

RECORD OF DECISION / STATEMENT OF BASIS

PETER KIEWIT LANDFILL

**UNITED STATES DEPARTMENT OF ENERGY
PORTSMOUTH GASEOUS DIFFUSION PLANT
PIKE COUNTY, OHIO**

MAY 1997



Mr. Eugene Gillespie, Site Manager
United States Department of Energy
Portsmouth Site Office
Portsmouth Enriching Office
P.O. Box 700
Piketon, OH 45661-0770

SRF-5J

Subject: Decision Document for the Peter Kiewit Landfill Solid Waste
Management Unit,
Portsmouth Gaseous Diffusion Plant, Piketon, Ohio
OH7 890 008 983

Dear Mr. Gillespie:

The Decision Document for the Peter Kiewit Landfill Solid Waste
Management Unit has been signed by the United States Environmental
Protection Agency (U.S. EPA) and is enclosed for your signature. Upon
United States Department of Energy signature, please return the signed
original to the U.S. EPA.

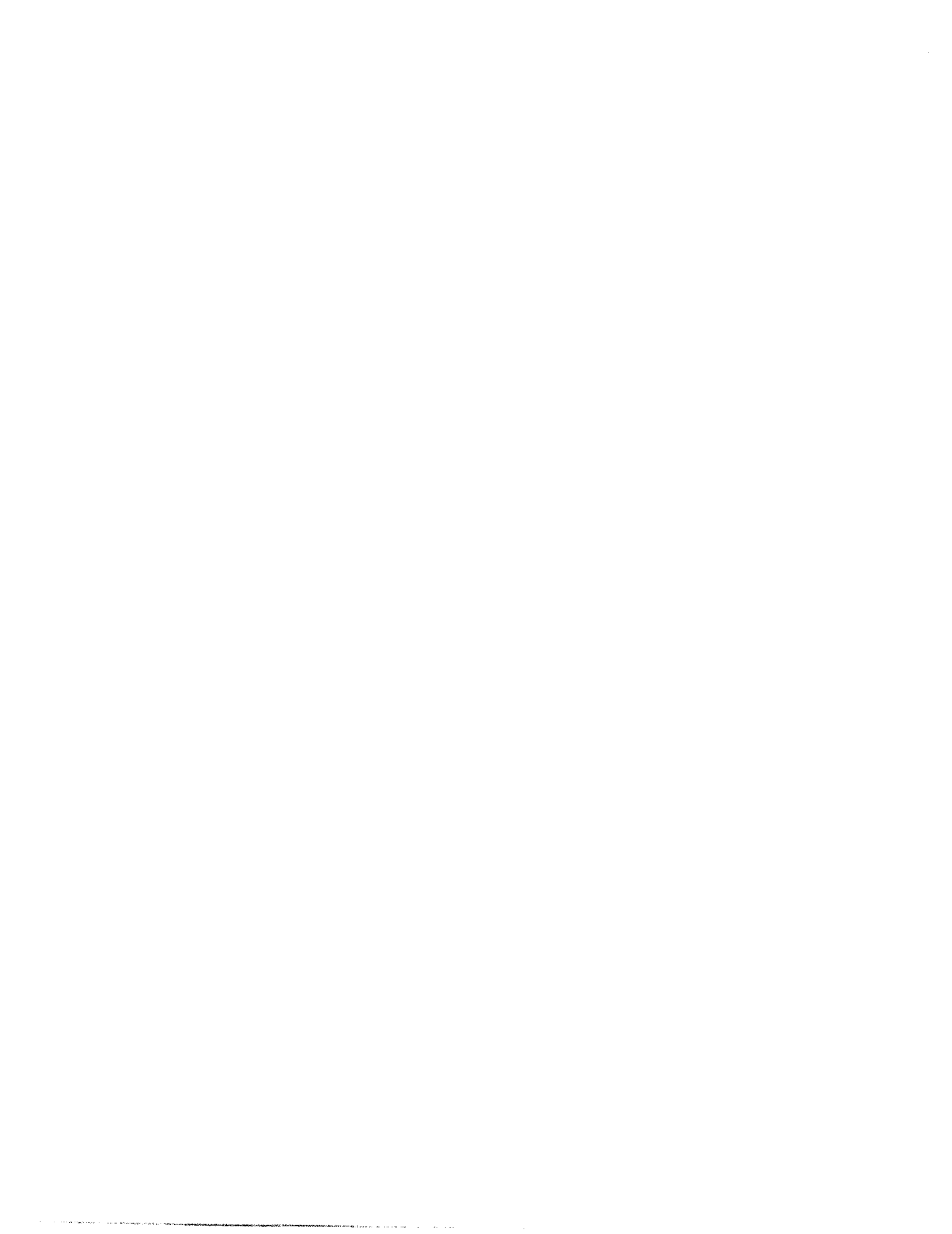
If you have any questions, please call me at (312) 886-4591.

Sincerely,



Gene Jablonowski
Remedial Project Manager
Federal Facilities Section
Superfund Remedial Response Branch #2

Enclosure





Department of Energy
Portsmouth Site Office
P.O. Box 700
Piketon, Ohio 45661-0700
Phone: 614-897-5010

May 27, 1997
EF-21-8445

Mr. T. David Taylor, Site Manager
Lockheed Martin Energy Systems
Post Office Box 628
Piketon, Ohio 45661

Dear Mr. Taylor:


**RECORD OF DECISION FOR THE PETER KIEWIT LANDFILL AT THE PORTSMOUTH
SITE, PIKETON, OHIO**

Enclosed is the approved Decision Document by the U. S. EPA and the DOE-ORO Manager of Environmental Management. The document was signed on May 15, 1997 and May 23, 1997, respectively. The selected remedy consists of the following requirements:

- The continuation of the seep collection system currently operating along the east side of the landfill;
- The placement of an engineered cap which meets RCRA Subtitle D requirements;
- Institutional controls necessary to ensure the integrity of the remedial action;
- The installation of a subsurface vertical barrier (if necessary) to prevent the flow of groundwater into landfilled waste;
- Groundwater and surface water/sediments monitoring programs.

If you have questions or comments, call Dewintus Perkins at extension 5524.

Sincerely,


Eugene W. Gillespie
Site Manager
Portsmouth Site Office

EF-21:Perkins

Enclosure

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PETER KIEWIT LANDFILL
UNITED STATES DEPARTMENT OF ENERGY
PORTSMOUTH GASEOUS DIFFUSION PLANT
PIKE COUNTY, OHIO**

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DECLARATION FOR THE RECORD OF DECISION / STATEMENT OF BASIS

SITE NAME AND LOCATION

Peter Kiewit Landfill Solid Waste Management Unit
Portsmouth Gaseous Diffusion Plant (PORTS)
United States Department of Energy (U.S. DOE), Pike County, Ohio

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Peter Kiewit Landfill site on the U.S. DOE Reservation in Pike County, Ohio. The U.S. DOE site is being cleaned up under an Administrative Order signed by U.S. DOE and United States Environmental Protection Agency, Region 5 (U.S. EPA) and a Consent Decree between U.S. DOE and the State of Ohio. Both legal agreements were signed in 1989. This decision document serves as the Statement of Basis (SB) in accordance with the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984, and the record of decision (ROD) in accordance with the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the Administrative Record for this action. The specific documents in the Administrative Record include but are not limited to the Quadrant I RCRA Facility Investigation (RFI), the Peter Kiewit Landfill Corrective Measures Study (CMS), and the Peter Kiewit Landfill Preferred Plan. Attachment A to this decision document (herein after referred to as SB/ROD) is the Administrative Record Index for this decision.

The State of Ohio concurs on the selected remedy and has issued its own decision document for selection of the response action for the Peter Kiewit Landfill. A copy of the State of Ohio decision document is presented in Attachment B to this SB/ROD.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from the site, if not addressed by implementing the response action selected in this SB/ROD, may present an imminent and substantial endangerment to public health, welfare, and the environment.

DESCRIPTION OF THE SELECTED REMEDY

The selected remedy at the Peter Kiewit Landfill will address the principal threats posed by the site through containment of source materials and treatment of leachate. The major components of the selected remedial action include:

- The continuation of the seep collection system currently operating along the east side of the landfill. This system was installed in November of 1994 and collects leachate migrating from the landfill towards Big Run Creek. The leachate is then treated at the X-622 treatment plant located on the south central part of the U.S. DOE reservation (within QI).
- The placement of an engineered cap which meets RCRA Subtitle D requirements. This consists of a recompacted clay cap or equivalent. The cap material will be covered with a drainage layer

and a vegetative layer at least 30 inches in depth to prevent frost damage to the cap material.

- Institutional controls necessary to ensure the integrity of the remedial action. Site deed restrictions and fencing will be used to restrict access as necessary to prevent the disturbance of the capped area.
- The installation of a subsurface vertical barrier if necessary to prevent the flow of groundwater into landfilled waste.
- Ground water and surface water/sediments monitoring program to confirm that the containment and treatment of source materials is sufficiently protective of human health and the environment.

STATUTORY DETERMINATIONS AND REMEDY SELECTION STANDARDS

This SB/ROD complies with the statutory mandates of both CERCLA and RCRA as described below.

CERCLA statutory requirements: The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. However, because treatment of the principal threats of the Peter Kiewit Landfill was not found to be practicable, this remedy does not satisfy the statutory preference for treatment as a principle element of the remedy. The wastes that comprise the principal threat from the landfill will be contained on-site in accordance with all applicable or relevant and appropriate requirements (ARAR).

Because this remedy will result in hazardous substances remaining on-site above health-based levels, a review will be conducted within five (5) years after construction of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

RCRA standards for remedy selection: The selected remedy meets RCRA standards as follows: The selected remedy is protective of human health and the environment, controls the source of releases that may pose a threat to human health and the environment, and complies with applicable standards for management of wastes. This remedy will provide long-term effectiveness, will reduce the mobility of contaminants, and is implementable.

5/15/97
Date

Wm. E. Mayo
U.S. EPA

5/23/97
Date

John R. [Signature]
U.S. DOE

DECLARATION FOR THE RECORD OF DECISION / STATEMENT OF BASIS

SITE NAME AND LOCATION

Peter Kiewit Landfill Solid Waste Management Unit
Portsmouth Gaseous Diffusion Plant (PORTS)
United States Department of Energy (U.S. DOE), Pike County, Ohio

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RCRA standards for remedy selection: The selected remedy meets RCRA standards as follows: The selected remedy is protective of human health and the environment, controls the source of releases that may pose a threat to human health and the environment, and complies with applicable standards for management of wastes. This remedy will provide long-term effectiveness, will reduce the mobility of contaminants, and is implementable.

5/15/97
Date

Date

Wm. E. Mayo
U.S. EPA

U.S. DOE

DECISION SUMMARY - PETER KIEWIT LANDFILL

1.0 SITE LOCATION AND DESCRIPTION

The Portsmouth Gaseous Diffusion Plant (PORTS) facility is located near Piketon, Ohio, in the south central portion of the state (see Figure 1, *USDOE-PORTS Site Location*). The PORTS facility was constructed between 1952 and 1956 and is owned by U.S. DOE. The active portion of the PORTS plant occupies approximately 1,000 acres of a 4,000-acre U.S. DOE reservation in south central Ohio, approximately 80 miles south of Columbus, 20 miles north of Portsmouth, and 1 mile east of U.S. Route 23, near Piketon. The principal process at the PORTS facility is the separation of uranium isotopes via gaseous diffusion.

The PORTS facility has been operating since 1954 enriching uranium for use in commercial nuclear reactors and for use by the U.S. Navy in power reactors in the nuclear navy. Support operations include the feed and withdrawal of material from the primary process, water treatment for sanitary and cooling purposes, decontamination of equipment removed from the plant for maintenance or replacement, recovery of uranium from various waste materials and treatment of sewage wastes and cooling water blow down. The construction, operation and maintenance of this facility requires the use of a wide range of commercially available chemicals. Continuous operation of this facility since 1954 has resulted in the generation of inorganic, organic and low level radioactive waste materials.

The immediate region surrounding the site consists of Pike County, Scioto County, Jackson County, and Ross County. Approximately 24,250 people reside in Pike County, and scattered rural development is typical. Piketon is the nearest town, approximately 5 miles north of the facility on U.S. Route 23. Piketon had an estimated population of 1,717 in 1990. The county's largest community, Waverly, has approximately 4,500 residents and is situated 12 miles north of the facility.

Land within a 5-mile radius of PORTS is primarily undeveloped, including cropland, woodlots, pasture, and forest. This distribution includes approximately 25,000 acres of farmland and 25,000

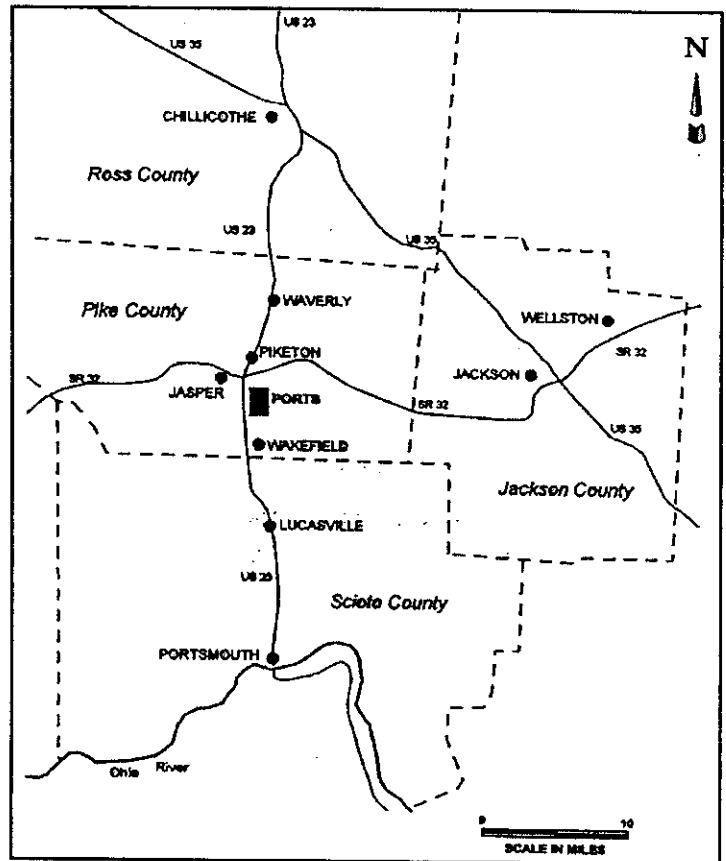


Figure 1 - U.S. DOE-PORTS Site Location

acres of forest. There is approximately 500 acres of urban land within the same radius.

The PORTS facility occupies an upland area of southern Ohio with an average land surface elevation of 670 feet above mean sea level. The terrain surrounding the plant site consists of marginal farmland and wooded hills, generally with less than 100 feet of relief. The plant is located within a mile-wide abandoned river valley.

The geology of the PORTS plant site consists of unconsolidated material overlying bedrock formations. The unconsolidated material is known as the Teays formation. The Teays formation is composed of two members, the Minford silt and clay (Minford), and the Gallia sand and gravel (Gallia). The bedrock formations underlying the Teays formation are, in descending order, the Sunbury shale, the Berea sandstone, and the Bedford shale.

For purposes of the RCRA Facility Investigation (RFI), the PORTS facility has been separated into four quadrants (Fig. 2). Each quadrant roughly corresponds to the uppermost groundwater flow paths beneath the site. The PORTS groundwater system includes two water-bearing units, the Berea Sandstone bedrock and the unconsolidated Gallia, and two aquitards, the Sunbury Shale (Sunbury) and the unconsolidated Minford. Although the Minford silt does not transmit groundwater as readily as Gallia, the basal silt portion of the Minford is generally grouped with the Gallia as part of the uppermost water-bearing unit at the PORTS site.

The Peter Kiewit Landfill is located in the central portion of Quadrant I (QI) of the PORTS facility, just west of Big Run Creek (BRC) and approximately 200 feet east of the XT-847 GCEP construction warehouse (see Figure 2, *USDOE-PORTS Site Map*). The Peter Kiewit Landfill was used from approximately 1953 until 1968. During plant construction, the landfill was used as a salvage yard, burn pit and trash disposal area. After plant construction, the landfill was used as a sanitary landfill. It is probable that solid wastes now known to be potentially hazardous were landfilled at this site. The landfill is about 23.5 acres in size

2.0 HISTORY OF ENFORCEMENT ACTIVITIES

As a result of chemicals used to support the uranium enrichment process, and the presence of uranium and technetium, waste management units at the site have contaminated soils and groundwater. In 1986, the State of Ohio filed suit against U.S. DOE resulting in a Consent Decree (CD) between the State of Ohio and U.S. DOE which became effective in August of 1989. The CD outlines the requirements for handling hazardous waste generated at the site and for the investigation and clean-up of the site. As part of the Resource Conservation and Recovery Act (RCRA) corrective action program, U.S. EPA and U.S. DOE signed a similar agreement in September of 1989. This agreement is an administrative order negotiated between Region V of U.S. EPA and U.S. DOE. Both the Administrative Order on Consent (AOC) and the CD require that the investigation of the site proceed according to quadrant boundaries established in the agreements. A schedule is attached to each agreement that outlines when documents pertaining to the investigation or corrective measures studies are to be submitted to Ohio EPA and U.S. EPA (hereafter referred to as the "Agencies"). A separate schedule shall be submitted to the Agencies for cleanup of the individual waste management units.

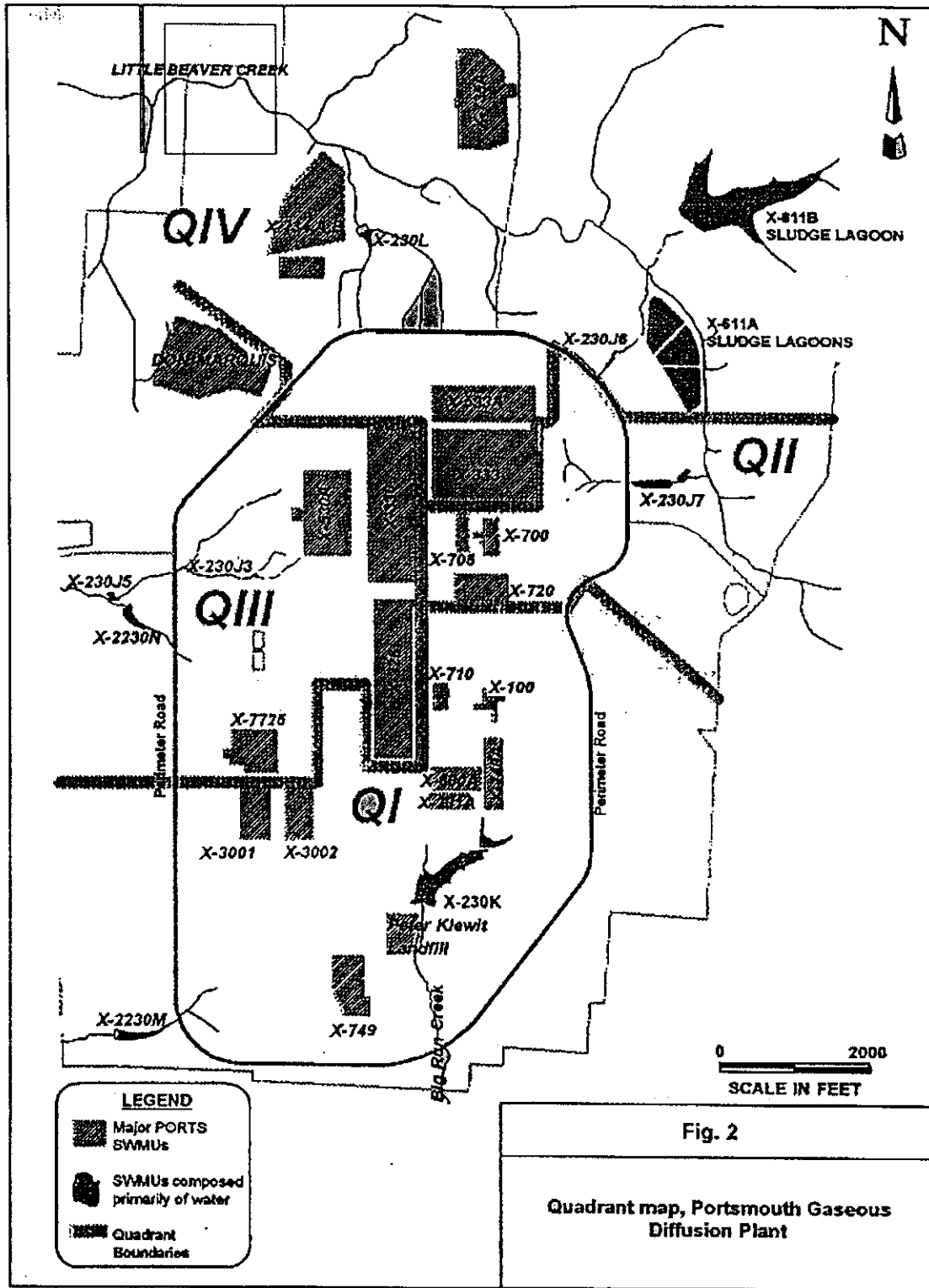


Figure 2, U.S. DOE-PORTS Site Map

3.0 COMMUNITY RELATIONS ACTIVITIES

A public meeting was held at the Vern Riffe Vocational School on April 18, 1995 to discuss the preferred plan for the Peter Kiewit Landfill. An information repository is located at U.S. DOE's Environmental Information Center located at 505 West Emmit Avenue in Waverly, Ohio. The public can also review these documents at Ohio EPA's Southeast District Office or at U.S. EPA's Region V office located in Chicago.

Details of the investigation at the Peter Kiewit Landfill can be found in the draft RCRA Facility Investigation (RFI) report located at the Information Center. The draft final Cleanup Alternatives Study/Corrective Measures Study (CAS/CMS) report and the preferred plan were discussed and presented at the April 18, 1995 public meeting. The public comment period on the proposed remedy extended from April 11, 1995 to May 17, 1995.

An announcement regarding the public comment period and the availability of the documents related to the clean-up at the site was published in the Waverly Watchman and in the Portsmouth Times newspapers. No written or verbal requests were received to extend the public comment period.

The public meeting, held on April 18, 1995 at the Vern Riffe Vocational School, was attended by approximately 25 members of the public. Representatives from U.S. EPA, and Ohio EPA answered questions regarding the preferred plan, summarized the findings of the RFI, and accepted statements from members of the public. Comments, including formal statements from four community members, were recorded by a court reporter. A transcript of the meeting is included in the Administrative Record. A total of two written submittals were received from the public during the public comment period.

Ohio EPA's written responses to comments received during the public comment period are contained in the Responsiveness Summary, which is part of this document. Ohio EPA's written responses were reviewed and approved by U.S. EPA. The public participation process was designed to be consistent with the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and therefore satisfies Sections 113(k)(2)(B)(i-v) and 117 of this law. The decision for the remedial alternative is based on the administrative record. The administrative record index for the response action is presented in Appendix A of this document.

4.0 SCOPE AND ROLE OF THE RESPONSE ACTION

For purposes of the RFI the PORTS facility has been separated into four quadrants. Each quadrant roughly corresponds to a distinct groundwater flow cell within the primary water-bearing unit beneath the site and has been investigated separately. Peter Kiewit Landfill is located in Quadrant I (QI), and is one of twenty-one Solid Waste Management Units (SWMUs) in QI currently undergoing investigation or remediation.

The response action at the Peter Kiewit Landfill is intended to be a long-term action designed to address contamination and potential contamination caused by waste disposed at the site. The remedial action will address the principal threats at the facility: contaminated soils, leachate, and landfilled solid waste through treatment of the leachate and containment of wastes in order to meet all ARARs. Wastes disposed of in the landfill have been identified as the primary risk to groundwater, surface water, and sediments.

Consequently, actions to treat and/or contain contaminated soils and wastes will, in addition to minimizing concerns associated with direct contact, minimize the potential for contaminants to infiltrate to the groundwater or leach to surface water. When the selected remedy is completed, no further remedial action at the site other than groundwater and surface water monitoring and operation and maintenance (O&M) activities are envisioned. The monitoring will be conducted to assure that all leachate sources are directed toward treatment and to detect any future migration of chemicals to surface water or groundwater. Since hazardous substances will remain above health-based levels in the capped area of the site, five-year reviews of the remedial action will be necessary.

5.0 SUMMARY OF RCRA FACILITY INVESTIGATION

The QI RFI was conducted during 1991 and the initial RFI report submitted to U.S. EPA and Ohio EPA on February 19, 1992. Phase II of the investigation was conducted between October 1993 to January 1994. The Phase II RFI report was submitted to the U.S. EPA and Ohio EPA on June 20, 1994. The Peter Kiewit Landfill was investigated as part of the QI RFI.

Because a permit was not required at the time of landfill operation, the exact boundaries of the filled area and the exact nature of all of the wastes disposed at the Peter Kiewit Landfill are not known (see Figure 3, *Approximate Landfill Boundaries*, for approximate landfill boundaries based on the current topography of the Peter Kiewit area). An estimate of the western boundary location cannot be made due to the presence of the XT-847 building. Borings and monitoring wells west of XT-847 such as the PK-08G and PK-09G wells did not encounter waste during installation. However, it is possible that the southern half of the XT-847 warehouse was built over a portion of the Peter Kiewit Landfill. Together, the Peter Kiewit Landfill and the XT-847 building cover approximately 23.5 acres.

During the QI RFI, several intermittent seeps located near the base of the landfilled material were discovered along the eastern edge of the landfill. Sampling during and after the RFI field work has indicated the presence of contaminants in the seep discharge and associated seep sediments.

5.1 Nature and Extent of Contamination

As done with all four quadrants, the investigation of QI consisted of Phase I and Phase II investigations. The Phase I investigation consisted of the installation of 11 monitoring wells, 2 sediment samples near Big Run Creek and 2 samples of leachate from the Peter Kiewit Landfill.

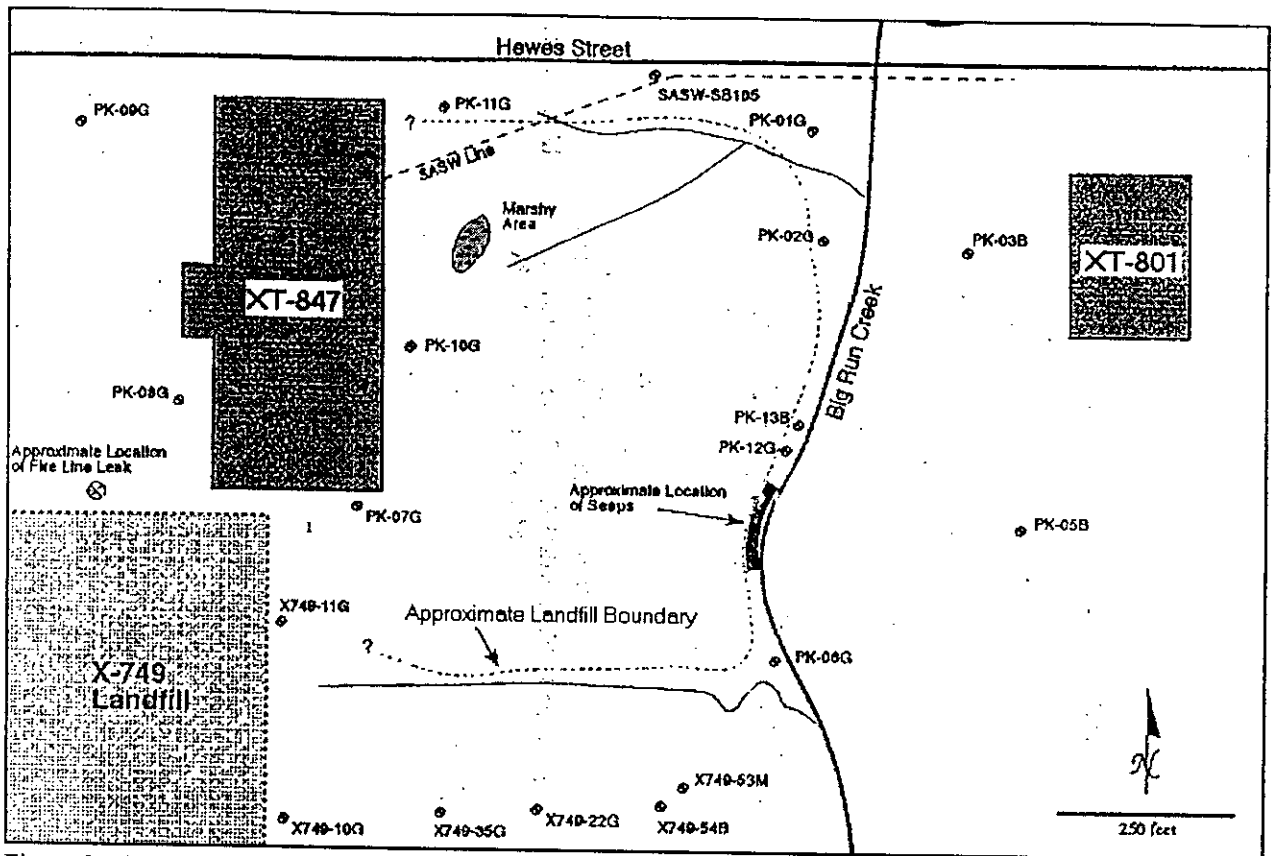


Figure 3 - Approximate Landfill Boundaries

The leachate samples were analyzed for over 200 volatile organic chemicals (VOCs) and also radiological analyses including uranium and Technetium-99, both previously detected radioactive materials at PORTS. The two sediment samples were analyzed for over 30 VOCs, over 20 metals, radiological analyses and also for freon and fluoride, both used on the plant site. The 11 monitoring wells were installed around the Peter Kiewit Landfill with 9 being drilled in the Gallia sand and gravel layer and 2 in the underlying Berea sandstone. A random soil sample was taken from each well and ground water was sampled from each well for VOCs and radiologicals.

During the Phase II investigation, eight hand auger soil samples were collected along the east side of the Peter Kiewit Landfill to provide better definition in this area. The results of the Phase I and Phase II investigations revealed that VOCs and Aroclor-1260 (PCB) were detected in surface water from the seeps located on the east side of the landfill. Gross alpha and gross beta radioactivity above preliminary background levels were also detected in these seep samples. The sediment samples taken in the area of the seeps showed levels of semi-volatile organic chemicals (SVOCs) and VOCs.

VOCs were detected in ground water at 4 wells. One well, PK-03B, showed 70 parts per billion of trichloroethylene (TCE) in one sample but the duplicate was non-detect. This well will be

resampled to resolve this discrepancy. Due to the location of the well and the direction of groundwater flow, the volatile organics detected are likely associated with the X-749/X-120 landfill ground water plume located southwest of Peter Kiewit. Migration of volatile organics from the X-749 area in an easterly direction toward Big Run Creek has been documented from past groundwater sampling.

Soil samples collected along the east side of the landfill revealed low levels of VOCs, SVOCs and elevated levels of PCBs (Aroclor-1260) in three samples. Sediment samples collected in the seep drainage disclosed numerous semi-volatile compounds, and low levels of radiologicals. All investigation samples are detailed in the revised Draft RFI. An interim action was completed in late 1994 to re-route the creek away from the landfill and collect and treat leachate from seeps located along the eastern side of the landfill.

6.0 SUMMARY OF RISK ASSESSMENT

The assessment of potential or current risks from wastes present at a SWMU such as the Peter Kiewit Landfill is based on guidance provided by the U.S. EPA, in particular the 1989 "Risk Assessment Guidance for Superfund" (RAGS) and the 1992 "Guidelines for Exposure Assessment." These guidance documents are founded on well established chemical risk assessment principles developed for the regulation of environmental contaminants. The risk assessment for contaminated sites on the U.S. DOE-PORTS site consists of a human health risk assessment and an ecological risk assessment. The human health risk assessment is conducted assuming that no institutional controls such as fencing are in place and that residential use is possible. A future residential scenario at a SWMU is considered the reasonable maximum exposure (RME) for risk assessment purposes. The initial risk assessment conducted for the site assumes that no future cleanup action is taken and is referred to as the baseline risk assessment (BRA). The baseline risk assessment consists of the following steps:

6.1 Identification of Chemicals of Concern

After data collected during the RCRA facility investigation (RFI) is evaluated, those chemicals that were detected during lab analysis were retained as Chemicals of Concern (COC). Some data not appropriate for certain exposure pathways was excluded. For example, deep soil data greater than 10 feet would not be expected to be available for possible ingestion by children or adults and is only a threat to ground water contamination. Therefore, this data was not included in the assessment of soil ingestion risks.

6.2 Exposure Assessment

This step involves the evaluation of potential human exposures to site chemicals. There are basically four separate tasks necessary in the exposure assessment. These steps are: (a) characterization of the exposure setting; (b) identification of exposure pathways; (c) estimation of environmental concentrations; and (d) estimation of human intake.

6.2.1 Characterization of the Exposure Setting

This step involves modeling or simulating those exposure scenarios considered possible on the site both for current use and future use. The following scenarios were included in the baseline risk assessment:

6.2.1.1 Current Use Scenarios

- on-site worker
- off-site worker
- off-site recreational population

The on-site worker scenario describes potential exposures to outdoor media at PORTS for a worker engaged in normal day-to-day activities throughout the quadrant. Because contaminated areas on the site did not extend to off-site locations, an assessment of current-use, off-site residential scenarios was not conducted. Current-use off-site residential risk estimates for air inhalation pathways will be assessed upon completion of the Air RFI work. The recreational population scenario was developed to assess potential exposures to surface water bodies on the PORTS reservation and to fish and game eaten by local recreational anglers and hunters. In estimating exposure for both current off-site resident and recreational populations, any significant direct access to media within the quadrant being evaluated was considered unlikely. Exposures were assumed to result from contaminants that could potentially migrate off-site.

Future use scenarios were developed consistent with the reasonable maximum exposure assumption of unrestricted access to the site. Specifically, on-site residential development and an on-site recreational population were assumed as potential exposure scenarios. For the future use conditions, the following scenarios were developed:

6.2.1.2 Future Use Scenarios

- on-site resident
- on-site recreational population
- on-site worker
- off-site resident
- off-site recreational population

In addition to the on-site worker who is involved in normal day-to-day activities, another exposure scenario modeled under both current and future land use conditions is the excavation worker. This worker is assumed to be in contact with contaminated media during periodic, intrusive activities such as construction or landscaping.

6.2.2 Identification of Human Exposure Pathways

The above exposure scenarios were developed to model or simulate possible exposure situations

found at the site. It is also necessary to determine the most likely exposure pathways as well. An example of an exposure pathway is the ingestion of contaminated groundwater under both current and future site use. The following exposure pathways were evaluated:

- Exposure to groundwater via ingestion of drinking water, and dermal contact and inhalation of volatiles while showering;
- Exposure to soil via incidental ingestion and dermal contact, and via external gamma radiation from radionuclides present in soil;
- Exposure to sediment via incidental ingestion and dermal contact;
- Exposure to surface water via incidental ingestion and dermal contact;
- Exposure to air via inhalation of vapors and particulates;
- Exposure to vegetables grown and to beef and milk from cattle pastured on contaminated land;
- Exposure via ingestion of local game contaminated by grazing on land affected by plant operations; and
- Exposure via ingestion of fish.

6.2.3 Estimation of Environmental Concentrations

In this step, concentrations of chemicals and radionuclides in various environmental media from which exposure may occur are estimated via sampling results and mathematical modeling.

6.2.4 Estimation of Human Intake

This step involves calculating the amount of a substance received by an individual through exposure to chemicals and radionuclides in the various environmental media. Chemical intakes (referred to as chronic daily intakes or CDIs) are typically expressed in terms of the amount of material in contact with the body for a certain time period, and are calculated as a function of chemical concentration in the soil or water, how often the exposure occurs and how long (exposure frequency), body weight, and the portion of a lifetime that exposure occurs.

The generic equation for calculating the CDI is as follows:

$$CDI = \frac{C_x CR_x EF_x ED}{B_w x AT}$$

where: CDI = Chronic daily intake, mg/kg/day

C	=	Chemical concentration in soil or water, e.g. mg/kg soil
CR	=	Contact rate, e.g., kg/soil/day
EF	=	Exposure frequency, days/year
Bw	=	Body weight, kg
AT	=	Averaging time; portion of life time over which exposure is averaged (days).

Variations of this equation are used when calculating air inhalation and radiological exposures.

6.3 Toxicological Assessment

The toxicological assessment involves the identification of adverse health effects associated with exposure to a chemical or radionuclide and the relationship between the extent of exposure and the likelihood and/or severity of adverse effects. The U.S. EPA has conducted such assessments on many frequently occurring environmental chemicals and radionuclides and has developed toxicity values based on these assessments for use in risk assessments. Further information regarding the toxicological assessment can be found in the draft RFI Reports.

6.4 Risk Characterization

This step involves calculating estimates of carcinogenic (cancer causing) and non-carcinogenic risks from chemicals of concern for different exposure pathways. Cancer risk is defined as the probability of an individual developing cancer over a lifetime as a result of exposure to a potential carcinogen in addition to the probability of cancer risks from all other causes. As a benchmark in developing clean-up goals at contaminated sites, an acceptable range of excess lifetime cancer risk (ELCR) from one in one million (1×10^{-6}) to one in ten thousand (1×10^{-4}) has been established. The point of departure or program goal for risk remaining after a site is cleaned up is 1×10^{-6} (i.e. a one in one million excess lifetime cancer risk, above and beyond risks from other unrelated causes) and is the risk goal for the U.S. DOE-PORTS site.

The "Hazard Quotient" (HQ) is used to determine the severity of non-cancerous hazards posed at a site. The HQ is determined by dividing the Chronic daily intake (CDI) by the Reference dose (RfD). The reference dose is the amount of material that is determined to cause a toxic effect. If the HQ is less than or equal to 1, then the estimated exposure to a substance represented by the CDI, is judged to be below the threshold that could result in a toxic effect. An HQ greater than 1, indicates that a toxic effect may result. To assess the cumulative effect of similar noncancerous substances, the HQ for all of the substances being assessed at a site are added, with the result being the hazard index (HI).

6.5 Conclusions

The risks estimated for substances evaluated at a solid waste management unit (SWMU) and in the quadrant, are compared to target risk levels and general conclusions regarding the potential risks associated with these substances are discussed in the baseline risk assessment.

6.6 Peter Kiewit (SWMU Specific) Risk Assessment

The SWMU specific risk assessment for the Peter Kiewit Landfill was completed using the above described principles. By using the SWMU specific data gathered during the RFI, it is possible to estimate risks associated with the landfill. The risk estimates for the scenarios assessed at the Peter Kiewit Landfill are summarized below in Table 1 and are the estimated risks assuming no clean-up action is taken at the site. Other risk estimates presented in the CAS/CMS report are for risks to construction workers during implementation of the clean-up alternative and for risk estimates after clean-up is complete. Table 1 shows that conservative estimates of future residential use of the area around (i.e. next to) the landfill and worker scenarios show unacceptable risk (i.e. HI > 1 and a cancer risk greater than 10^{-4}) if no clean-up actions are taken. The future on-site residential scenario is considered to represent the reasonable maximum exposure (RME) risk estimate for the Peter Kiewit landfill area.

6.7 Ecological Risk Assessment

The purpose of the ecological risk assessment was to estimate the potential and future risks of Peter Kiewit Landfill contaminants to ecological receptors. The primary source of potential ecological risks was determined to be the seeps located along the eastern side of the landfill. In 1994, an interim action was completed to re-route Big Run Creek away from the landfill and collect and treat leachate from the seeps. Following the completion of the interim action, potential ecological exposure to landfill wastes has been minimized. The selected remedy will appropriately address landfill wastes which have potential to cause future ecological harm.

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this SB/ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

TABLE 1¹

Summary of Risks Associated with the Peter Kiewit Landfill		
Exposure Scenario	Noncancer Hazard Index (HI)	Cancer Risk (Excess Lifetime Cancer Risk-ELCR)
Current Use: On-site Worker	Total HI = 7×10^{-2}	Total excess cancer risk = 1×10^{-5} .
Future Use: On-site Resident (next to the landfill)	Total HI = 50	Total excess cancer risk > 1×10^{-2}
On-site Recreational Population: Seep and sediment assessment ²	Total HI = 9×10^{-1}	Total excess cancer risk = 2×10^{-4}
Future Use: On-site Worker	Total HI = 20	Total excess cancer risk = 2×10^{-3}
Excavation Worker	Total HI = 30	Total excess cancer risk = 1×10^{-4}
On-site Worker: Seep and sediment assessment ²	Total HI = 7×10^{-1}	Total excess cancer risk = 1×10^{-4}

¹ From the Quadrant I Baseline Risk Assessment, RFI Report, U.S. DOE, 1994

² Seep and Sediment Assessment: Risks associated with exposure to seep and sediment only. This scenario assumes the seep collection system is not in operation.

7.0 DESCRIPTION OF ALTERNATIVES

The CAS/CMS was conducted to identify and screen technologies and cleanup alternatives for addressing the Peter Kiewit Landfill. The seep collection system installed on the east side of Big Run Creek is expected to collect contaminants released from the landfill. Under a true no action scenario, continued treatment of seeps would not occur, posing continued unacceptable risk, as demonstrated in the baseline risk assessment. The "No Further Action" scenario presented below assumes that the seep collection system will remain in operation.

Four alternatives were evaluated in detail in the CAS/CMS Report. The alternatives were compared based on the overall effectiveness in addressing the current and future site conditions. These alternatives were as follows:

- No Further Action (seep collection system would remain in operation)
- Limited Action - Fencing/Signs, Deed Restrictions and Environmental Monitoring
- Capping, Vertical Subsurface Barriers, Deed Restrictions and Environmental Monitoring
- Vertical Subsurface Barriers, Deed Restrictions and Environmental Monitoring

These alternatives are summarized below:

7.1 **Alternative #1: No Further Action**

Under this alternative, the seep collection system (and treatment) would remain in operation but PORTS enrichment plant processes are assumed to be shut down and no additional actions would be taken at the landfill. The No Further Action alternative assumes unrestricted access to the landfill area and no restrictions on land use. There would be no additional active measures taken to reduce the concentration levels or mobility of the contaminants in the seeps.

Cost Analysis-Alt. #1: No Further Action Alternative

There are no costs associated with this alternative in addition to the seep collection system and its operation. The total present worth cost of the seep collection system is \$2,995,000.

7.2 **Alternative #2: Limited Action - Fencing/Signs, Deed Restrictions and Environmental Monitoring**

This Limited Action alternative includes installing a security fence around the perimeter of the Peter Kiewit Landfill. Signs prohibiting entry would be prominently placed upon the fence. Deed restrictions would be applied to this area to restrict digging, drilling, building, or any other activity that can disturb soils, and to prevent installation of drinking water wells in the contaminated area. Environmental monitoring of the ground water and surface water near the

area would occur semi-annually. An annual report would be prepared summarizing all field activities and analytical data. Evaluation of the environmental monitoring program would be conducted every five years to determine the need for remediation and/or continued monitoring. In addition, the interim action would be continued for seep collection and treatment.

Since the Limited Action Alternative primarily uses institutional controls such as fencing and no active source treatment, it does not comply with Section 300.430 of the NCP which states that institutional controls shall not substitute for active response measures as the sole remedy unless active response measures are determined not to be practicable. Alternative #2 is retained only to provide a remedial option that may be selected if other alternatives involving active source treatment prove impracticable.

Cost Analysis-Alternative #2: Fencing/Signs, Deed Restrictions, Environmental Monitoring

The total present worth cost for this alternative is \$6,052,000.

7.3 Alternative #3: Capping, Continuation of Seep Collection System, Deed Restrictions, Environmental Monitoring, and Vertical Subsurface Barriers (contingency)

This alternative would be designed to include the relevant components of U.S. EPA's presumptive remedy guidance for landfills, which specifies containment technologies to isolate the contaminated seeps and wastes present in the landfill, and reduce the water source of the seeps. Infiltration would be reduced by the construction of a cap over the landfill which would extend over the previous course of Big Run Creek (the stream channel prior to installation of the seep collection system).

If necessary to prevent the flow of groundwater into the landfilled wastes, vertical subsurface barriers would be installed on the northern and western edges of the landfill (see discussion of subsurface barriers below). The primary source of seep water is believed to be from infiltration of rain water from the landfill surface and not from ground water flowing into the waste. Therefore, the installation of the vertical subsurface barriers is included in this alternative as a contingency. Determination of the need for the vertical subsurface barriers would be made during the first five year review of the remedial action, using criteria developed during the remedial design.

Seep collection and treatment would be accomplished using the seep collection system (SCS). Two options each for capping and vertical subsurface barriers were considered under this alternative and are described below. Deed restrictions would be enacted to prevent any activities that could damage the integrity of the cap.

7.3.1 Capping Options

Two different capping options were evaluated in the CAS/CMS, a RCRA Subtitle C cap and a

RCRA Subtitle D cap. Section 7.3.1.1 and 7.3.1.2 below summarize the evaluations for the two capping options.

7.3.1.1 Hazardous Waste Disposal Facilities Final Cover (RCRA Subtitle C Multimedia Cap).

This option involves constructing a multimedia cap over the landfill per RCRA Subtitle C requirements. The multimedia cap would consist of a low permeability geomembrane/soil layer, a drainage layer, and a top vegetative/soil layer. In addition, the design would consist of vents for landfill gas collection and perimeter drains for capturing drainage through the drainage layer.

It is possible that the landfill material may be unstable and pose cap implementation problems, such as settling due to the use of heavy machinery causing differential settlement of the cap. If the landfill material is determined to be unstable for cap installation, measures for providing a solid foundation for the cap or other actions for stabilizing the landfill may be required. The existing landfill material can be compacted by heavy equipment traffic or by dynamic compaction. A foundation consisting of a 3-foot layer of stone overlain by a 3-foot layer of below-cap fill is another possible option for providing stability. The decision of the cap stability requirement and the measures to be taken for stabilizing the cap would be determined in the detailed design phase.

The cap would be sloped to force the runoff of any precipitation away from the landfill area. Monitoring would include regular visual inspections to ensure the integrity of the cap and leachate collection system. Noted defects in the cap will be repaired as needed.

Cost Analysis-Alternative #3: Hazardous Waste Cap Option

The total capital cost for this alternative is \$17,267,000. Operation and Maintenance costs are estimated to be, Year 1: \$294,000; Years 2-30: \$9,925,000; The total present worth cost in 1994 dollars is \$21,503,000.

7.3.1.2 Municipal Solid Waste Landfills Final Cover (RCRA Subtitle D Multimedia Cap)

This option involves constructing a multimedia cap over the landfill per RCRA Subtitle D requirements for the final closure of a municipal/sanitary landfill facility. This option would also address the applicable, relevant, and appropriate requirements for closure of a solid waste facility per Ohio regulations. The multimedia cap would consist of a compacted soil barrier layer, a granular drainage layer, and a top vegetative layer. The slope of the cover may vary from 5 percent to 25 percent or any other slope justified by adequate slope-stability analysis.

The discussion on cap stability requirement is the same as that described for the Subtitle C cap. The cap would be sloped to force the runoff of any precipitation away from the landfill area. Monitoring would include regular visual inspections to ensure the integrity of the cap and

leachate collection system. Noted defects in the cap will be repaired as needed.

Cost Analysis-Alt. #3: Solid Waste Cap Option

The solid waste cap costs are identical to the above costs with the exception of no added costs for the synthetic liner material. Therefore, this alternative's net worth is approximately \$20,877,000.

7.3.2 Vertical Subsurface Barrier Options

Two vertical subsurface barrier options were evaluated in the CAS/CMS, slurry wall and sheet piling. Sections 7.3.2.1 and 7.3.2.2 below summarize the evaluations of these options.

7.3.2.1 Slurry Walls

Conventional slurry wall technology involves excavation of trenches followed by backfilling with soil bentonite slurry. However, recently developed techniques, which use simultaneous soil mixing and injection of soil-bentonite slurry, can be used for construction of slurry walls. The principal advantage of these techniques is the minimization of the volume of soil to be excavated. In this alternative, slurry walls would be constructed on the northern and western edges of the landfill. This technique utilizes a drill rig with multi-shaft augers and mixing paddles to drill into the soil. During the drilling operation a fluid slurry is injected and mixed with the soil to form a low permeability column. These columns are then overlapped to form a continuous barrier to ground water flow.

The slurry wall would extend from the ground surface into the impervious Sunbury shale layer, located at a depth of approximately 30 ft. in the landfill area. The slurry wall would divert ground water around the landfill and is intended to prevent horizontal ground water flow into the waste. Soils removed during construction of the slurry wall would be tested and disposed according to these test results.

7.3.2.2 Sheet Piling

This option involves driving steel sheets into the ground to form an interconnecting, thin, low-permeability barrier to ground water movement into the landfill area. The joints of steel sheet piles would be sealed by a bituminous sealant to further reduce permeability. The sheet piles would extend from the ground surface into the impervious Sunbury shale layer, located at a depth of approximately 30 ft. in the landfill area.

Cost Analysis-Vertical Subsurface Barrier Options

Costs associated with the Vertical Subsurface Barriers were included in the cost analyses for Alternative #3. The cost difference between the two subsurface barrier options is not expected to substantially affect the total cost of Alternative #3.

7.4 **Alternative #4: Vertical Subsurface Barriers, Continuation of Seep Collection System, Deed Restrictions, and Environmental Monitoring**

This alternative would continue to allow precipitation to infiltrate into the landfill to allow for natural biodegradation of organic contaminants in the landfill. Some organic compounds such as PCB's do not readily biodegrade. Biodegradation could be enhanced by spraying inorganic nutrients over the landfill surface. Leachate from the landfill is collected and either recirculated for re-infiltration into the landfill or treated prior to discharge. This alternative is similar to Alternative #3 except that landfill capping is not included. Vertical subsurface barriers would be placed upgradient of the landfill to minimize ground water movement into the landfill and minimize contamination of ground water moving into and away from the landfill. The options for vertical subsurface barriers are described in Alternative #3. The seep collection system would be continued for seep collection and treatment. Deed restrictions would be placed on the landfill area to prevent access to the landfill and to prevent any activities that may damage the integrity of the remedy.

Cost Analysis-Alt. #4: Vertical Subsurface Barrier

The total capital cost for this alternative is \$4,909,000. O&M costs are estimated to be, Year 1: \$283,000; Years 2-30: \$9,876,000; The total present worth cost is \$10,420,000.

8.0 **SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES**

In selecting the remedial alternative, U.S. EPA and U.S. DOE considered the following nine criteria. Although the eighth criterion, state acceptance, was not formally evaluated in the CAS/CMS, it is evaluated in this SB/ROD.

1. **Overall protection of human health and the environment** addresses whether or not a remedy provides adequate protection, and describes how risks are eliminated, reduced or controlled through treatment, engineering controls, and/or institutional controls.
2. **Compliance with all State, Federal and local laws and regulations** addresses whether or not a remedy will meet all of the relevant, appropriate and applicable State, Federal, and Local environmental statutes.
3. **Long-term effectiveness and permanence** refers to the ability of a remedy to maintain reliable protection of human health and the environment over time once clean-up goals have been met.
4. **Reduction of toxicity, mobility, or volume** is the anticipated performance of the treatment technologies to yield a permanent solution. This includes the ability of the selected alternative to reduce the toxic characteristics of the chemicals of

concern or remove the quantities of those chemicals to an acceptable risk concentration or regulatory limit and/or decrease the ability of the contaminants to migrate through the environment.

5. **Short-term effectiveness** involves the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until clean-up goals are achieved.
6. **Implementability** is the technical and administrative feasibility of a remedy, including the availability of goods and services needed to implement the chosen solution.
7. **Cost** includes capital and operation and maintenance costs.
8. **State Acceptance** involves assessing whether or not the State would find the remedial alternative acceptable.
9. **Community acceptance** is assessed in the Responsiveness Summary of this document. Public comments were received on the RFI report, the CAS/CMS, and the Preferred Plan.

The nine criteria are categorized into three groups: threshold criteria, primary balancing criteria, and modifying criteria. The first two criteria, overall protection of human health and the environment and compliance with ARARs, are the threshold criteria that must be satisfied in order for an alternative to be eligible for selection as remedial alternative. Criteria three through seven are the primary balancing criteria that are used to weigh major trade-offs among alternatives. The final two criteria, State and community acceptance are the modifying criteria that are taken into account after public comment is received on the Preferred Plan. U.S. EPA and U.S. DOE evaluated each alternative using the above nine criteria. The following discussion summarizes the compliance of the alternatives with these criteria.

8.1 Overall Protection of Human Health and the Environment

Alternatives #1 and #2 do not provide overall protection of human health and the environment due to the long-term risks associated with potential formation of additional seeps along the southern edge of the landfill, and possible exposure to uncovered waste due to eventual erosion of the current cover material. Alternatives #3 and #4 were determined to provide overall protectiveness.

Alternative #3 (cap, seep collection, vertical upgradient barrier) is expected to be the most protective of both human health and the environment because the most effective activities will be conducted to alleviate infiltration of surface water into the waste, seep water volume, and, if necessary, migration of groundwater as compared to the other alternatives. In addition to this,

the cap is expected to provide more protection against possible exposure to uncovered waste due to eventual erosion of the current cover material than will Alternative #4 (no cap, seep collection, vertical barrier) or Alternative #2 (Seep Collection, Fencing/Signs, Deed Restrictions). Alternative #1 was considered the least protective because a greater probability of additional seeps and eventual erosion of the current soil cover is anticipated as compared to the other alternatives. The potential for erosion of the current soil cover is equal for Alternatives #1, #2, and #4, however, Alternative #4 poses a lesser risk for additional leachate from seeps over Alternative #1 because some reduction in groundwater flow into the landfill is expected with a vertical barrier.

8.2 Compliance with all State, Federal and Local Laws and Regulations

Selected remedial actions on the U.S. DOE site must comply with applicable Federal, State, and Local laws and regulations. Examples of applicable laws and regulations include, but are not limited to, the Clean Air Act, Toxic Substances Control Act, the Safe Drinking Water Act, the Clean Water Act, the Resource Conservation and Recovery Act, Ohio Revised Code (ORC) 6111, ORC 3734, and Ohio Administrative Code 3745. CERCLA Section 121 requires that remedial actions meet legally applicable or relevant and appropriate requirements of other environmental laws. "Applicable requirements" means those cleanup standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a site.

"Relevant and appropriate" requirements are cleanup standards, standards of control, and other substantive environmental protection requirements, criteria or limitations promulgated under Federal or State law that, while not legally "applicable" to a hazardous substance, pollutant, remedial action or circumstance at a site, their use and application is well suited to the situation at a site. An example of a situation where a law would be relevant and appropriate is the treatment of waste not lawfully deemed "hazardous" but identical to chemicals currently deemed hazardous under the Resource Conservation and Recovery Act (RCRA). A list of Ohio's ARARs is provided in Appendix C. U.S. EPA and U.S. DOE have reduced the number of Ohio ARARs to reflect only those action-, chemical-, and location-specific requirements that are pertinent to the remedy selected for Peter Kiewit Landfill. Therefore, the list of state ARARs in this SB/ROD is shorter than the list of state ARARs presented in the State of Ohio's decision document.

In certain instances, a remedy may be selected which does not meet an ARAR. Six conditions have been established under which an ARAR may be waived: interim measure, greater risk to health and the environment, technical impracticability, equivalent standard of performance, inconsistent application of state requirements, and fund-balancing. No waiver of an ARAR has been sought by U.S. DOE with respect to the Peter Kiewit Landfill.

ARAR's are divided into three different categories:

- Chemical-Specific ARARs
- Action-Specific ARARs
- Location-Specific ARARs

Chemical-Specific ARARs are health or risk-based numerical values which establish the acceptable amount or concentration of a chemical that may be found in the environment. An example of chemical-specific requirements are maximum contaminant levels (MCLs) established for certain chemicals. All of the alternatives evaluated for the Peter Kiewit Landfill are expected to comply with chemical-specific ARARs because discharge levels for treated seep water are identical in each alternative. Only if operation of the seep collection system is halted (a true "No Action alternative") would there be potential violations in discharge limits for treated seep water.

Action-Specific ARARs are usually technology or activity based requirements or limitations on actions taken with respect to hazardous waste. An example of an action-specific requirement would be the requirement for treatment of hazardous waste to approved standards before it is land disposed. Alternative #3 complies with action-specific ARARs, however, the remaining alternatives do not. A "relevant and appropriate" requirement for landfills is the placement of a cap on the landfill after it is no longer in operation. Because they do not evaluate placement of a cap on the Peter Kiewit Landfill, Alternatives #1, #2, and #4 do not satisfy Action-specific ARARs. Additionally, the NCP states that a preference shall be given to alternatives that actively treat waste rather than institutional controls (Alternative #2).

Location-Specific ARARs are restrictions placed on the concentration of hazardous substances or the conduct of activities solely because they occur in a specific location. An example of location-specific requirements are laws forbidding the placement of an incinerator near a hospital or school or the placement of waste in a wetland area. All of the alternatives will comply with these requirements because no waste disposal outside of the landfill is proposed.

According to Section 121 of CERCLA, no federal, state or local permits are required for remedial actions taken on-site.

8.3 Long-term Effectiveness and Permanence

Alternative #3 is expected to provide the greatest long-term protectiveness over the other alternatives because capping the landfill will reduce infiltration of water into the waste and the additional contingency measure of up-gradient groundwater control would also be expected to reduce horizontal groundwater flow. An alternative which would remove and treat the landfill waste would have the greatest level of long-term effectiveness. However, due to the large cost and risks of addressing unknown landfill waste and the high cost of off-site disposal, such an alternative was found impracticable and was not considered in the detailed analysis of alternatives. Alternatives #1, #2 and #4 are anticipated to have a lesser degree of permanence because eventual failure of the current soil cover which could expose wastes and additional seep generation is more likely to occur without further control of rainwater infiltration into the waste. Alternative #4 was judged to be more protective than Alternative #1 and #2 because a vertical

barrier to stop the migration of groundwater will reduce the likelihood of future seep generation.

8.4 Reduction of Toxicity, Mobility, or Volume Through Treatment

None of the alternatives reduce the toxicity, mobility or volume of landfill wastes through treatment. No hot spots were located at the Peter Kiewit Landfill; therefore, treatment of hot spots was not considered. Treatment of the homogenous waste within the landfill was not found to be practicable. A landfill operated today similar to the Peter Kiewit Landfill would be required to be capped per solid waste regulations after operations ceased. Although the Peter Kiewit Landfill ceased operation before these State and Federal laws were enacted, capping the landfill is a relevant and appropriate requirement.

8.5 Short-Term Effectiveness

Alternatives #1 and #2 do not require soil excavation and are therefore not expected to cause short-term risk from exposure to landfilled wastes. Alternative #3 is expected to slightly increase ecological risks during cap construction due to soil run-off into Big Run Creek. Alternative #4 is expected to have the greatest short-term risk because unknowns during construction of the vertical barrier could cause exposures from buried wastes. In the westerly direction from the landfill (where the vertical barrier would be installed), the extent of buried waste is not known, increasing the possibility of excavating wastes during construction. Contingency measures to address these concerns would be addressed during remedial design.

Since the seep collection system is already in place, Alternative #1 would be completed immediately. Alternative #2 could be completed in less than six months; Alternative #4 in approximately six months; and Alternative #3 in six months to one year.

8.6 Implementability

All of the alternatives are expected to be technically implementable. Alternatives #3 and #4 would be expected to present greater difficulties than alternatives #1 and #2 due to the proposed cap construction (Alt. #3) and potential vertical barrier work (Alt. #4). Alternatives #1 and #2 would be the easiest to implement because fence construction in alternative #2 is the only construction activity necessary. No construction activities are planned in alternative #1 beyond the seep collection system which is already in place and operating.

8.7 Cost

The "No Further Action" alternative would not require additional costs beyond the installation costs already expended for the seep collection system and is the least costly alternative. However, additional costs may be necessary in the future for addressing additional seeps or failure of the current soil cover. Alternative #2 is more costly than alternative #1, followed by alternative #4 and alternative #3, which is estimated to be the most expensive due to the greatest amount of field work. Alternative #4 is substantially less costly than alternative #3 because of

the absence of capping construction costs. Recent experience with construction work at the PORTS plant has shown that contractor bids for remedial work are often times lower than estimated in the corrective measures studies.

8.8 State Acceptance

The State of Ohio has indicated its acceptance of the remedial action for Peter Kiewit Landfill by issuance of its own decision document (see Appendix B).

8.9 Community Acceptance

Comments received from the community are addressed in writing in the Responsiveness Summary to this SB/ROD. Based on the comments received, the community accepts the preferred alternative for the Peter Kiewit Landfill.

9.0 THE SELECTED REMEDY

U.S. EPA and U.S. DOE select a modified version of Alternative #3. This alternative continues the operation of the seep collection system, requires the landfill to be capped with a solid waste type cap meeting Subtitle D requirements, and stipulates the installation of a subsurface vertical barrier if monitoring shows that a barrier is needed to prevent the flow of groundwater into landfilled waste (see Figure 4, *Schematic of Alternative 3*, for a sketch of alternative components). This alternative provides the best balance of trade-offs when considering the criteria used to evaluate remedies presented in the preferred plan and in Section 8.0 above. U.S. EPA and U.S. DOE believe that this remedy will be protective of human health and the environment by containing and where practicable, treating the waste (leachate sources). This alternative meets ARAR (see Appendix C), is cost-effective, and will provide long-term effectiveness.

The major components of this alternative are:

- Continuation of the seep collection system which is currently in operation on the east side of the landfill;
- Capping the landfill to contain wastes and reduce water infiltration with a cap meeting the requirements of RCRA Subtitle D;
- The use of vertical barriers (slurry wall) as necessary to minimize lateral migration of contaminants. Future evaluation of the leachate volumes flowing to the seep collection system will determine the need for a vertical subsurface barrier. The criteria for determining the need for the vertical subsurface barrier shall be developed during the remedial design. Specific details shall be included in all subsequent design documents.

- Environmental monitoring to ensure that the final remedial action is protective.

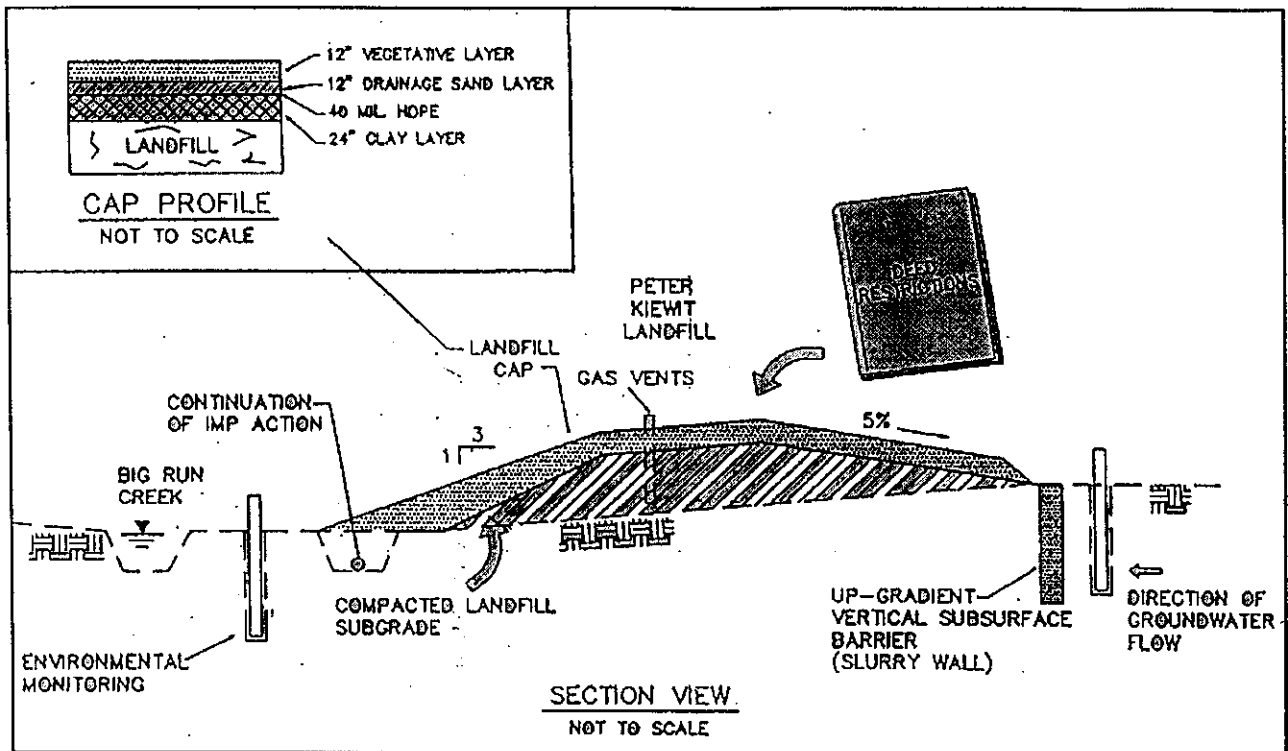


Figure 4 - Schematic of Alternative 3

The recompacted low permeability cap is the preferred cap design. This cap, commonly referred to as a solid waste cap, has been used at two other locations on the site and is expected to contain landfilled wastes and minimize the infiltration of rain water into the landfill.

A landfill operated today similar to the Peter Kiewit Landfill would be required to be capped per solid waste regulations after operations ceased. Although the Peter Kiewit Landfill ceased operation before these State and Federal laws were enacted, capping the landfill is a relevant and appropriate requirement and will comply with Federal and State law. Alternative #1 (No Further Action), Alternative #2 (Fencing and Deed Restrictions), and Alternative #4 (Vertical Subsurface Barrier) do not meet relevant and appropriate requirements.

If deemed necessary, the selected remedy will require the installation of a slurry wall to prevent the horizontal flow of groundwater into the landfill. However, based on past data showing that the Minford clays have a relatively low horizontal permeability, U.S. EPA and U.S. DOE believe that the primary source of seep water is from infiltration of rain water from the landfill surface and not from ground water flowing into the waste. The effectiveness of the landfill cap in reducing seep water volume, and the continued ability of the seep collection system will determine the need for the installation of a slurry wall. Specific criteria developed during the remedial design will be examined during the first five year review of the remedy to determine the need for the slurry wall. If a slurry wall is deemed necessary to reduce lateral migration of

contaminants, its placement and design will consider the existing structures and utilities west of the landfill area.

Excavation and subsequent disposal of the material in the Peter Kiewit Landfill was considered; however, it was determined that this alternative would not be practicable and would not provide significant advantages in risk reduction over alternative #3. As stated above, excavation is likely to cause increased exposure risks to wastes during field work and the final disposal location for this waste is undetermined. Containment of the waste in the Peter Kiewit Landfill was considered a better alternative than attempting to excavate and treat the landfilled wastes because of the variety of wastes present and the difficulty in adequately treating a mixture of contaminants such as landfill wastes.

Environmental monitoring such as ground water sampling and monitoring of the seep collection system will be conducted after the landfill is capped to ensure that the selected remedial action is effective. The seep discharges will be collected and treated as long as seep flow is present. The remedial alternative is expected to significantly reduce or eliminate the seep discharge. Immediate steps will be taken to mitigate any unacceptable risks from releases detected after remedial actions have been completed. Additional actions are not anticipated but might be necessary for unexpected events such as new seeps or previously undetected ground water contamination.

The objective of Alternative #3, the preferred alternative, is to eliminate the release of contaminants (i.e. seeps). Other alternatives are less likely to eliminate the seeps; therefore, they were deemed less effective in reducing the mobility of contaminants (via seep discharge), less effective in the protection of human health and the environment, and less permanent than Alternative #3. Capping the landfill is expected to cause no insurmountable problems during construction. However, as noted above in the discussion of implementability, the installation of a slurry wall or sheet piling, if needed, may present some construction difficulties.

10.0 STATUTORY DETERMINATIONS

In accordance with the statutory requirements of Section 121 of CERCLA, remedial actions must be protective of human health and the environment, comply with all ARARs established under federal and state environmental laws, be cost effective, utilize permanent solutions and alternative technologies or recovery technologies to the maximum extent practicable, and, to the extent practicable, use treatment to reduce the toxicity, mobility, or volume as a principle element. In addition to the CERCLA statutory mandates, the RCRA standards for remedial actions must be met. Under RCRA, remedial actions must: protect human health and the environment, attain media cleanup standards set by the implementing agency, control the source of releases, and comply with any applicable standards for management of wastes.

10.1 Protection of Human Health and the Environment

The selected remedy protects human health and the environment by preventing potential human and ecological exposure to landfill wastes and seep water. The area will be capped, preventing infiltration of precipitation into the wastes and reducing seep water volume. The cap will also provide protection against possible exposure to uncovered waste due to the eventual erosion of the current cover material. If necessary to further control seep water, a vertical subsurface barrier will be installed to prevent migration of groundwater into the landfill wastes.

10.2 Compliance with Applicable or Relevant and Appropriate Requirements

The selected remedy will comply with all ARARs established under federal and state environmental laws. ARARs specific to the Peter Kiewit Landfill are presented in Appendix C.

10.3 Cost-Effectiveness

The selected remedy is cost-effective because it has been determined to provide overall effectiveness proportional to its costs, the net present worth being \$20,877,000. Removal and subsequent on- or off-site disposal was not developed as an alternative, because the high cost, excessive waste volume, and unknown waste composition made such an alternative impracticable. Although Alternative #3 is the next to most costly of the four considered alternatives (construction of a RCRA Subtitle C Multimedia Cap would be more costly, with a present worth cost of \$21,503,000), its protectiveness, compliance with ARARs, and long-term effectiveness make it the most cost-effective.

10.4 Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

U.S. EPA and U.S. DOE have determined that the selected remedy for the Peter Kiewit Landfill represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a cost-effective manner. Of those alternatives that are protective of human health and the environment and comply with ARARs, this selected remedy provides the best balance of tradeoffs among the alternatives in terms of long-term effectiveness and permanence, reduction in toxicity, mobility, and volume through treatment, short-term effectiveness, implementability, and cost, also considering community acceptance.

10.5 Preference for Treatment as a Principal Element

The selected remedy does not satisfy the statutory preference for treatment as a principal element of the remedy because treatment of the principal threat of the site was not found to be practicable.

10.6 Source Control

The selected remedy will effectively control the source of releases by containing the landfill wastes. Source control will be accomplished by the landfill cap, seep collection system, and, if

necessary, the installation of a vertical subsurface barrier.

11.0 DOCUMENTATION OF SIGNIFICANT CHANGES

The preferred plan for the Peter Kiewit Landfill was released for public comment in April, 1995. The preferred plan identified a modified version of Alternative #3: continuation of the seep collection system; capping the landfill to contain wastes and reduce water infiltration; the use of vertical barriers as necessary to minimize lateral migration of contaminants; and environmental monitoring to ensure that the final remedial action is protective. U.S. EPA and Ohio EPA reviewed all written and verbal comments submitted during the comment period. Upon review of these comments, it was determined that no significant changes to the remedy, as it was originally identified in the preferred plan, were necessary.

RESPONSIVENESS SUMMARY PETER KIEWIT LANDFILL

1.0 SUMMARY OF COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD

This section provides an overview of the purpose and organization of the Responsiveness Summary and summarizes significant comments received during the public comment period. The Ohio EPA responded to the comments received. For the purpose of this SB/ROD, U.S. EPA reviewed, approves, and adopts all the responses written by Ohio EPA.

1.1 Overview

This responsiveness summary has been prepared to respond to each of the significant comments, criticisms, and new data submitted in written or oral presentations on the preferred plan for the Peter Kiewit landfill and is intended to be consistent with Sections 113(k) (2) (B) (iv) and 117(B) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). This section requires that the United States Environmental Protection Agency (U.S. EPA) respond "... to each of the significant comments, criticisms, and new data submitted in written or oral presentations" on the preferred plan. Numerous comments were made during the public comment period that do not pertain to the proposed remedial action at the Peter Kiewit Landfill. These comments were not addressed in this responsiveness summary. Attempts will be made to address all comments and concerns not specific to the Peter Kiewit Landfill by communicating with the public in future public informational/update meetings and during site visits where Ohio EPA and/or U.S. EPA representatives are present.

The administrative record index for the U.S. DOE site which includes the RCRA Facility Investigation (RFI), the Cleanup Alternatives Study/Corrective Measures Study (CAS/CMS) and the Preferred Plan is available to the public at the Environmental Information Center located in Waverly, Ohio. The first draft of the RFI was submitted to Ohio EPA and U.S. EPA on February 19, 1992. The CAS/CMS was submitted on June 2, 1994, and a public notice alerting the public of their opportunity to comment on the preferred plan was placed in the *Waverly Watchman* and the *Portsmouth Times* on April 11, 1995. The public comment period closed on May 12, 1995. A public meeting to discuss the preferred plans was held on April 18, 1995 at the Vern Riffe Vocational School near the U.S. DOE plant.

1.2 Summary of Significant Comments

The public comments regarding the U.S. DOE site are organized into the following categories:

- (1) Summary of comments and Agency responses to citizens regarding the preferred plan;

- (2) Summary of comments from U.S. DOE and Agency responses.

2.0 COMMENTS FROM THE COMMUNITY

1. A commenter expressed concern regarding the short time period Ohio EPA and U.S. EPA had given between notification of the public meeting and the meeting date on April 18th.

Ohio EPA's Response: The purpose of the meeting was to present the remediation alternatives being considered to the public and to accept oral comments. Written comment were accepted throughout the comment period. Holding the meeting earlier in the public comment period, gave citizens more time to consider the information presented prior to the end of the comment period. By holding the meeting sooner, rather than later in the comment period, citizens had a greater opportunity to provide comments once the alternatives were presented. The length of the comment period was consistent with federal and state regulations and no request for a comment period extension was requested.

2. This same commenter also pointed out that EPA does not have the authority to regulate radioactive constituents in drinking water and therefore it was not accurate to say that the preferred remedy complied with all laws and regulations.

Ohio EPA's Response: The authority of EPA to regulate radioactive material has some restrictions and does not apply to all radioactive material. However, many radioactive materials from U.S. DOE facilities and the PORTS site in particular are subject to regulation by Ohio EPA and/or U.S. EPA. Designated levels for some radioactive materials in the Safe Drinking Water Act (SDWA) such as gross alpha, gross beta, radium and radon do apply to U.S. DOE facilities and CERCLA also covers radioactive materials not otherwise exempted by the Atomic Energy Act of 1954. Thus, U.S. EPA and Ohio EPA have authority over certain radioactive materials in drinking water. Public water supplies in the State are required to conduct the above listed radioactive analyte list.

During evaluation of alternatives, a primary criterion is protection of human health and the environment. Ohio EPA and U.S. EPA evaluate all alternatives to determine their ability to protect human health. Leaching of radioactive material to groundwater, ingestion exposures to both soils and waters, dust inhalation and dermal contact are all considered during alternative evaluation and selection.

3. This commenter also asked what decisions were being made as to the extent of cleanup, if there is a cleanup goal and if some plant conversion was anticipated (such as a commercial nuclear waste treatment facility) and also recommended that a "budget plan" be put in place for restoration costs.

Ohio EPA's Response: Throughout the RFI and CAS/CMS process, Ohio EPA and U.S. EPA have required that the risk assessments evaluate unrestricted future use with the reasonable maximum exposure (RME) being residential use of the property. The one in a million excess cancer rate level (1×10^{-6}) has been identified as a remediation goal. At this time, future commercial and unrestricted future residential use has been evaluated for the PORTS site by Ohio EPA or U.S. EPA. Clean-up goals will be protective of the future use designated for the site. In regards to budget considerations, all of the alternatives are evaluated with respect to cost but it is not considered a primary screening criteria.

4. This commenter ended by requesting that the agencies consider human health more than cost when determining remedies for waste units.

Ohio EPA's Response: Ohio EPA agrees with this request. As discussed above, remedial action decisions place primary emphasis on the protection of human health and the environment. Cost is always considered, but is done so after remediation goals are established for the protection of human health and the environment. The remedial alternative that is protective, complies with ARARs, and is cost-effective is selected. Cost-effectiveness, as stated in the NCP, is determined by evaluating the overall effectiveness of an alternative and then assessing the cost of the alternative to ensure that the cost is proportional to the overall effectiveness.

5. Another commenter expressed that the area of the landfill was greater than stated during the public meeting. An additional concern noted by this commenter was the burn area that was in operation at the landfill area. Also mentioned was the disposal of "85,000 pounds of metal hydraulic sludge from the X-705", and also waste oils and solvents.

Ohio EPA's Response: Ohio EPA stated in the public meeting that the acreage of the landfill was not exactly known and the acreage was estimated by scaling dimensions from maps included in investigation documents from U.S. DOE. It was not intended to be a precise value and was used by Ohio EPA and U.S. EPA to provide a description of the landfill. During the investigation work at the Peter Kiewit landfill, monitoring wells and soil borings were taken around the perimeter of the known disposal area. This investigation work served to identify the approximate area where wastes were placed. Because the approximate dimensions of the landfill are known, the chosen remedy for the landfill will not be affected if a precise acreage for the landfill is not available. It is common when addressing old landfills to encounter incomplete information because accurate records were not usually kept. However, cleanup actions will be designed to address all known and suspect areas of waste disposal. Environmental monitoring of groundwater and surface water will be conducted on a routine basis to evaluate the selected remedy's effectiveness.

Ohio EPA believes that the commenter was referring to the X-749 landfill and not the Peter Kiewit landfill when commenting about the sludge from the X-705 building. The

X-749 landfill did receive 85,000 pounds of hydroxide sludge between August, 1984 and June, 1985 (QI RFI, 1994). A cap was placed on this landfill and a leachate collection system was installed in 1991.

Existing plant engineering drawings indicate that a burn pit was operated at the landfill by the construction contractor to dispose of construction waste. There are not records that characterize the material that was burned, nor are there records of the quantities or characterization of wastes disposed in the Peter Kiewit landfill during its operation.

3.0 COMMENTS FROM THE U.S. DOE

The U.S. DOE identified the following concerns in the Preferred Plan and presented these concerns in written correspondence to Ohio EPA and U.S. EPA during the public comment period.

1. Page 8, Line 14 of the Preferred Plan:

U.S. DOE Comment: "Geologic data do not indicate that the Sunbury Shale is absent beneath the landfill..."

Ohio EPA's Response: During development of the preferred plan document for public review, Ohio EPA and U.S. EPA referenced past documents such as the RFI and the CAS/CMS to assemble information for presentation in the plan. In this specific case, Section 6.1.2.1 of the CAS/CMS document was used in part as a reference for geologic information. Section 6.1.2.1 of the CAS/CMS discusses the absence of the Sunbury Shale in the southeast portion of the landfill and also where the Sunbury and Berea have been eroded in the drainage ravine south of the landfill. The inference that the Sunbury Shale was likely absent from the landfill area was drawn from these statements. Ohio EPA agrees that this statement is a generalization and should have been more specific to the areas specifically identified in the RFI and CAS/CMS. However, this statement was merely intended to provide a description of the geology in the vicinity of the Peter Kiewit Landfill and should not be construed as a statement made with the intention of supporting the Agencies preferred remedy for the Peter Kiewit Landfill.

2. Page 9, Line 2:

U.S. DOE Comment: "Construction of the seep collection system is complete and all data indicate that the system is effective in preventing discharge of contaminants to Big Run Creek."

Ohio EPA's Response: Ohio EPA agrees with U.S. DOE's comment. The Agency's evaluation of all of the alternatives assumed that the seep collection was operating and would continue operating as long as necessary.

3. **Page 27, Line 6:**

U.S. DOE Comment: "While it is true that Alternative #3 has the most extensive construction activities associated with it, it is not clear that this alternative is more protective...."

Ohio EPA's Response: During evaluation of the alternatives for the Peter Kiewit Landfill, the Agencies ranked each alternative according to its performance (identifying the most effective to the least effective alternative) in each of the eight criteria. This was done for all eight criteria, even though some of the differences between alternatives may be small. In the case of "Overall Protection of Human Health and the Environment", under the current use (i.e. short term), the differences between the alternatives may be small. However, the Agencies believe that the differences between alternatives are more pronounced when evaluating an alternative's ability to be protective over the long term.

4. **Page 27, Line 10:**

U.S. DOE Comment: "The landfill is covered, vegetated, and maintained to prevent erosion. There has been little erosion to the cover since 1968, and as part of the IRM, low spots have been filled and revegetated to prevent ponding of surface water."

Ohio EPA's Response: As stated in the previous response, the objective of evaluation was to rank the alternatives according to their effectiveness for each of the eight criteria. The Agencies believe that the placement of an engineered solid waste cap or liner material will provide a greater level of protection than will the current condition at the landfill. While the IRM may have eliminated the current erosion on the east side of the landfill, erosion over time did occur in the sloped area adjacent to Big Run Creek, exposing landfilled wastes. The likelihood of this re-occurring in the same location or elsewhere on the site is greater without an engineered cover over the waste.

5. **Page 28, Line 30**

U.S. DOE Comment: "As stated in the Preferred Plan, relevant and appropriate requirements are generally not applicable and should be considered based on the specific site situation...."

Ohio EPA's Response: Ohio EPA disagrees with U.S. DOE's interpretation of the discussion of ARAR's in the Preferred Plan. Relevant and appropriate requirements apply to the Peter Kiewit landfill. The discussion here was not intended to point out that "relevant and appropriate" requirements are generally not applicable to a cleanup situation as stated in U.S. DOE's comment, but rather was intended to outline the difference between an applicable law versus a relevant and appropriate application of a law or rule to a cleanup situation (e.g. a landfill such as the Peter Kiewit Landfill that was

closed prior to the enactment of Ohio's closure rules for solid waste landfills). The applicability of the closure rule to currently operated solid waste landfills is not dependent upon the observation of occurrences such as infiltration of water, exposed waste, etc. The intent of capping upon closure is to prevent as much as possible the future occurrence of infiltration, erosion, etc. that eventually could result in migration of wastes and subsequently higher maintenance costs and necessary corrective measures. When the analysis results in a determination that a requirement is both relevant and appropriate, such a requirement must be complied with to the same degree as if it were applicable, unless waived.

6. **Page 29, Line 5**

U.S. DOE Comment: "Capping of the landfill is not considered containment nor active treatment under the National Contingency Plan"

Ohio EPA's Response: The statement regarding the preference for active treatment in the NCP was added to emphasize this when comparing Alternative #2 to other alternatives and was intended to be similar to language in the CAS/CMS documents regarding Alternative #2. It was not the intent of the Agencies to imply that other alternatives for the Peter Kiewit Landfill provided greater treatment than Alternative #2.

7. **Page 29, Line 22**

U.S. DOE Comment: "Surveillance, maintenance and scheduled improvements will reduce or eliminate these concerns".

Ohio EPA's Response: Ohio EPA agrees that surveillance, maintenance and scheduled improvements will reduce the concerns regarding exposed wastes and additional seep generation. However, a preference is given to the permanence of an alternative and the minimization of operation and maintenance. The Agencies believe that the preferred remedy will result in reduced maintenance costs in the future compared to the "no further action" alternative, and will meet ARARs.

8. **Page 30, Line 20**

U.S. DOE Comment: "Because interim remedial measures have mitigated potential risk to human health and the environment, it is difficult to justify additional large-scale construction and 12 million dollars in costs to implement Alternative #3."

Ohio EPA's Response: The response to comment #7 above also applies to this comment. The permanence of an alternative is expected to result in reduced future maintenance costs and a reduced probability of future releases of waste to soils and groundwater/surface water.

9. Page 31, Line 25

U.S. DOE Comment: "A waiver could be obtained for the relevant and appropriate requirement that is not met. The existing cover prevents direct contact and reduces infiltration. This requirement should not be viewed as a deciding factor".

Ohio EPA's Response: The attainment of ARAR's was not the only criteria used to identify the preferred alternative. Issues of long term effectiveness and permanence also affected the decision to select Alternative #3 as the preferred alternative. However, the placement of a cap over the Peter Kiewit Landfill was determined to be a "relevant and appropriate" requirement based on the analysis required by Section 300.400 (g) (2) of the NCP. The capping requirement is "relevant and appropriate" because, (a): the actions or activities regulated by the requirement and the remedial action contemplated at the CERCLA site are sufficiently similar; and, (b): the requirement is well suited to the site.

Six conditions have been established under which an ARAR may be waived: Interim Measure; Greater Risk to Health and the Environment; Technical Impracticability; Equivalent Standard of Performance; Inconsistent Application of State Requirements; and Fund-Balancing. With regard to the capping of the Peter Kiewit Landfill, only the Equivalent Standard of Performance condition potentially applies.

According to the preamble of the March 8, 1990 NCP, the criteria for evaluating whether an alternative method is equivalent to or better than the method required by the ARAR are degree of protection; level of performance; reliability into the future; and time required for results. Alternatives #1, #2, and #4 do not meet these criteria because of the uncertainty of the long term effectiveness of the current cover, the lack of reduction of seep water volume, the essentially unlimited period of time required to achieve remedial objectives, and the unknown wastes disposed in the landfill.

10. Page 32, Line 24

U.S. DOE Comment: Installation and operation of the collection system have eliminated the possibility of contaminants leaving the site. Alternative #3 should be viewed as less, not more permanent than Alternative #1, #2, and #4; because Alternative #3 requires perpetual operation and maintenance. Under Alternatives #1, #2, and #4, however, contaminated leachate will eventually cease being generated, significantly reducing operation and maintenance requirements".

Ohio EPA's Response: The Agencies disagree that Alternative #3 (capping) should be viewed as less permanent than alternatives #1 (no action), #2 (institutional controls) and #4 (vertical barrier), and disagree that these alternatives will have less operation and maintenance compared to alternative #3. The time frame under which leachate will cease being generated is not known, but is expected to be a long period of time because organic

industrial wastes were likely disposed in the Peter Kiewit Landfill and the attenuation of these wastes commonly requires decades or more. The erosion of the landfill cover material over time will require at least as much or more routine maintenance than will an engineered cap.

11. **U.S. DOE Comment:** "The No further Action alternative provides the most efficient and effective solution to mitigating risks to human health and the environment posed by Peter Kiewit Landfill. As stated in the preferred plan "The seep collection system installed west of Big Run Creek is expected to address much of the estimated risk to humans and to Big Run Creek by collecting contaminants released from the landfill". The seep collection system effectively eliminates short-term risk to the environment, therefore, the goal of the remedial alternative implemented through the CAS/CMS should be to reduce the long-term risk to the environment. The No Further Action alternative accomplishes this by reducing the toxicity of material in the landfill over a relatively short period of time (approximately ten years). It is expected that concentration of contaminants in seep water will eventually be reduced below PQLs allowing the collection system to cease operation. Implementation of the No Further Action alternative will require very little additional capital cost and will mitigate the need for perpetual operation and maintenance costs and large-scale construction at this unit".

Ohio EPA's Response: While the seep collection system is expected to effectively capture contaminants from the landfill, an important issue is the long-term effectiveness of the no-action alternative. This alternative is expected to require more maintenance in the future than alternatives that reduce infiltration of water into the waste. Because it is not known what quantities of containerized liquids or other organic waste may be present in the landfill, the agencies are not necessarily in agreement that the reduction of contaminants will be accomplished in approximately ten years as stated in U.S. DOE's comment. Unexpected future releases from the landfill are considered more likely with the no-action alternative than with alternative #3, therefore, Ohio EPA does not agree that the no-action alternative is the most effective alternative.

APPENDIX A

ADMINISTRATIVE RECORD INDEX

Environmental Management Program

Portsmouth Gaseous Diffusion Plant

Peter Kiewit

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AR Doc. No. Catalog No.	Internal Doc. No. Revision	Document Title	Date Pages	Originator From	Recipient To	Location Document Type
1-20-28/00.001 763		Requirement for Interim Remedial Plan U.S. DOE - Portsmouth OH7 890 008 983	10/18/93 2	USEPA Boyle	USDOE Gillespie	PORTS AR Letter
1-20-28/00.002 875		Remedial Action at the Peter Kiewit Landfill	10/25/93 1	OEPA Rochotte	USDOE Gillespie	PORTS AR Letter
1-20-28/05.001 800	0	Interim Measures Plan: Peter Kiewit Landfill	11/18/93 83	USDOE Gillespie	USEPA, OEPA Blanchin, Rochotte, Welch	PORTS AR Plan
1-20-28/81.001 1006		Disapproval of Interim Measures Plan for the Peter Kiewit Landfill U.S. DOE Portsmouth Gaseous Diffusion Plant OH7 890 008 983	1/31/94 14	USEPA Boyle	USDOE Gillespie	PORTS AR Disapproval/Comments
1-20-28/81.002 1039	EO-23-5885	USEPA Required Revisions to Interim Measures Plan - Request for Extension of Time to Submit	3/2/94 1	USDOE Gillespie	USEPA Averill	PORTS AR Letter
1-20-28/81.003 1077		Ohio EPA Comments on the Peter Kiewit Landfill Interim Measures Plan	3/15/94 2	OEPA Rochotte	USDOE Gillespie	PORTS AR Comments
1-20-28/81.004 1055	EO-23-5950	Revisions to Interim Measures Plan - Peter Kiewit Landfill	3/28/94 2	USDOE Gillespie	USDOE Averill	PORTS AR Letter
1-20-28/81.005 1161		Approval of Revision to Interim Measures Plan for Peter Kiewit Landfill Department of Energy OH7 890 983	3/30/94 1	USEPA Averill	USDOE Gillespie	PORTS AR Approval Letter
1-20-28/81.006 1088	EO-23-6007	Revised Interim Measures Plan - Peter Kiewit Landfill	4/14/94 15	USDOE Gillespie	USEPA, OEPA Averill, Rochotte, Welch	PORTS AR Responses
1-20-28/05.002 1089	DOE/OR/11-1262&D2 1	Interim Measures Plan for the Peter Kiewit Landfill at the Portsmouth Gaseous Diffusion Plant	4/15/94 116	MMES Gillespie	USEPA, OEPA Averill, Rochotte, Welch	PORTS AR IMP
1-20-28/00.003 1167	EO-23-6060	Peter Kiewit (PK) Landfill Interim Remedial Measure Project	5/11/94 2	USDOE Gillespie	US Army Corps. Engineers Adamo	PORTS AR Letter
1-20-28/81.007 1169		Ohio EPA Comments on the Peter Kiewit Landfill Interim Remedial Measures Plan	5/13/94 2	OEPA Rochotte	USDOE Gillespie	PORTS AR Comments
1-20-28/81.008 1175		Disapproval of the Interim Measures Plan: Peter Kiewit Landfill for the Portsmouth	6/1/94 3	USEPA Averill	USDOE Gillespie	PORTS AR Disapproval/Comments



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1-20-28/00.004 1177		Gaseous Diffusion Plant (PORTS) OH7 890 008 983	6/2/94 32	US Dept. of the Army Richmond	USDOE Gillespie	PORTS AR Letter
1-20-28/05.003 1200	DOE/OR/11-1262&D3 2	Description: Peter Kiewit (PK) Landfill Interim Remedial Measure Project Proposal	6/30/94 120	MMES Gillespie	USEPA, OEPA Averill, Rochotte, Welch	PORTS AR IMP
1-20-28/81.009 1201	EO-23-6171	Interim Measures Plan for the Peter Kiewit Landfill at the Portsmouth Gaseous Diffusion Plant Piketon, Ohio	7/1/94 27	MMES Gillespie	USEPA, OEPA Averill, Rochotte, Welch	PORTS AR Responses
1-20-28/81.010 1223		Description: Response to USEPA and OEPA Comments on the Peter Kiewit Landfill Interim Measures Plan	7/25/94 2	OEPA Rochotte	USDOE Gillespie	PORTS AR Approval/Comments
1-20-28/81.011 1232		Approval with Conditions of the Interim Measures Plan: Peter Kiewit Landfill for the Portsmouth Gaseous Diffusion Plant (PORTS) OH7 890 008 983	7/26/94 1	USEPA Averill	USDOE Gillespie	PORTS AR Approval Letter
1-20-05/15.001 1236	DOE/OR/12-1295&D1 0	Peter Kiewit Landfill Draft Cleanup Alternatives Study/Corrective Measures Study Report for the Portsmouth Gaseous Diffusion Plant	7/29/94 283	SAIC Gillespie	USEPA, OEPA Averill, Rochotte, Welch	PORTS AR Report
1-20-28/05.003A 1254	DOE/OR/11-1262&D4 3	Interim Measures Plan for the Peter Kiewit Landfill at the Portsmouth Gaseous Diffusion Plant Piketon, Ohio	8/23/94 28	MMES Gillespie	USEPA, OEPA Averill, Rochotte, Welch	PORTS AR Revised Pages
1-20-28/81.012 1255	EF-21-6268	Description: Response to USEPA and OEPA Comments on the Peter Kiewit Landfill Interim Measures Plan	8/23/94 5	MMES Gillespie	USEPA, OEPA Averill, Rochotte, Welch	PORTS AR Response
1-20-05/15.002 1257		Modeling Results - Draft Addendum to the Peter Kiewit Landfill Draft Cleanup Alternatives Study/Corrective Measures Study Report for the Portsmouth Gaseous Diffusion Plant Piketon, Ohio	8/29/94 22	SAIC Gillespie	USEPA, OEPA Averill, Rochotte, Welch	PORTS AR Addendum

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1-20-05/81.001 1377		Description: Ohio EPA Comments on the Peter Kiewit Landfill CAS/CMS Report	10/20/94 3	OEPA Rochotte	USDOE Gillespie	PORTS AR Comments
1-20-28/55.001 1383	EF-21-6385	Notice of Intent Form (NOI) for Stormwater General Permit - Department of Energy (DOE) - Portsmouth Gaseous Diffusion Plant (PORTS) - Peter Kiewit Landfill Interim Remedial Measures (IRM) Project	10/26/94 3	USDOE Gillespie	OEPA General NPDES Permits	PORTS AR NOI
1-20-05/81.002 1387		"Peter Kiewit Landfill Draft Cleanup Alternatives" Technical Review Comments Portsmouth Gaseous Diffusion Plant Piketon, Ohio OH7 890 008 983	11/1/94 6	USEPA Averill	USDOE Gillespie	PORTS AR Comments
1-20-05/81.003 1405	EF-21-6431	Response to OEPA Comments on the Draft Peter Kiewit CAS/CMS Report	11/21/94 4	USDOE Gillespie	USEPA, OEPA Averill, Rochotte	PORTS AR Responses
1-20-28/00.005 1418	EF-21-6446	Completion of Construction at Peter Kiewit Landfill IRM	11/30/94 2	USDOE Gillespie	USEPA, OEPA Averill, Rochotte, Welch	PORTS AR Letter
1-20-05/81.004 1420	EF-21-6456	Responses to USEPA Comments Regarding Peter Kiewit Landfill CMS/CAS Report	12/5/94 11	USDOE Gillespie	USEPA, OEPA Averill, Rochotte	PORTS AR Responses
1-20-05/15.003 1500	DOE/OR/12-1295&D2	Peter Kiewit Landfill Draft Cleanup Alternatives Study/Corrective Measures Study Report for the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio	2/10/95 221	SAIC Gillespie	USEPA, OEPA Averill, Rochotte, Welch	PORTS AR Report
1-20-05/81.005 1531		Ohio EPA Approval of the X-705A/B CAS/CMS and Peter Kiewit Landfill CAS/CMS Reports	3/22/95 1	OEPA Rochotte	USDOE Gillespie	PORTS AR Approval
1-20-15/73.001 1558		Description: Public Notice: Portsmouth DOE Public Hearing on Preferred Plan for Peter Kiewit Landfill	4/11/95 1	OEPA	Public	PORTS AR Public Notice
1-20-15/60.001 1548		The Ohio EPA's and the U.S. EPA's Preferred Plan for the Peter Kiewit Landfill U.S. DOE - PORTS Site	4/13/95 72	OEPA Rochotte	Env. Information Center Childers	PORTS AR Preferred Plan

Portsmouth Gaseous Diffusion Plant
Peter Kiewit

Environmental Management Program

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AR Doc. No. Catalog No.	Internal Doc. No. Revision	Document Title	Date Pages	Originator From	Recipient To	Location Document Type
1-20-15/75.001 1586		Description: Ohio EPA's and U.S. EPA's Meeting Regarding Preferred Plans for DOE PORTS Peter Kiewit Landfill	4/18/95 10	OEPA	Public	PORTS AR Public Meeting
1-20-15/81.001 1566	EF-21-6802	Comments Regarding the USEPA and OEPA Preferred Plan Remediation of Contamination at the Peter Kiewit Landfill	5/10/95 5	USDOE Gillespie	USEPA, OEPA Averill, Rochotte	PORTS AR Comments
1-20-28/72.001 1573	PORTS/ER/CR0018	Peter Kiewit Landfill Interim Remedial Measures	5/18/95 2	SAIC	Public	PORTS AR Fact Sheet
1-20-28/00.006 1617	EF-21-6855	Maintenance Requirements for the Peter Kiewit Landfill Interim Remedial Measure	5/31/95 3	USDOE Gillespie	OEPA Rochotte	PORTS AR Letter
1-20-28/81.013 1720		Ohio EPA Approval of the Maintenance Construction Plan at the Peter Kiewit Landfill	7/13/95 1	OEPA Rochotte	USDOE Gillespie	PORTS AR Approval
1-20-05/81.006 1785		Ohio EPA Approval of the X-705 and Peter Kiewit Landfill Corrective Measures Study Reports	8/8/95 1	OEPA Rochotte	USDOE Gillespie	PORTS AR Approval
1-20-05/81.007 1823		Description: USEPA Approval of Revised Peter Kiewit Landfill CAS/CMS Report	9/14/95 1	USEPA Averill	USDOE Gillespie	PORTS AR Approval



APPENDIX B

STATE OF OHIO DECISION DOCUMENT



**Major Differences Between the U.S. EPA Decision Document
and the Ohio EPA Decision Document for the
Peter Kiewit Landfill at the Portsmouth Gaseous Diffusion Plant
Piketon, Ohio**

U.S. EPA and Ohio EPA have issued two separate decision documents for selection of the remedy for the Peter Kiewit Landfill at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio. Ohio EPA issued its decision document in May 1996. U.S. EPA delayed issuance of its decision document in order to address issues relating to radioactive waste disposal at Peter Kiewit Landfill. To ensure as much consistency between the two decision documents as possible, U.S. EPA based its decision document on the Ohio EPA decision document with several changes. The major differences between the U.S. EPA and Ohio EPA decision documents that resulted from the changes are listed below. Other editorial changes that were made are not listed.

1. The U.S. EPA decision document is referred to as a Statement of Basis/Record of Decision (SB/ROD) to indicate it complies with both RCRA and CERCLA.
2. The text of the declaration was changed to indicate that the SB/ROD is based on the Administrative Record Index for the response action.
3. A short paragraph describing the Peter Kiewit Landfill was moved from Section 5.0 to Section 1.0.
4. A standard paragraph required by EPA's ROD guidance was added to the end of Section 6.0. The paragraph states that the risks from the site, if not addressed by the response action, pose an imminent and substantial threat to human health and the environment.
5. The state acceptance evaluation criteria was added to Section 8.0 and evaluated in a new Section 8.8. A new section 8.9 was also added for the evaluation of the community acceptance criterion.
6. The text was revised to indicate that U.S. EPA reviewed and approved of the responses written by Ohio EPA in the Responsiveness Summary.
7. The four figures were added into the text of the document instead of being placed in an Appendix at the end of the document.
8. The Administrative Record Index was moved to Appendix A and the most recent version of the Q1 RFI report was added to the index.
9. The Federal ARARs pertaining to preparing and transporting hazardous waste off-site and RCRA land disposal restrictions were removed because the remedy does not involve hazardous waste management. In addition, RCRA Subtitle D landfill capping requirements were added to the list of Federal ARARs.
10. State ARARs that do not pertain to the remedy, such as air pollution limitations for incineration and regulations for hazardous waste management, were deleted from the State ARAR list. This results in a significantly shorter list of State ARARs in the U.S. EPA and U.S. DOE SB/ROD than in the Ohio EPA decision document.



PORTSMOUTH DOCUMENT RELEASE FORM

DOCUMENT DESCRIPTION (TO BE COMPLETED BY REQUESTER)

DOCUMENT NUMBER _____ DRAFT FINAL DOCUMENT DATE 05/97

DOCUMENT TITLE/IDENTIFIER Record of Decision / Statement of Basis Peter Kiewit Landfill United States
Department of Energy, Portsmouth Gaseous Diffusion Plant, Pike County, Ohio

AUTHOR(S) (NAME AND AFFILIATION) U.S. Environmental Protection Agency

PURPOSE OF RELEASE For a Public Request at the Environmental Information Center

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