L	365000	10	73%	3%	90%	72.80%

Table 2: Treatment Plant Quarterly Effluent Sampling Results 2005

SAMPLE MONTH:		ROD	KPDES	March	June	Sept	Jan
DATE COLLECTED:		Requirements	Requirements	3/4/2005	6/24/2005	9/9/2005	1/4/2006
METALS Compound by SW846, 6010 / 7470							
PARAMETERS	UNITS						
Antimony	mg/L	0.062	1.6	<0.01	<0.01	<0.05	<0.01
Arsenic	mg/L	0.011	0.05	<0.02	<0.02	<0.02	<0.01
Barium	mg/L	0.231		0.08	0.06	0.09	0.08
Beryllium	mg/L		0.0053	<0.01	<0.01	<0.01	<0.01
Cadmium	mg/L		0.0011	<0.02	<0.01	<0.01	<0.01
Calcium	mg/L			150	110	125	110
Chromium	mg/L	0.011	0.011	<0.01	<0.01	<0.01	<0.01
Copper	mg/L		0.012	<0.01	<0.01	<0.01	<0.01
Iron	mg/L		1	0.17	0.19	0.13	0.14
Lead	mg/L		0.0032	<0.01	<0.01	<0.01	<0.02
Magnesium	mg/L			140	115	125	100
Manganese	mg/L			0.02	0.18	0.94	0.23
Mercury	mg/L		0.000012	<0.0002	<0.0002	<0.0002	<0.0002
Nickel	mg/L		0.16	<0.01	0.02	0.02	0.02
Selenium	mg/L		0.005	<0.01	<0.01	0.17	<0.01
Silver	mg/L		0.00012	<0.01	<0.01	<0.01	<0.01
Thallium	mg/L	0.011	0.04	<0.05	<0.01	<0.05	<0.05
Zinc	mg/L		0.11	<0.01	0.03	<0.01	0.02
GENERAL INORGANICS							
PARAMETERS	UNITS						
BOD	mg/L			<5	41	5	10
COD	mg/L			50	82	52	50
Cyanide total	mg/L			<0.01	<0.01	<0.01	<0.01
Nitrogen, Ammonia	mg/L			<1.0	1.4	1.9	1.8
Nitrogen, Kjeldahl	mg/L			2.86	2.3	3	5
Nitrogen, Nitrate	mg/L			<0.1	0.57	0.81	1.2
Nitrogen, Nitrite	mg/L			0.66	0.57	2	<0.15
Nitrogen, Nitrite and Nitrate	mg/L			2.86	<0.15	1.2	1.2
Organic Carbon, total	mg/L			14.8	16.6	18	19
pH	s.u.			7.5	7.95	7.6	7.5
Phosphate, Ortho	mg/L			<0.80	<0.16	0.15	<0.16
Phosphorus, total	mg/L			0.1	0.11	0.2	0.1
TDS	mg/L			2100	1600	1800	1500
TSS	mg/L			<5	<5	5	<5
Turbidity	NTU			0.4	1.5	0.4	<0.2

Notes:
NA = Not analyzed
Laboratory analysis by Microbac Labs Louisville,Ky

Prepared by: E Ta
Checked by: H Pot

Table 3: Treatment Plant Semi-Annual Influent Sampling Results 2005

SAMPLE MONTH:		ROD	KPDES	June	DEC	June	DEC	June	DEC	June	Jan
DATE COLLECTED:		Requirements	Requirements	6/12/2002	12/11/2002	6/13/2003	12/5/2003	6/3/2004	12/15/2004	6/24/2005	1/4/2006
VOLATILE ORGANIC COMPOUNDS BY SW8260											
PARAMETERS	UNITS										
DICHLORODIFLUOROMETHANE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
VINYL CHLORIDE	ug/L		5	<2	<2	<10	<2	<50	<5	<2	81
CHLOROMETHANE	ug/L			<10	18	<50	<10	<50	<5	<5	<50
BROMOMETHANE	ug/L			<10	34	<50	<10	<50	<5	<5	<50
CHLOROETHANE	ug/L			<10	<10	<50	<10	<50	<5	<5	<50
TRICHLOROFLUOROMETHANE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
1,1-DICHLOROETHYLENE	ug/L			<5	7	<25	<5	<50	14	<5	53
METHYLENE CHLORIDE	ug/L			<10	924	800	640	1390	2830	109	8400
ACETONE	ug/L			<50	4100	3040	4840	2130	6690	502	9200
ACROLEIN	ug/L			<50	<50	<250	<50	<250	<25	<25	<250
IODOMETHANE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
CARBON DISULFIDE	ug/L			<10	16	<50	<10	<50	14	<5	<50
ACRYLONITRILE	ug/L			<50	<50	<250	<50	<50	<5	<5	<50
TRANS-1,2-DICHLOROETHYLENE	ug/L			<5	<5	<25	<5	<50	<5	<5	51
1,1-DICHLOROETHANE	ug/L			<5	71	<50	48	68	148	22	290
VINYL ACETATE	ug/L			<50	<50	<250	<50	<50	<5	<5	<50
2-BUTANONE (MEK)	ug/L		5	<50	2070	1390	1480	883	4060	362	1100
CIS-1,2-DICHLOROETHYLENE	ug/L		5	<5	<5	<25	<5	<50	8	<5	<50
BROMOCHLOROMETHANE	ug/L			<5	6	<25	<5	<50	<5	<5	<50
CHLOROFORM	ug/L			<5	178	550	310	422	1230	189	1000
2,2-DICHLOROPROPANE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
1,1,1-TRICHLOROETHANE	ug/L		5	<5	15	70	21	<50	43	11	120
1,1-DICHLOROPROPYLENE	ug/L		5	<5	<5	<25	<5	<50	<5	<5	53
CARBON TETRACHLORIDE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
BENZENE	ug/L			<5	6	<25	<5	<50	14	6	<50
1,2-DICHLOROETHANE	ug/L		5	<5	5	<25	<5	<50	<5	<5	<50
TRICHLOROETHYLENE	ug/L			<5	26	50	24	50	64	20	240
DIBROMOMETHANE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
1,2-DICHLOROPROPANE	ug/L	5870	5	<5	<5	<25	<5	<50	<5	<5	<50
BROMODICHLOROMETHANE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
2-CHLOROETHYL VINYL ETHER	ug/L			<10	140	<50	<10	ND	<5	<5	<50
CIS-1,3-DICHLOROPROPYLENE	ug/L		5	<5	<5	<25	<5	<50	<5	<5	<50
4-METHYL-2-PENTANONE (MIBK)	ug/L		5	<50	604	<250	520	221	1050	<25	<250
TOLUENE	ug/L		5	<5	55	<50	39	<50	112	25	400
TRANS-1,3-DICHLOROPROPYLENE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
1,1,2-TRICHLOROETHANE	ug/L		5	<5	178	140	99	160	500	78	460
1,3-DICHLOROPROPANE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
DIBROMOCHLOROMETHANE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
1,2-DIBROMOETHANE (EDB)	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
TETRACHLOROETHYLENE	ug/L			<5	6	<25	7	<50	16	<5	<50
2-HEXANONE	ug/L			<10	<10	<50	17	<250	<5	<25	<250
1,1,1,2-TETRACHLOROETHANE	ug/L			<5	8	100	9	100	28	<5	<50
CHLOROBENZENE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
1-CHLOROHEXANE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
ETHYLBENZENE	ug/L			<5	10	<25	<5	<50	14	<5	<50
M-XYLENE / P-XYLENE	ug/L			<10	43	<25	15	<100	38	<10	<100
O-XYLENE	ug/L			<5	11	<25	5	<50	14	6	<50
STYRENE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
BROMOFORM	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
1,2,3-TRICHLOROPROPANE	ug/L		10	<5	<5	<25	<5	<50	<5	<5	<50
ISOPROPYLBENZENE (CUMENE)	ug/L			<5	<5	<25	<5	<50	<5	<5	<50

Prepared by: E Tay
Checked by: H Pot

Table 3: Treatment Plant Semi-Annual Influent Sampling Results 2005

SAMPLE MONTH:		ROD	KPDES	June	DEC	June	DEC	June	DEC	June	Jan
DATE COLLECTED:		Requirements	Requirements	6/12/2002	12/11/2002	6/13/2003	12/5/2003	6/3/2004	12/15/2004	6/24/2005	1/4/2006
BROMOBENZENE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
TRANS-1,4-DICHLORO-2-BUTENE	ug/L			<10	<10	<50	<10	<50	<5	<5	<50
N-PROPYLBENZENE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
1,1,2,2-TETRACHLOROETHANE	ug/L			<5	84	100	82	<50	238	45	<50
2-CHLOROTOLUENE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
3-CHLOROTOLUENE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
4-CHLOROTOLUENE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
1,3,5-TRIMETHYLBENZENE	ug/L	23		<5	<5	<25	<5	<50	<5	<5	<50
TERT-BUTYLBENZENE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
1,2,4-TRIMETHYLBENZENE	ug/L			<5	<5	<25	<5	<50	<5	8	<50
SEC-BUTYLBENZENE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
1,3-DICHLOROBENZENE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
1,4-DICHLOROBENZENE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
4-ISOPROPYLTOLUENE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
1,2-DICHLOROBENZENE	ug/L		5	<5	<5	<25	<5	<50	<5	<5	<50
N-BUTYLBENZENE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
1,2-DIBROMO-3-CHLOROPROPANE	ug/L		5	<5	<5	<25	<5	<50	<5	<5	<50
1,2,4-TRICHLOROBENZENE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
NAPHTHALENE	ug/L			<5	<5	<25	<5	<50	<5	15	<50
HEXACHLOROBUTADIENE	ug/L			<5	<5	<25	<5	<50	<5	<5	<50
1,2,3-TRICHLOROBENZENE	ug/L			<25	<5	<25	<5	<50	<5	15	<50
DCA SURROGATE RECOVERY	%	4570	10	102%	90	102%	95%	95%	80%	93%	102%
TOL-D8 SURROGATE RECOVERY	%			93%	95	93%	92%	98%	94%	82%	134%
BFB SURROGATE RECOVERY	%			105%	100	105%	95%	87%	98%	91%	99%
DBFM SURROGATE RECOVERY	%							87	85%	92%	101%
SEMI-VOLATILE ORGANIC COMPOUNDS BY SW8270											
PARAMETERS	UNITS										
PYRIDINE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
N-NITROSODIMETHYLAMINE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
BIS(2-CHLOROETHYL)ETHER	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
PHENOL	ug/L			<10	400	320	400	140	100	<10	140
2-CHLOROPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
1,3-DICHLOROBENZENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
1,4-DICHLOROBENZENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
1,2-DICHLOROBENZENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
BENZYL ALCOHOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
BIS(2-CHLOROISOPROPYL)ETHER	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
2-METHYLPHENOL	ug/L			<10	<10	<10	<10	50	<10	<10	48
HEXACHLOROETHANE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
N-NITROSODI-N-PROPYLAMINE	ug/L	11		<10	<10	<10	<10	<10	<10	<10	<10
3&4-METHYLPHENOL	ug/L			<10	120	150	120	60	115	<10	38
NITROBENZENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
ISOPHORONE	ug/L			<10	60	580	60	60	136	<10	46
2-NITROPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
2,4-DIMETHYLPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	14
BIS(2-CHLOROETHOXY)METHANE	ug/L	250		<10	<10	<10	<10	<10	<10	<10	<10
2,4-DICHLOROPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
2,6-DICHLOROPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
1,2,4-TRICHLOROBENZENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
NAPHTHALENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
4-CHLOROANILINE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
HEXACHLOROBUTADIENE	ug/L	365000	10	<10	<10	<10	<10	<10	<10	<10	<10
4-CHLORO-3-METHYLPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10

Table 3: Treatment Plant Semi-Annual Influent Sampling Results 2005

SAMPLE MONTH:		ROD	KPDES	June	DEC	June	DEC	June	DEC	June	Jan
DATE COLLECTED:		Requirements	Requirements	6/12/2002	12/11/2002	6/13/2003	12/5/2003	6/3/2004	12/15/2004	6/24/2005	1/4/2006
2-METHYLNAPHTHALENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
HEXACHLOROCYCLOPENTADIENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
2,4,6-TRICHLOROPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
2,4,5-TRICHLOROPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
2-CHLORONAPHTHALENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
2-NITROANILINE	ug/L			<50	<50	<50	<50	<10	<10	<10	<10
DIMETHYL PHTHALATE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
ACENAPHTHYLENE	ug/L	23		<10	<10	<10	<10	<10	<10	<10	<10
2,6-DINITROTOLUENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
ACENAPHTHENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
3-NITROANILINE	ug/L			<50	<50	<50	<50	<10	<10	<10	<10
2,4-DINITROPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
4-NITROPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
DIBENZOFURAN	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
2,4-DINITROTOLUENE	ug/L		5	<10	<10	<10	<10	<10	<10	<10	<10
FLUORENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
DIETHYL PHTHALATE	ug/L		5	<10	<10	<10	<10	<10	<10	<10	<10
4-CHLOROPHENYL PHENYL ETHER	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
2-METHYL-4,6-DINITROPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
4-NITROANILINE	ug/L			<50	<50	<50	<50	<10	<10	<10	<10
N-NITROSO-DIPHENYLAMINE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
4-BROMOPHENYL PHENYL ETHER	ug/L	4570	10	<10	<10	<10	<10	<10	<10	<10	<10
HEXACHLOROBENZENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
PENTACHLOROPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
ANTHRACENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
PHENANTHRENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
CARBAZOLE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
DI-N-BUTYL PHTHALATE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
FLUORANTHENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
BENZIDINE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
PYRENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
BENZYL BUTYL PHTHALATE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
BENZO(A)ANTHRACENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
3,3'-DICHLOROBENZIDINE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
BIS(2-ETHYLHEXYL)PHTHALATE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
CHRYSENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
DI-N-OCTYL PHTHALATE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
BENZO(B)FLUORANTHENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
BENZO(K)FLUORANTHENE	ug/L	11		<10	<10	<10	<10	<10	<10	<10	<10
BENZO(A)PYRENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
INDENO(1,2,3-C,D)PYRENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
DIBENZO(A,H)ANTHRACENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
BENZO(G,H,I)PERYLENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
[Surrogate Rec. - B/N]	ug/L										
NITROBENZENE-D5	ug/L	250		105	81	26	81	68%	36%	3%	146%
2-FLUOROBIPHENYL	ug/L			85	102	23	102	76%	31%	3%	80%
P-TERPHENYL	ug/L			107	85	37	85	93%	112%	9%	82%
[Surrogate Rec. - Acids]	ug/L										
2-FLUOROPHENOL	ug/L			68	49	12	49	45%	114%	0%	43%
PHENOL-D6	ug/L			44	39	17	39	0%	1%	7%	24%
2,4,6-TRIBROMOPHENOL	ug/L	365000	10	61	97	40	97	104%	96%	0%	89%

Table 3: Treatment Plant Semi-Annual Influent Sampling Results 2005

SAMPLE MONTH:		ROD	KPDES	June	DEC	June	DEC	June	DEC	June	Jan
DATE COLLECTED		Requirements	Requirements	6/12/2002	12/11/2002	6/13/2003	12/5/2003	6/3/2004	12/15/2004	6/24/2005	1/4/2006
METALS Compound by SW846, 6010 / 7470											
PARAMETERS	UNITS										
Antimony	mg/L	0.062	1.6	<0.1	<0.01	<0.1	<0.01	<0.05	<0.02	0.01	<0.02
Arsenic	mg/L	0.011	0.05	<0.1	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.010
Barium	mg/L	0.231		0.1	0.19	0.12	0.09	0.12	0.8	0.22	0.16
Beryllium	mg/L		0.0053	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	mg/L		0.0011	<0.1	<0.01	<0.1	<0.01	<0.05	<0.01	<0.01	<0.01
Calcium	mg/L			100	120	110	110	124	127	124	120
Chromium	mg/L	0.011	0.011	<0.1	<0.01	<0.1	<0.01	<0.05	<0.01	<0.01	<0.01
Copper	mg/L		0.012	0.6	<0.01	<0.01	<0.01	<0.05	<0.02	<0.01	<0.02
Iron	mg/L		1	4.3	8	5.98	9.18	7.5	51.8	80.4	4.83
Lead	mg/L		0.0032	<0.1	<0.01	<0.1	<0.01	<0.05	<0.02	<0.01	<0.02
Magnesium	mg/L			89	92	120	96.7	119	110	112	110
Manganese	mg/L			1.8	1.51	1.69	1.4	1.71	1.57	1.52	1.2
Mercury	mg/L		0.000012	0.0001	<0.0002	0.0001	<0.0002	0.0002	<0.0002	<0.0002	<0.0002
Nickel	mg/L		0.16	<0.1	0.02	0.03	0.03	0.03	<0.01	0.09	0.02
Selenium	mg/L		0.005	<0.1	<0.01	<0.1	<0.01	<0.05	0.08	<0.05	<0.01
Silver	mg/L		0.00012	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01
Thallium	mg/L	0.011	0.04	<0.1	<0.01	<0.1	<0.01	<0.05	<0.05	<0.01	<0.05
Zinc	mg/L		0.11	<0.1	0.02	0.05	0.03	<0.05	0.1	0.14	0.04
GENERAL INORGANICS											
PARAMETERS	UNITS										
BOD	mg/L			123	111	81	47	104	220	51	53
COD	mg/L			254	290	197	120	254	340	190	180
Cyanide total	mg/L			0.01	<0.01	0.01	0.04	<0.01	<0.01	<0.01	<0.01
Nitrogen, Ammonia	mg/L			9	8	6.9	6	4	5.9	7.1	8.5
Nitrogen, Kjeldahl	mg/L			9	10	7.9	6	6.4	7.6	6.6	9.2
Nitrogen, Nitrate	mg/L			0.55	<0.5	<0.5	<0.01	0.4	0.41	0.15	<0.11
Nitrogen, Nitrite	mg/L			<0.05	<0.05	0.007	<0.01	<0.15	0.6	0.15	<0.15
Nitrogen, Nitrite, and Nitrate	mg/L			0.55	0.5	0.007	<0.01	0.4	<1.0	<0.15	<0.5
Organic Carbon total	mg/L			120	55	49.3	42	75.9	166.2	41.8	50
PH	s.u.			6.8	7.82	6.67	7	6.6	7.2	6.88	7.5
Phosphate Ortho-	mg/L			<0.1	<0.1	0.1	<0.3	<0.2	<0.64	0.18	<0.61
Phosphorus total	mg/L			<1	0.1	<0.1	0.09	<0.1	0.3	0.2	<0.1
TDS	mg/L			1290	1300	1310	1424	1480	1500	1500	1500
TSS	mg/L			42	10	11	10	29	<5	284	13
Turbidity	NTU			54	300	100	36.6	5.1	180	2.8	180

Notes:
NA = Not analyzed
Laboratory analysis by Microbac Labs Louisville,Ky

Prepared by: E Te
Checked by: H Pa

Table 5: OP Unit One Annual Groundwater Montoring Wells Sampling Results 2005

DATE COLLECTED:		OP UNIT ONE - NOVEMBER 8, 2005										
SAMPLE ID:		MW-3	MW-4	MW-5	MW-6	MW-7	MW-9	MW-11	MW-12	MW-13	MW-14	
VOLATILE ORGANIC COMPOUNDS												
PARAMETERS	UNITS											
Acetone	ug/l	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	
1,1-Dichloroethane	ug/L	ND	ND	ND	ND	ND	ND	3	ND	NA	NA	
1,1-Dichloroethene	ug/L	ND	ND	ND	ND	ND	ND	1	ND	NA	NA	
1,2-Dichloroethene (total)	ug/L	ND	ND	ND	ND	ND	ND	1100	ND	NA	NA	
Toluene	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	
Trichloroethene	ug/L	ND	ND	ND	ND	ND	ND	1500	ND	NA	NA	
Xylene (Total)		ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	
SEMI-VOLATILE ORGANIC COMPOUNDS												
PARAMETERS	UNITS											
bis(2-Ethylhexyl) phthalate	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	
Caprolactam	ug/L	ND	ND	3	3	53	ND	ND	ND	NA	NA	
Naphthalene	ug/L	ND	ND	ND	2	ND	ND	ND	ND	NA	NA	
1,1,1- Trichloroethane	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	
METALS												
PARAMETERS	UNITS											
Aluminum	ug/L	2480	8230	4970	11400	450	485	90800	332	NA	NA	
Antimony	ug/L	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	NA	NA	
Arsenic	ug/L	6.1	8.5	6.1	11.4	6.1	6.1	52.9	6.1	NA	NA	
Barium	ug/L	55	86.5	39.2	180	67.8	264.6	104	11.8	NA	NA	
Beryllium	ug/L	0.14	0.84	0.26	1.1	0.14	0.14	3.3	0.14	NA	NA	
Cadmium	ug/L	0.22	0.22	0.22	0.23	0.22	0.34	0.22	0.22	NA	NA	
Calcium	ug/L	63900	57100	85800	65700	11500	65700	61300	33800	NA	NA	
Chromium	ug/L	3.46	16.8	66	32.4	1.3	6.4	107	0.95	NA	NA	
Cobalt	ug/L	9	18.2	8.2	20.5	4.6	0.84	102	0.78	NA	NA	
Copper	ug/L	17.2	25.6	18.6	34	2.7	2.8	119	1.2	NA	NA	
Iron	ug/L	7250	24300	11100	38400	2980	951	198000	1110	NA	NA	
Lead	ug/L	3.2	19.6	3.9	46.4	1.9	1.9	40	1.9	NA	NA	
Magnesium	ug/L	41400	51200	71800	44600	26900	36700	95500	300000	NA	NA	
Manganese	ug/L	460	891	545	2290	2060	362	2560	249	NA	NA	
Mercury	ug/l	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	NA	NA	
Nickel	ug/L	394	35.8	78	59.2	16.7	16.4	212	2.7	NA	NA	
Potassium	ug/L	8090	10900	12300	11500	31100	9940	19300	20300	NA	NA	
Selenium	ug/L	4.4	4.4	4.4	4.9	4.4	4.4	4.4	4.4	NA	NA	
Silver	ug/L	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	NA	NA	
Sodium	ug/L	156000	35300	197000	36300	33400	48800	49700	2900000	NA	NA	
Thallium	ug/L	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	NA	NA	
Vanadium	ug/L	7	16.8	9.2	24.2	0.99	1.7	316	1.1	NA	NA	
Zinc	ug/L	28.6	81	50.4	130	13.6	3.9	636	47.3	NA	NA	
Cyanide	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

Notes:

ND = Not detected above laboratory detection limits listed on laboratory data sheets

NA = Not analyzed

Laboratory analysis by Lancaster Laboratories at Lancaster, PA.

Prepared by
Checked by

Appendix E

Quarterly Monitoring Reports 2001-2005

Appendix E (11 MB) of this Five-Year Review is available by placing a request using the Customized CERCLIS/RODS Report Order Form.

http://www.epa.gov/superfund/sites/phonefax/rods.htm

Appendix F

Smith's Farm Superfund Community Fact Sheet

SUPERFUND FACT SHEET

Smith's Farm Site

Brooks, KY

Region 4 **June 2006**

This fact sheet is not to be considered a technical document but has been prepared to provide the general public with a better understanding of activities that have been occurring at the Site. For technical information, please review documents in the Information Repository.

PURPOSE

The purpose of this fact sheet is to explain the 5-year review process as well as clarify both the legal and health related consequences related to trespassing on the Smith's Farm Superfund site.

SITE HISTORY

Between 1950 and 1989, the Smith's Farm property was used as both a permitted and unpermitted disposal area for industrial and commercial wastes. The site was placed on the National Priorities List (NPL) in 1986, qualifying it for clean-up by the US EPA. Clean-up activities included transporting the most hazardous materials off-site and containing remaining wastes under an EPA approved cap consisting of synthetics liners, clay, several feet clean soil and vegetation to prevent soil erosion. Ongoing activities include collecting and treating leachate from the landfill and installing fences, gates and warning signs.

5-YEAR REVIEW

According to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), remedial actions which result in any hazardous substances, pollutants, or contaminants remaining at the site must be reviewed every five years to ensure protection of human health and the environment. The 5-year review process involves inspecting the site, reviewing site documents and data and conducting interviews. EPA is currently conducting second 5-year review for the Smith's Farm site. The first 5-year review can be found at:

http://www.epa.gov/superfund/sites/fiveyear/f01-04008.pdf

or call (404)562-8821 to request a paper copy.

TRESPASSING

Although EPA has declared the Smith's Farm remediation fully "protective of human health and the environment," contamination does still exist on the site. While the site poses little risk to the surrounding community, trespassing on the site can damage the cap and greatly increases the risk of exposure to contamination. For this reason, trespassing on the site can lead to serious health and legal issues for both the trespasser and the community.

HEALTH ISSUES

As stated above, contamination does remain on the Smith's Farm site. Contaminants on site include:

- Volatile Organic Compounds (VOCs),
- Metals (including lead),
- Polychlorinated Biphenols (PCBs),
- Polycyclic Aromatic Hydrocarbons (PAHs), and
- Pesticides

Health effects related to these contaminants include:

- Damage to the brain, heart, liver and kidneys
- Birth defects
- Skin damage
- Nervous system damage
- Cancer

Exposure to these contaminants can occur through contact with contaminated soil or leachate. Since completion, the cap has been continuously monitored to ensure that it adequately protects the communities surrounding the site from risks mentioned above. However, trespassing on the site greatly increases one's risk of exposure and the associated health problems.

In addition, many activities related to trespassing, including vandalism and driving off-road vehicles, have the potential to damage the remedy. Damage to the landfill cap, gas vents, wells or any other part of remedy interferes with the ability of the remedy to adequately protect the surrounding community from the risks listed above.

LEGAL ISSUES

The Smith's Farm Superfund site is private property and as such, any unauthorized activities on the site are illegal and punishable by law.

Conclusion

Due to the reasons mentioned in this fact sheet, trespassing on the Smith's Farm site is illegal and dangerous. Please be aware of dangers associated with illegally entering the site and think before you put yourself and your community at risk.

FOR MORE INFORMATION

If you would like more information or would like to talk about the Site, please contact the following:

Mr. Clark Rushing
Remedial Project Manager
Phone: 404-562-8821

Mr. Eddie Wright
Public Affairs Specialist
Phone: 404-562-8669

Or visit the Smith's Farm Information Repository at:

Ridgeway Memorial Library
2nd and Walnut St.
Shepherdsville, KY 40165