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Superfund Record of Decision:

Craig Farm Drum, PA

50272-101

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15. Supplementary Notes

16. Abstract (Limit: 200 words)

The Craig Farm Drum site covers approximately 117 acres near the village of Fredericksburg in Armstrong County, Pennsylvania. The area around the site is dominated by farmland and forest, and a creek crosses the southern portion of the site. The site consists of two abandoned strip mine pits which were later used for disposal of distillation residue containing resorcinol and other high polymers. From 1958 to 1963 the Koppers Chemical Co. disposed of 2,500 tons of resorcinol production residue in 55-gallon drums in the pits. Resorcinol is an organic compound used as an adhesive enhancer in commercial products such as tires and pharmaceuticals. Investigations in 1984 revealed that the majority of drums were broken or crushed and were without lids. The primary contaminants of concern affecting the soil and ground water are organics including benzene and phenol, inorganics, and metals including lead and chromium.

The selected remedial action for this site includes the excavation of 32,000 cubic yards of soil from the two disposal pits and surrounding area with onsite treatment using solidification; placement of treated soil in a newly excavated and lined onsite landfill followed by capping; passive collection of ground water using a seep interceptor system with offsite treatment; and performing a ground water verification study. The estimated present worth cost for this remedial action is $5,188,000, which includes estimated annual O&M costs of $124,000 for 30 years.

17. Document Analysis a. Descriptors

Record of Decision - Craig Farm Drum, PA
First Remedial Action - Final
Contaminated Media: soil, gw
Key Contaminants: organics (benzene, phenol), inorganics, metals (chromium, lead)

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report) None	21. No. of Pages 46
	20. Security Class (This Page) None	22. Price

(See ANSI-Z39.18) *See Instructions on Reverse* OPTIONAL FORM 272 (4-77) (Formerly NTIS-35) Department of Commerce

RECORD OF DECISION
REMEDIAL ALTERNATIVE SELECTION

Site: Craig Farm Site, Perry Township, Pennsylvania

Statement of Basis and Purpose

This decision document represents the selected remedial action for the Craig Farm Site, in Perry Township, Pennsylvania, developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 (CERCLA), 42 U.S.C. Section 9601 et seq. and to the extent practicable the National Contingency Plan (NCP), 40 C.F.R. Part 300. This decision is documented in the contents of the Administrative Record for this site. The Commonwealth of Pennsylvania concurs with the selected remedy.

Assessment of the Site

Pursuant to duly delegated authority, I hereby determine that pursuant to Section 106 of CERCLA, 42 U.S.C. Section 9606, actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Record of Decision (ROD), may present an imminent and substantial endangerment to the public health, welfare, or the environment based on the information set forth in "Summary of Site Risks", pages 11-16.

Description of the Remedy

The selected remedy seeks to prevent site contaminants from migrating offsite and/or impacting a small creek that crosses the southern portion of the site (Unnamed Creek). A landfill will be constructed for disposition of the source material from the two disposal pits and the surrounding contaminated soil. The source material will be stabilized/ solidified prior to its placement in the landfill. Contaminated ground water will also be collected passively using two interceptor trenches at seepage points downgradient of the two pits. The collected ground water will be transported weekly to an offsite wastewater treatment plant until the remediation is judged to be completed.

Additional components of the selected remedy are as follows:

- After the two pits are excavated, they will be refilled with uncontaminated soil, and the area will be covered with enough soil to support vegetation.

- A ground water verification study will also be done to determine whether or not the ground water (both on- and offsite), not being addressed by the selected remedy, needs any further remediation. This study is expected to confirm that the ground water collection system is working properly, and is adequate to address all of the contaminated ground water.

- Institutional controls, such as utilizing deed notices to inform property owners about contaminants at the site, will also be implemented.

- A wetlands delineation will also be done in order to determine that the proposed location for the landfill is the appropriate distance from the onsite wetlands. If the proposed location is found to be too close to the wetlands, the landfill will be moved to a more remote area of the site. Potential impacts to the wetlands will be considered and minimized to the extent practicable during the design phase of this project.

- A treatability study on the solidification procedure will be done, and its effectiveness will be evaluated by the EPA prior to the full-scale remedial action.

Declaration

The selected remedy is protective of human health and the environment, attains Federal and State requirements that are applicable or relevant and appropriate to this remedial action, and is cost-effective as set forth in Section 121 of CERCLA, 42 U.S.C. Section 9621 and Section 300.68 of the NCP. This remedy satisfies the statutory preference as set forth in Section 121(b) of CERCLA, 42 U.S.C. Section 9621(b) for remedies that employ treatment that reduce toxicity, mobility, or volume of the hazardous substances, pollutants or contaminants. This remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. Because this remedy will result in hazardous substances remaining onsite above health-based levels, a review will be conducted every five years after commencement of remedial action in accordance with Section 121(c) of CERCLA, 42 U.S.C. Section 9621(c) to ensure that the remedy continues to provide adequate protection of human health and the environment.

Edwin B. Erickson
Regional Administrator

9/29/89
Date

RECORD OF DECISION

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SUMMARY OF REMEDIAL ALTERNATIVE

SELECTION FOR THE CRAIG FARM SITE

Site Name and Location

The Craig Farm site covers approximately 117 acres, and is located near the village of Fredericksburg, just inside the western border of Armstrong County, Pennsylvania. The borough of Petrolia lies approximately two miles to the west, and the town of Parker, on the Allegheny River, is about four miles to the north. The area around the site is dominated by farmland, and has a population density of approximately 120 persons per square mile.

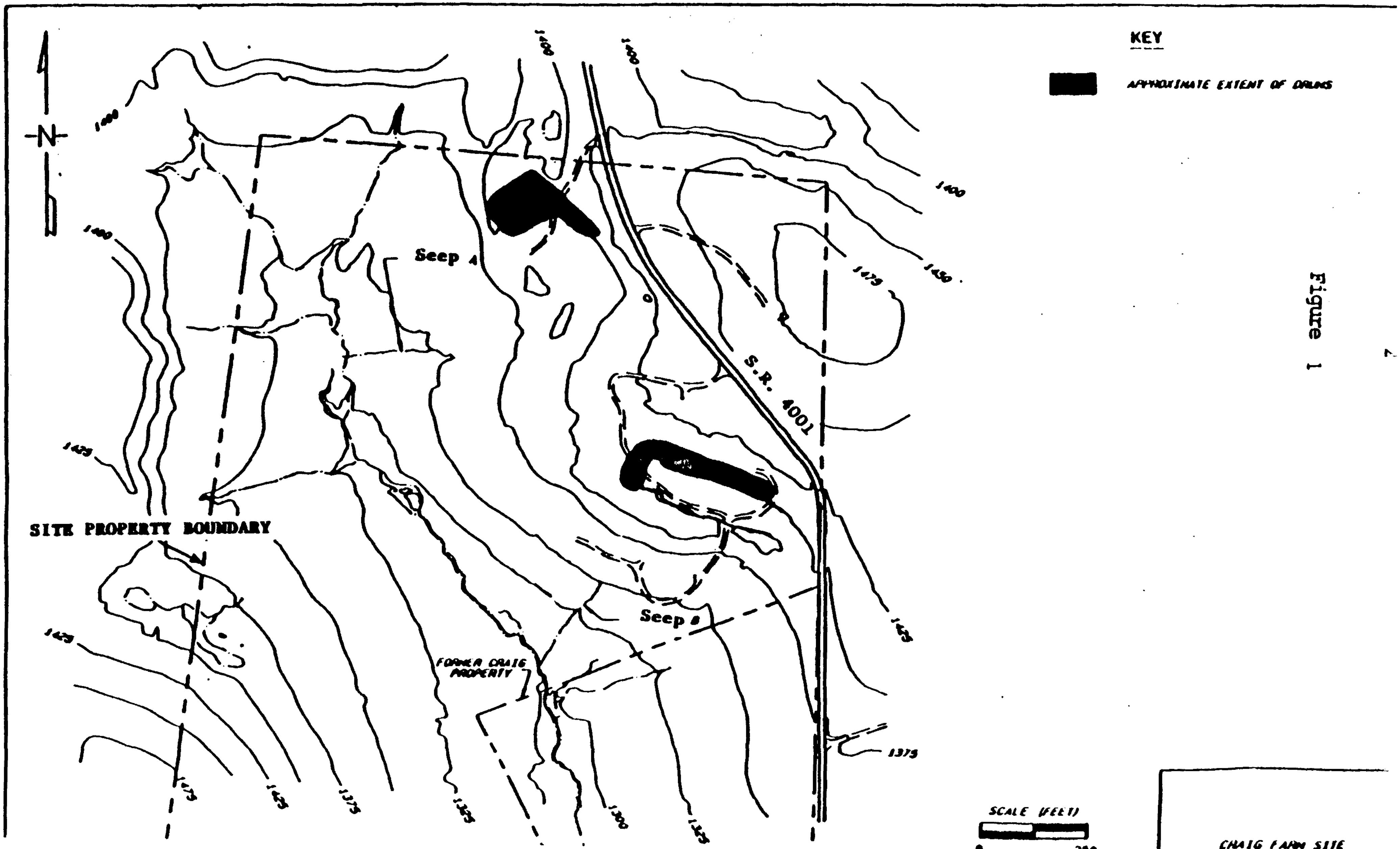
The site was originally two abandoned strip mine pits which had worked the Upper Freeport coal seam. As with most strip mines in the area, the pits were cut into a hillside beginning where the coal outcropped or subcropped. The pit walls were formed by the working face (highwall) of the mine and the spoil piles were deposited away from the working face.

Site History and Enforcement Activities

The two pits were used for the deposition of distillation residue from 1958 to 1963 (See Figure 1). The residue was still bottoms from the production of resorcinol at the Koppers Chemical plant in Petrolia, PA. Resorcinol, an organic compound is used as an adhesive enhancer in commercial products, such as automobile tires and pharmaceuticals.

At the time when the source material was placed onsite, the land was owned by Mr. Paul Craig. His brother, Mr. Herman Craig, hauled the distillation residue from the plant and placed it in the two pits. Approximately 2,500 tons of residue contained in 55-gallon drums were deposited at the site. Near the end of 1971, Koppers purchased 100 of the 117 acre Craig property, which included the pits. In 1985, Koppers acquired the remaining portion of the Craig property.

Pursuant to Section 105 of CERCLA, 42 U.S.C. Section 9605, the Craig Farm Site was considered for placement on the National Priorities List (NPL). When the NPL was revised in December, 1982, the Craig Farm site was ranked 415 out of 418 sites proposed for the NPL at that time. On February 25, 1983, Koppers presented to the Pennsylvania Department of Environmental Resources (PADER) a proposal for a hydrogeological study of the site. Koppers decided to also undertake a surface water sampling study, a stream biological study, an air quality survey, and to incorporate them into the hydrogeologic investigation resulting in an Environmental Assessment (EA) of the site. The EA was submitted to PADER on October 31, 1983.



KEY
APPROXIMATE EXTENT OF DRUMS
N
Seep A
Seep B
S.R. 4001
SITE PROPERTY BOUNDARY
FORMER CRAIG PROPERTY
1400
1425
1450
1475
1375
1350
1325
1300
SCALE (FEET)
0
250
CRAIG FARM SITE

Figure 1

On January 19, 1984, the County of Armstrong, Department of Public Protection prepared an Emergency Preparedness Plan for the site. On April 23-24, 1984, Koppers undertook an investigation to determine the approximate extent and condition of the still bottom residue drums at the site. Representatives of the PADER were onsite to observe the investigation. A series of fifteen test pits were excavated. The results of the test pits indicated that the drums were butted against the highwall of both strip mine cuts, and then covered. The majority of the drums were broken or crushed and were without lids.

EPA contracted GCA Corporation to review the Koppers EA of the Craig Farm site. EPA, with GCA representatives, visited the site on June 29, 1984, and issued draft comments on the EA report in August, 1984. On April 1, 1985, the PADER and EPA offered joint comments on the EA report.

During the fall of 1984, Koppers investigated several remedial measures, including excavation and recycling of the residue and onsite and offsite incineration. On August 2, 1985, the PADER requested Koppers to perform a complete Remedial Investigation and Feasibility Study (RI/FS) of the Craig Farm site. On November 12, 1985, representatives of Koppers, PADER, and EPA met to discuss the RI/FS Work Plan and the EPA and PADER comments on the EA report. It was agreed at this meeting that as much of the information from the EA report as possible would be used in the RI/FS development. Additional work was required to satisfy RI/FS protocols which evolved following the preparation of the EA report.

In February, 1986, Keystone Environmental Resources, Inc. and Remediation Technologies, Inc. began work on the Craig Farm site RI/FS for Koppers. From September, 1986 through August, 1987, a biological survey was performed by Keystone utilizing data obtained from four rounds of sampling at the Craig Farm site. From October, 1986 through June, 1987, a biota survey was performed by Keystone utilizing data obtained from two rounds of sampling (Fall, 1986, and Spring, 1987) at the Craig Farm site. From November, 1986 through August, 1987, Keystone performed six rounds of sampling to characterize the surface water and sediments at the site.

From December, 1986 through November, 1987, Keystone performed four rounds of sampling to characterize the ground water at the site. On February 10 1987, Koppers Company, Inc. signed a Consent Order and Agreement with PADER to perform a RI/FS of the site.

In May, 1988, the EPA and PADER requested that five additional wells be installed to further delineate the ground water contamination. These wells were installed in November, 1988.

On January 20, 1989, BNS Acquisitions merged into Koppers, and on January 26, 1989, the name of Koppers was changed to Beazer Materials and Services, Inc. (Beazer).

In April, 1989, the Draft Remedial Investigation (RI) was submitted to the State and the EPA. The Revised RI was submitted in August, 1989. The Draft Feasibility Study (FS) was submitted in July, 1989, and the Revised FS was submitted in August, 1989.

A Special Notice Letter, granting Beazer the opportunity to make a good faith offer pursuant to Section 122(e) of CERCLA, 42 U.S.C. Section 9622(e), was sent by the EPA to Beazer on August 24, 1989.

Community Relations

On April 7, 1987, PADER conducted a public meeting to announce the start of the RI/FS at Craig Farm. The RI/FS and the Proposed Plan for the Craig Farm Site were released to the public in August, 1989. These two documents were made available to the public in the administrative record file and an information repository maintained at the EPA in Region III and in the administrative offices of the Karns City Area High School in Karns City, Pennsylvania.

The notice of availability for these two documents was published in the Butler Eagle on August 25, 1989. A public comment period was held from August 25, 1989 through September 25, 1989. In addition, a public meeting was held on September 13, 1989. At this meeting, representatives from EPA and PADER answered questions about problems at the site and the remedial alternatives under consideration. The only written comments received during the public comment period were in a letter from Beazer, a copy of which is attached. The Responsiveness Summary is based on oral comments received during the public meeting and on the written comments. The above actions satisfy the requirements of Section 113(k) and 117 of CERCLA, 42 U.S.C. Section 9613(k) and 9617.

Identification of Operable Units

The Craig Farm Site has been divided into three operable units:

1. Operable Unit #1

Operable Unit #1 is the distillation residue material in each pit area and the adjacent contaminated soils. Contaminated soils are defined as those soils determined analytically to contain detectable amounts of resorcinol. The detection limit for resorcinol in soils is approximately 50 parts per million.

2. Operable Unit #2

Operable Unit #2 is the remaining portion of each pit area not defined as Operable Unit #1 material, mainly overburden and adjoining soils that are determined analytically to be clean.

3. Operable Unit #3

Operable Unit #3 includes Seeps A and B (see Figure #1) which are downgradient locations where seeps containing contaminated ground water are discharging.

Operable Unit #2 is uncontaminated soil that is considered an operable unit merely because it must be moved to get to the underlying contaminated soils and source materials. However, Operable Unit #2, by definition, contains only clean soils and therefore, will not be discussed in the analysis of treatment alternatives. The operable unit does contain any contaminated soils that would require any remediation.

A ground water verification study will be done to determine whether or not the ground water (both on and off-site), not being addressed in this ROD, needs any further remediation. If additional ground water remediation is required, it will be considered a separate operable unit, and will be addressed in a subsequent ROD for this site.

Site Characteristics

A. Topography

The area around the site is farmland and forest, with surface mining operations throughout the area. The site is a small steep hillside with an average gradient of 1.43 ft/ft. Strip mining activities have created two separate highwalls with the bottom of the pits at an elevation of 1400 feet (mean sea level). The topography of the site area is characterized by a dendritic drainage pattern with good surface water drainage throughout the watersheds.

B. Land Use

Current figures show that approximately 28 percent of Armstrong County is farmland, 52 percent is forest, and 20 percent other. The area around the site, including the village of Fredericksburg, is dominated by farmland. Strip mining is also conducted in the surrounding area.

The site is not used for any commercial or residential purposes, although it could be used for recreational purposes after remediation. Due to the steepness of the topography and remoteness of the site, future commercial or residential development may be limited.

C. Hydrology

Surface water on the site consists of several seepage ditches emanating from the former pits, and the Unnamed Creek. Drainage, via hillside runoff and the seepage ditches, flows from the site into Unnamed Creek, which in turn flows southeast and discharges into Valley Run, approximately one mile from the site. Valley Run flows northeast for approximately one and a half miles and discharges into the Allegheny River. The seepage ditches are actually small erosion channels which have formed via hillside runoff. The seeps drain into one of these two channels.

D. Wildlife

Faunal species have been noted at the site during various field investigations and include: several species of small mammals (rabbits, squirrels, chipmunks, etc); various species of birds, deer, and bear. These animal species are commonly found in woodland habitats. Vegetation identified as part of the biota investigation include: numerous herbaceous species and several woody species in various stages of growth (seedlings, saplings and mature trees).

E. Hydrogeology

Ground water at the site occurs under water table conditions in the unconsolidated zone and under confined conditions in the upper bedrock and lower sandstone aquifers. Portions of the unconsolidated materials are water bearing. The interval from below the Upper Freeport Coal to the top of the lower sandstone unit has been collectively designated as the upper bedrock aquifer, although this unit is not a good water producing zone. Most water produced in this unit is present around the Lower Freeport Coal seam. Water level measurements indicate that the flow in the upper bedrock aquifer is to the west toward Unnamed Creek. The other water producing zone beneath the site has been designated as the lower sandstone bedrock which occurs beneath the Lower Freeport Coal, at an approximate elevation of 1300 feet. The ground water flow within the lower sandstone is to the south and southwest toward the valley bottom.

Water level contours for the unconsolidated materials indicate the water table surface resembles, and usually mimics, the topography. Flow lines indicate that ground water migrates toward the stream valley, as expected. The contours near the southern portion of the site, tend to swing toward the east, which indicates that the seepage stream gully and the topographic slope toward the former Craig property, influence the ground water flow in this area.

Downslope from the two pits, the unconsolidated material thins out near the 1350 elevation. This is also the approximate elevation where many of the hillside seeps occur. This indicates that the ground water flows through the unconsolidated materials and along the shale contact, until discharging on to the hillside.

F. Nature and Extent of Contamination

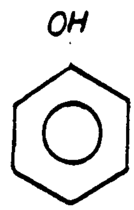
The distillation residue deposited in the two pits contains resorcinol and other higher polymers. The distillation residue is a waste created in the production of resorcinol, and its composition has been analyzed. The waste is a CERCLA hazardous substance, but it is not a Resource Conservation and Recovery Act (RCRA) hazardous waste. The composition of the waste is as follows:

Resorcinol	5-10%
Dihydroxydiphenyls (DHD)	20-25%
Trihydroxydiphenyls (THD)	30-35%
higher polymers	30-35%

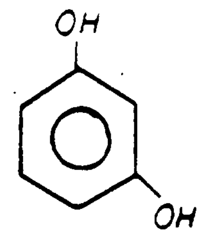
The chemical structure of the compounds is illustrated in Figure 2.

FIGURE 2

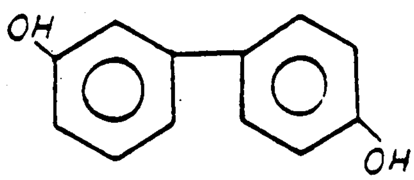
CHEMICAL STRUCTURES OF PHENOL, RESORCINOL, DHD, THD, and RELATED HIGHER MOLECULAR WEIGHT POLYMERS



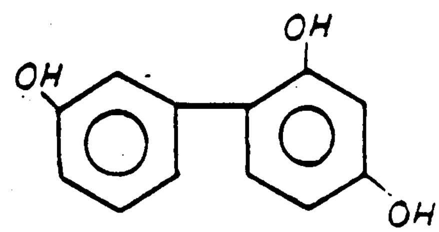
PHENOL



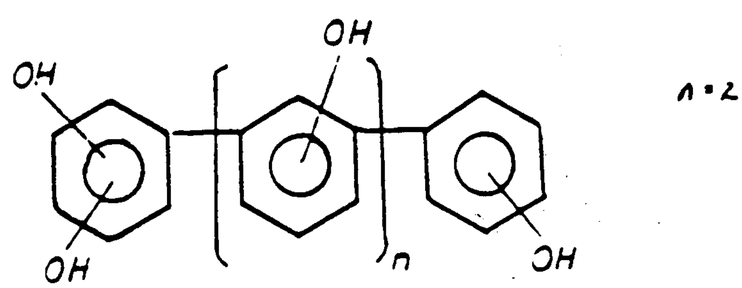
RESORCINOL



3,4'-DIHYDROXYDIPHENYL



2,3',4-TRIHYDROXYDIPHENYL



HIGHER MOLECULAR WEIGHT POLYMERS

Test pits dug into the two pits showed that the residue ranged from black or pink semi-solid material to hardened chunks. The northern pit encompasses 1.2-1.5 acres and the southern pit encompasses approximately 0.8-1.0 acre. Analytical data also indicate that the source material in the pits is most concentrated from 2.5-6.0 feet below the surface. Contaminated soil exists near the two pits, especially downslope of these two areas.

The water quality data obtained from the RI has been used to refine interpretations regarding the horizontal and vertical extent of degraded ground water at the Craig Farm site. Generalized boundary maps for the unconsolidated materials zone, upper bedrock aquifer, and lower sandstone aquifer are based on the detection of one or more of the process-related organic indicator parameters in penetrating those respective monitoring intervals. The chemical constituents associated with the former site activities are present in ground water in each of the three geologic intervals described above.

Within the unconsolidated materials zone, the degraded ground water appears to extend beneath most of the site. Due to the thinning of this zone below the pits, ground water moves along the top of the shale and discharges to the surface at an approximate elevation of 1340 ft. Because the Unnamed Creek represents the local discharge point for the unconsoldated materials zone, the limit of the impacted ground water is thought to be to the west by Unnamed Creek.

Within the upper bedrock aquifer unit, the degraded ground water appears to extend beneath most of the study area. Ground water moves through the shale and discharges along the position of the Lower Freeport Coal seam. Because the Unnamed Creek and the topographic position represent the local discharge point for the upper bedrock aquifer, the limit of the impacted ground water is thought to be to the west by Unnamed Creek.

Within the lower sandstone aquifer unit, the degraded ground water extends from the area of the two pits to an area immediately east of the Unnamed Creek valley bottom. Ground water movement in this unit is influenced by migration of ground water from above the Lower Freeport Coal seam, as well as through regional ground water discharge toward the valley bottom.

G. Biological Findings

From September, 1986 through August, 1987 a biological survey was performed to determine the effects, if any, of potential constituents of concern on aquatic biota. The study found that macroinvertebrate communities located down-gradient of the site did exhibit signs of stress. The stress was characterized by a lack of macroinvertebrates species that are indicators of good water quality. Statistical correlations indicate that, of the process-related constituents, trihydroxydiphenyl (THD) concentration has the greatest impact on macroinvertebrates. Chemical analyses of crayfish tissue determined that no bioaccumulation of any PCOC could be detected. There also were no indications of any biomagnification of any site-related compound.

There was no stress detected in the fish community in Valley Run, and the impacted macroinvertebrate community tested appear to recover within 1 mile of the confluence of the Unnamed Creek with Valley Run.

H. Air Monitoring Findings

In August and September, 1987, an air monitoring survey was performed at the site to determine the air quality in regards to the source material and several other compounds on the Hazardous Substance List. The air survey determined that the constituents of concern were not impacting the air quality at the site. Field sampling was conducted in accordance with a RI/FS Air Monitoring Work Plan. The results of this study were that the site in its present condition poses no health threat via air transport of site-related compounds.

SUMMARY OF SITE RISKS

Potential Contaminants of Concern

Soils, ground water, surface water and sediments, and ambient air were analyzed for various priority pollutant organics and metals as well as process-related constituents. Based on the analytical results and the above criteria, the following organic and inorganic constituents have been selected as potential contaminants of concern (PCOCs):

Organics:

- o resorcinol
- o trihydroxydiphenyl (THD)
- o meta-phenolsulfonic acid (m-PSA)
- o para-phenolsulfonic acid (p-PSA)
- o benzene sulfonic acid (BSA)
- o benzene meta disulfonic acid (BMDSA)
- o benzene
- o phenol

Inorganics:

- o cadmium
- o chromium
- o copper
- o lead
- o zinc

This list of organic PCOCs, excluding benzene, are process-related constituents. Although other priority pollutant organics were detected in one round of surface water sampling, they were not selected as PCOCs since the final round of sampling determined the concentrations to be below the limits of detection. The priority pollutant metals selected as PCOCs are not process-related constituents. However, they were detected at levels greater than typical background levels for the media in which they were measured. Cadmium was the only metal detected above background levels in the soil. The other metals were detected in the ground water. It should be noted that the above set of PCOCs were not necessarily detected in each of the media of interest. Table 1 lists PCOCs in each of the areas of interest.

Toxicological Profiles

Toxicological data on the majority of the PCOCs identified at the site, i.e. the process-related constituents - resorcinol, THD, DHD, m-PSA, p-PSA, BMDSA, and BSA, is either scarce or absent. Resorcinol, for which some toxicological data is available, was used as the representative for all of these related compounds based on the similarity of their chemical structures. Resorcinol is moderately toxic, but it is not presently considered a carcinogen.

RETAINED POTENTIAL HUMAN EXPOSURE PATHWAYS

ium of ent	Current or Future	Pathways	Receptor	Retained/Not Retained for Quantitative Analysis	PCOCs
ce Water Sediments	Current- Valley Run Only	Dermal Inhalation Incidental Ingestion	Recreational Users- waders bait seekers	Not Retained - No PCOCs in Valley Run	None in Valley Run
	Future	Same as Above	Same as Above	Same as Above	None in Valley Run
ndwater imeter d C Series s Only)	Current	None	-----	-----	-----
	Future	Dermal Inhalation Incidental Ingestion	Hypothetical Future miners	Retained Not Retained Not Retained	resorcinol,THD, m-PSA, p-PSA, BMDSA, phenol, benzene, lead, zinc cadmium, chromium, copper
eries s Only)	Future	Dermal Inhalation	Off-Site Domestic Well-Users	Retained Not Retained - Not Volatile based on ambient air results	resorcinol, m-PSA, p-PSA, THD, phenol, BSA, cadmium, chromium, copper lead, zinc
		Incidental Ingestion		Retained	
cial Soils -other & oils)	Current	Dermal Inhalation Incidental Ingestion	Trespassers	Retained Not Retained- based on ambient air monitoring results Retained	resorcinol, THD, m-PSA, p-PSA, cadmium
	Future	Same as Above	Same as Above	Same as Above	Same as Above
p Soils her Soils)	Current	None	-----	-----	-----
	Future	Dermal Inhalation Incidental Ingestion	Hypothetical Future miners	Not Retained-Strip Mined Not Retained-Strip Mined Not Retained-Strip Mined	-----

Table 1

The Registry of Toxic Effects and Chemical Substances lists the oral lethal dose of resorcinol in rats as 301 mg/kg. Benzene is the only known carcinogen that is a PCOC at this site, and it is present only at low levels in the soils and ground water.

Potential Migration Routes

An exposure pathway usually involves the transport of chemicals through an environmental medium or from one environmental medium to another. At the site, migration of PCOCs could potentially occur via movement through surface water, sediments, ground water, soil, or ambient air.

The analysis of surface water (i.e. Seeps A & B, Unnamed Creek, and Valley Run) resulted in detectable concentrations of several of the PCOCs in both Unnamed Creek and the seeps. However, these same constituents were below detection limits in Valley Run which is the body of surface water most likely to be used by potential receptors. Therefore, surface water was not considered as a significant migration route for PCOCs, because of the lack of a receptor. Analysis of the PCOCs in sediments resulted in 1) levels below limits of detection (resorcinol, m-PSA, BSA, BMDSA), 2) detectable concentrations in only one sampling round (THD), or 3) levels similar to controls (benzene). These results indicate that sediments do not provide a significant migration route for the PCOCs.

Surficial soil samples taken from test pits 0 to 2 feet in depth and from the strip mine pits resulted in detectable concentrations of resorcinol, THD, m-PSA, p-PSA and cadmium. Therefore, surficial soils and deeper soils may be potential migration routes. Based on analytical results, ground water is also a migration route for all of the PCOCs.

With respect to ambient air samples, the PCOCs were either below detection limits, or in the case of benzene, were equivalent to typical U.S. rural background levels. Therefore, the transport of PCOCs through ambient air will not be considered further as a potential migration route at the site.

Potential Human Exposure Pathways

In the identification and evaluation of potential exposure pathways, potential current and potential future uses of the site were considered. The area currently is restricted from recreational use. Hypothetical future uses were determined based on the typography and current demographic use of the surrounding area. The steepness of the hillside on which the site is located and its remoteness may preclude future commercial or residential development.

Therefore, future occupants or construction workers will not be considered. Potential future use of the site for mining, an activity that has occurred on the site and is currently being practiced in the surrounding area, is utilized as the human exposure pathway for the risk calculations.

Potential Environmental Exposure Pathways

Surface water and sediments from Unnamed Creek, soil on the site, and sediments in Valley Run could provide potential environmental exposure pathways. Wildlife could be exposed to site-related contamination by coming in contact with the seeps on the hillside downgradient from the two pits.

Terrestrial species inhabiting the site, which is primarily wooded, include deer, rabbits, squirrels and other mammalian species. Amphibious species (i.e. turtles, frogs, salamanders) also inhabit areas of the site. Aquatic organisms that could inhabit Valley Run and Unnamed Creek include invertebrates and fish.

The lack of benthic macroinvertebrates and fish in Unnamed Creek indicates that PCOCs in the stream are impacting aquatic life.

Risk Characterization

An exposure assessment and risk characterization was carried out for the following exposure pathways: 1) incidental ingestion and dermal absorption of PCOCs in surficial soils by trespassers; 2) dermal absorption of PCOCs in ground water by hypothetical future miners; and 3) incidental ingestion and dermal absorption of PCOCs in ground water by future offsite domestic well users.

The maximum concentration of resorcinol, THD, and DHD found in soils were 1400 mg/kg, 11,500 mg/kg, and 250 mg/kg, respectively. BSA had a maximum concentration of 700 mg/kg, m-PSA had a maximum of 320 mg/kg, and the highest level of p-PSA was 2250 mg/kg. The highest level of benzene found in the soils was 7.8 mg/kg. The levels of PCOCs in the ground water are listed in Table 2.

The PCOCs for each receptor group varied according to predicted usage patterns, i.e. potential trespasser exposure to surficial soils, potential exposure of hypothetical future miners to ground water in the uppermost bedrock unit and the lower sandstone unit, and potential future domestic well usage of ground water from the lower sandstone unit.

TABLE 2

GEOMETRIC MEAN CONCENTRATION RANGES OF
PCOCs IN GROUNDWATER

Compound (mg/l)	Level	Frequency of Detection	Range (mg/l)
BSA	A	4/9	<25 - 70.5
(<25)	B	9/19	<25 - 74.4
	C	3/12	<25 - 29.7
BMDSA	A	2/9	<25 - 19.2
(<25)	B	5/9	0.37 - 122
	C	0/12	ND(1)
m-PSA	A	6/9	<25 - 96.7
(<25)	B	7/19	<25 - 183
	C	1/12	<25 - 345
p-PSA	A	8/9	<25 - 721
(<25)	B	7/19	<25 - 1063
	C	4/12	<25 - 811
Benzene (ug/L)	A	6/9	<1.0 - 2.55
(<1)	B	6/19	<1.0 - 3.71
	C	5/12	<1.0 - 1.6
Phenol	A	9/9	0.05 - 0.86
(<5)	B	13/19	<0.005 - 0.71
	C	9/12	<0.005 - 0.27
Resorcinol	A	8/9	<5.0 - 878
(<5)	B	9/19	<5.0 - 872
	C	5/12	<5.0 - 465
THD	A	9/9	7.67 - 2453
(<0.5)	B	11/19	<5.0 - 2455
	C	6/12	<5.0 - 1435

NOTES:

(1)Not detected in any sampling round.
<-indicates detection limit.
All concentrations in mg/L unless otherwise noted.
Level A is the shallow wells, Level B is medium-depth wells, and Level C is the deep wells.

Hazard indices and/or risk calculations were calculated for each of these receptor groups and are as follows:

- The total hazard index for trespassers, the sum of the hazard indices for incidental ingestion (3.28×10^{-3}) and dermal absorption from soil (0.07), is 0.07.

- The total hazard index for hypothetical future miners for dermal absorption from ground water is 0.43 and the excess individual lifetime cancer risk is 1.39×10^{-7}.

- The total hazard index for future offsite domestic well-users, the sum of the hazard indices for incidental ingestion (0.63) and dermal absorption from ground water (1.39×10^{-4}) is 0.63.

The total hazard indices calculated for trespassers, hypothetical future miners and future offsite domestic well users were all less than 1. A hazard index of 1 or less indicates that the estimated intakes are less than the threshold intake levels and that there is no appreciable risk of adverse health effects.

The cancer risk to future miners is based on potential exposure of future miners to benzene in the ground water. The potential excess individual lifetime cancer risk calculated for hypothetical future miners was 1.39×10^{-7} which is lower than the upper bound of the range recommended by the U.S.EPA of 10^{-4} to 10^{-7}.

The human health threat presented by this site is negligible in as much as there are no human receptors onsite, or immediately adjacent to the site at this time. The site is presently having an impact on Unnamed Creek and the onsite wetlands as well as the organisms living in these communities. Thus, the selection of the remedy is based on the site's impact on the environment rather than on a risk to human health. As described above, the site does present an imminent and substantial endangerment to the environment as set forth in Section 106 of CERCLA, 42 U.S.C. Section 9606.

DESCRIPTION OF ALTERNATIVES

A number of alternatives were developed to meet the following remedial action goals:

- minimize risk to the public health and environment from direct contact with contaminated material

- control the migration of contaminants into nearby surface waters

- control the migration of contaminants into ground water

OPERABLE UNIT #1 (OU1) - The source material in the two pit areas and the adjacent contaminated soils.

Alternative 1: No Action

This alternative provides the baseline or reference point against which each of the operable unit alternatives are compared. If the other selected alternatives do not offer substantial benefits in reduction of toxicity, mobility, or volume, then the No Action alternative may be considered a feasible approach.

The No Action alternative would consist of continued monitoring of Unnamed Creek and the ground water, as well as potential deed notices. Monitoring of Unnamed Creek and the ground water would consist of monitoring for PCOCs on a semi-annual basis. The semi-annual monitoring would be implemented to determine the potential effects, if any, on the creek and ground water, and would be assumed to continue for a 30-year period. The monitoring would consist of the collection and analysis of 16 groundwater samples and 5 surface water samples. Institutional controls utilizing deed notices would be implemented to inform property owners about the PCOCs at the site. Fences would also be erected around the two pit areas.

Monitoring would require a two-man field crew spending approximately 8 days each year. The Operation and Maintenance (O&M) costs for this alternative are estimated as $49,000 per year which includes sampling and analysis, administration costs, and labor. Assuming a 5% interest rate and a projected 30-year monitoring period, the associated present worth of this alternative has been estimated to be $817,000.

Alternative 2A: Slurry Walls with Impermeable Cap

This alternative provides for installing upgradient slurry walls and surface capping the OU1 areas with low permeability material. Low permeability caps would be con-tructed over the OU1 areas to substantially reduce migration of PCOCs to Unnamed Creek. The surface cap would consist of a relatively impermeable soil layer, a synthetic membrane liner, a conducting zone, cover soil, and top soil with a vegetative cover.

The capped area would be graded to achieve the required surface drainage patterns, and compacted to provide a stable subgrade for cap construction. After the initial surface preparation work, the relatively impermeable barrier soil layer would be constructed. This layer would consist of two feet of either remolded natural clay or soil with clay (bentonite) additives. A High Density Polyethylene (HDPE) synthetic membrane liner would be installed over the barrier soil layer. Above the 50 mil synthetic membrane, a one-foot thick conducting zone would be constructed of granular material and would intercept infiltrating water, and direct it to the perimeter of the cap for discharge into surface drainage facilities. Above the conducting zone, two feet of soil cover would be placed for frost protection. The cap construction would be completed with a six-inch topsoil layer and the entire capped area, as well as adjacent disturbed areas, would be seeded and mulched for long-term erosion control.

To divert the ground water around the OU1 areas, a slurry trench of approximately 600 linear feet would be installed on the upgradient side of both the northern and southern pits. The slurry trench would be founded into the shale layer, which is approximately 15 feet below surface, and the width of the trench would be at least 24 inches. The slurry wall would be constructed using a soil/bentonite clay mixture. The trench would be excavated using special backhoes and the slurry material would be mixed and backfilled using a bulldozer.

This alternative would take four months to complete. The capital cost for this alternative is estimated to be approximately $1,280,000, and the associated O&M costs are approximately $49,000. The total present worth of this alternative is, therefore, about $2,033,000, assuming a 30-year period at 5% interest.

<u>Alternative 2B: Slurry Walls, In-Situ Solidification/Fixation Treatment, Capping</u>

This alternative provides for solidification/fixation treatment of OU1 material, installing upgradient slurry walls and surface capping the OU1 areas with low permeability material. OU1 material would be chemically treated and low permeability caps with slurry walls would be constructed over the OU1 areas to substantially reduce migration of PCOCs to Unnamed Creek. The surface cap and slurry walls would be identical to those discussed in alternative 2A.

In-situ chemical treatment of OU1 material would be performed by injecting reagent into the sub-surface area and mixing the reagent in place with the OU1 material. The equipment used for subsurface stabilization is similar to typical augering equipment with specialized bits. The treatment area would be divided into blocks for treatment with approximately 10% overlap of the treatment blocks to ensure complete treatment of the entire OU1 area. The volume of material to be solidified/fixed is expected to be 5,000 cubic yards. It would be necessary to perform treatability testing to determine the reagents that would be best suited for stabilizing OU1 material before this alternative could be implemented.

This option would take approximately 6 months to complete. The capital cost for this alternative is estimated to be about $2,717,500. The O&M costs associated with the alternative are estimated to be $49,000/year. The total present worth of the excavation and landfill alternative is, therefore, about $3,471,000, assuming a 30-year period and a 5% interest rate.

Alternative 3A: Excavation with Onsite Landfill

This alternative provides for the complete excavation of OU1 material and onsite landfilling. The excavated material would be placed onsite in a secure landfill (1.5-2.0 acres) located in the immediate area between the two existing pit areas. Typical construction equipment would be used for landfill construction and loading. The landfill would be lined with a two-foot clay barrier, and two layers of HDPE liner with filter fabric on each side. A one-foot leak detection zone would be placed above the secondary liner, and a one-foot thick seepage collection zone would be placed above the primary liner. Impacted soil would be compacted and placed on the liner to a depth of about 12 feet. After all impacted soil has been placed in the landfill, a cap would be constructed over the landfill. The cap would be composed of a two-foot clay barrier, one layer of HDPE liner, a one-foot drainage layer, and two feet of cover soil. After the cap is constructed, the area would be vegetated for erosion control.

This alternative would take approximately 5 months to complete. The capital cost for this option is estimated to be about $2,309,000. The maintenance costs associated with it are about $49,000/year. The total present worth of the excavation and landfill alternative is, therefore, about $3,062,000 assuming a 30-year period and a 5% interest rate.

Alternative 3B: Excavation with Solidification/Fixation Treatment Onsite Landfill

This alternative provides for the complete excavation of OU1 material, solidification/fixation of the source material using fixing agents and landfilling of all OU1 material onsite. The method of excavation and landfilling would be identical to that discussed for Alternative 3A; however the source material will be solidified before landfilling. Solidification/fixation treatment of OU1 material (5,000 cubic yards) would be performed by one of two methods. The simplest method would be to mix an appropriate reagent with the material using typical excavating equipment such as a bulldozer or backhoe. The second possible method would include excavating the source material and mixing it with an appproriate reagent in a pug mill. After solidification, the material would be transported to the onsite landfill. It would be necessary to perform treatability testing to determine the reagent that would be best suited for stabilizing the material before this alternative could be implemented. Some fixing agents react chemically with the waste material and thus change the chemical make-up of the resultant solid. Other solidifying agents have only a physical reaction, and merely encase the waste in a solid mixture. A solidification that involves a chemical reaction would be preferable because the toxicity of the waste material is reduced in the process. The effectiveness of the solidification procedure would also be evaluated during the treatability study by using the TCLP method (EPA Method 1311, 53FR18792, May 24, 1988).

This alternative would take six months to complete. The capital cost for this alternative is estimated to be about $3,053,750. The O&M costs associated with the alternative are estimated to be $49,000/year. The total present worth of this alternative is about $3,807,000 assuming a 30-year period and a 5% interest rate.

Alternative 3C: Excavation and Solidification/Fixation Treatment with Offsite Landfill

This alternative provides for complete excavation and solidification of all OU1 material and disposal at an offsite landfill. The method of excavation would be identical to that discussed for Alternative 3A and solidification/fixation treatment would be identical to that described for Alternative 3B. The materials would be removed and placed in a secure offsite landfill. Dump trucks with a capacity of 16 cubic yards would be employed. The transportation would be performed by licensed haulers, and appropriate regulations would be met for the transportation of these types of wastes. About 2,490 truck loads (@ 13 cubic yards/truck) would be required to transport this material to the landfill.

The excavated material would be taken to a licensed facility permitted to handle these materials in a secure landfill. The facility would have appropriate state and federal permits to receive these materials. This alternative would take 6 months to complete. The total present worth for this alternative is about $23,168,750 assuming a 30-year period and a 5% interest rate.

Alternative 4A: Excavation with Onsite Incineration

This alternative deals with complete excavation of OU1 material and then incineration in a onsite incineration unit. For the purposes of this evaluation, the incineration equipment is assumed to be a rental unit, and the estimated volume of material to be treated is about 32,300 cubic yards.

The onsite incineration equipment would consist of a primary oxidation chamber which would heat the OU1 material to be treated to an operating temperature of 1,500°F to 2,000°F, which is sufficient to drive the PCOCs from the material, and initiate their thermal destruction. Secondary chamber exhaust is processed through a heat exchanger to reduce the heat content of the gas stream. Heat may be re-covered in the form of steam or preheated combustion air. The cooled gas is treated for particulate matter removal and, where required, acid gases are reduced through a wet scrubbing technology.

The treating capacity of the incineration process would be approximately 50 to 100 tons per day. It is estimated to take 24 to 48 months based on the 50 to 100 tons per day rate to incinerate the 32,300 cubic yards. After incineration and destruction of the constituents in the excavated materials, inert ash may be replaced in the excavated zones of the site. Analysis of the ash during laboratory testing for comparison to EPA Toxicity Criteria indicated that ash from incineration of the Craig Farm waste material is inert and non-toxic.

Soils for backfilling and placing a soil cover over the excavated areas will be obtained onsite. Spreading and compacting backfill material will be achieved using a medium-sized dozer and self-propelled compactor. This alternative would be completed within 4 years. Total capital cost for the excavation and onsite incineration alternative is approximately $13,471,00. O&M costs associated with this option are $49,000, therefore, the total present worth for Alternative 4A is $14,224,000 assuming a 30-year period and a 5% interest rate.

<u>Operable Unit #3</u> (OU3) - Seeps A & B downgradient of the two disposal pits.

In the preliminary screening of alternatives for OU3, it was determined that the aquifer supplying these seeps was not very productive. Therefore, an active collection and treatment option, such as a recovery well connected to an air stripper, was not feasible for this operable unit, and was eliminated in the preliminary screening. The alternatives that were determined to be feasible for Operable Unit #3 are as follows:

<u>Alternative 1A: No Action</u>

This alternative would entail no action regarding the two seeps which are downgradient of the two disposal pits. There would be no cost associated with this alternative as it would not involve monitoring of the seeps.

<u>Alternative 2A: Seep Interceptor System and Offsite Treatment</u>

This alternative provides for collection of OU3 water using an interceptor system and transporting it offsite to a treatment system that is capable of handling wastewater of this type. This wastewater collection will continue indefinitely until the remediation is judged complete. The judgement about the completeness of the remediation will be done by periodically analyzing the water quality and toxicity of the wastewater using a bioassay test for resorcinol approved by the EPA.

Collection trenches would be installed perpendicular to the slope several feet above the location where Seeps A and B appear on the hill side. The trench would be constructed using conventional construction equipment. Each trench would be approximately 20 feet long, 5 feet deep, and 2 feet wide. The exact size of the trenches will be determined during remedial design. The trenches would be sloped to one side and a conducting zone composed of gravel and perforated pipe would be placed in the trenches, to collect the OU3 water and channel it to the sump located on the low side of the trench. A sump pump with level control would pump the water to a 40,000gallon tank providing a minimum of 10 days storage capacity. A pump truck would collect the water once each week and deliver it to the system at an offsite treatment plant. Total capital cost for this alternative is approximately $228,000. O&M costs associated with this option are $75,000, therefore, the total present worth for the alternative is $1,381,000 assuming a 30-year period and a 5% interest rate.

COMPARATIVE ANALYSIS OF ALTERNATIVES

In evaluating remedial alternatives, EPA evaluates nine specific criteria. The criteria are explained and briefly summarized in Table 3. The following section describes the nine evaluation criteria and how each of the alternatives compare according to each of these criteria. The criteria are analyzed first for OU1, and then for OU3.

1). Overall Protection of Human Health and the Environment

OU1

The site's main impact is on the environment; its impact on human health is negligible. Excavation with onsite incineration would reduce or eliminate the potential adverse impact on Unnamed Creek and the surrounding wetlands. Based on treatability testing, the ash would be of quality suitable for re-incorporation on the site. Alternative 3C would also reduce the adverse impact on the environment. The material would be placed offsite, so that future remediation is unlikely. Solidification treatment and onsite landfill would also reduce or eliminate the adverse impact to the nearby environment. However, this remedy would not eliminate the possibility of future remediation if the liner or cap failed and the solidification process failed. The remaining alternatives (2A,2B,3A) would be even more likely to require further remediation.

OU3

Collection of the OU3 water, and transporting it offsite reduces PCOC migration by decreasing PCOC concentrations at the site.

2). Compliance With ARARs

OU1

All of the alternatives would meet ARARs, and no waivers would be required. The waste material is a CERCLA hazardous substance, but it is not a RCRA hazardous waste. Certain RCRA regulations, specified in Table 7, although not applicable, are relevant and appropriate. The onsite landfilling alternatives would have to meet RCRA design standards for landfills. The incinerator option would have to meet RCRA requirements regarding incinerators. The offsite landfilling option would have to meet Hazardous Materials Transportation regulations. RCRA Closure and Post-Closure would require deed notic~s and long-term monitoring. The Executive Order on Protection of Wetlands is applicable, because there are wetlands onsite. Any remedial actions must be done without adversely impacting the wetlands. The proposed landfill must be a minimum of 300 feet from the wetlands because of the RCRA siting criteria regarding wetlands. The Occupational Safety and Health Act would be applicable in terms of protecting the safety of workers during any remedial action.

Table 3. DESCRIPTION OF EVALUATION CRITERIA

Overall Protection of Human Health and the Environment - addresses whether or not a remedy will: cleanup a site to within the risk range; result in any unacceptable impacts; control the inherent hazards (e.g., toxicity and mobility) associated with a site; and minimize the short-term impacts associated with cleaning up the site.

Compliance with ARAR's - addresses whether or not a remedy will meet all of the applicable or relevant and appropriate requirements of other environmental statues and/or provide grounds for invoking a waiver.

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 cleanup goals have been met.

Reduction of Toxicity, Mobility, or Volume through Treatment - refers to the anticipated performance of the treatment technologies that may be employed in a remedy.

Short-term Effectiveness - refers to 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 cleanup goals are achieved.

Implementability - describes the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement the chosen solution.

Cost - includes the capital for materials, equipment, etc. and the operation and maintenance costs.

Support Agency Acceptance - indicates whether, based on its review of the RI, FS and the Proposed Plan, the State concurs with, opposes, or has no comment on the preferred alternative.

Community Acceptance - will be assessed in the Record of Decision following a review of the public comments received on the RI, FS, and the Proposed Plan.

OU3

The wastewater collection and treatment system would be operated to ensure compliance with chemical-specific ARARs (See Table 5).

3). Long-Term Effectiveness

OU1

The most effective option long-term is the incineration option. Alternative 3B has good long-term effectiveness because if the containment system failed, the source material would be bound up, and the impact on human health and the environment would be minimal. The other treatment options would also be effective long term, especially if the site is properly maintained.

OU3

Collection and treatment of OU3 water will provide remediation of that water until it is no longer necessary.

4). Reduction in Toxicity, Mobility, Volume

OU1

Excavation with onsite incineration would result in permanent reduction in toxicity, mobility and volume of the organic PCOC's. Excavation with solidification and onsite landfilling would also reduce mobility of the PCOC's. It may or may not also reduce volume and toxicity depending on the solidification process. Some solidifications increase the volume of the waste material, and some decrease it. Some solidications decrease the toxicity of the waste material, and some do not effect the toxicity of the waste material. The most likely scenario is that the volume of the waste material would increase, and the toxicity would be reduced. Excavation and landfilling would reduce the mobility of site-related contaminants. Capping and slurry walls would reduce mobility. No action would not reduce toxicity, mobility or volume.

OU3

The collection and treatment of the contaminated water from the two seeps would reduce the mobility of the PCOCs. No action would not reduce toxicity, mobility or volume.

5). Short-term Effectiveness

OU1

The slurry wall and cap could be completed in four months, and the material would be contained. Excavation, solidification and onsite landfill would be completed in six months and would be a permanent treatment of the waste. Excavation and incineration would take 4 years to complete, so its short-term effectiveness would be low. No short-term reduction in PCOC's can be associated with the no action alternative.

OU3

Construction of the collection and offsite treatment alternative would be completed in approximately one month, however, collection and treatment would continue indefinitely.

6). Implementability

OU1

All of the alternatives proposed for this site can be easily implemented. For the solidification options, it would be necessary to perform treatability tests to determine the most effective method of solidification. The onsite incineration is the most difficult of the treatment options to implement.

OU3

The collection and offsite treatment option could be easily implemented. Access would be no problem, and the required equipment is readily available.

7). Cost

OU1

The most inexpensive treatment option is in-situ treatment with slurry walls. Alternative 3B is only marginally more expensive; it costs aprroximately $400,000 more than in-situ treatment. Incineration and offsite landfilling are substantially more expensive, at $14.2 and $23.9 million respectively. An important consideration at this site regarding cost is that, with the risk to human health being low, the more expensive remedies are difficult to justify.

8). State Acceptance - The PADER concurs with the remedy selection at this site. A copy of the state's concurrence letter is attached.

9). Community Acceptance - Community interest is low at this site. A single letter contained the only written comments received during the public comment period. A public meeting was held, and it lasted approximately 90 minutes. In general, the citizens seemed interested in having the site remediated as soon as possible. The citizens did not appear interested, however, in the details of the selected remedy. All significant comments are addressed in the attached Responsiveness Summary.

DESCRIPTION OF THE SELECTED REMEDY

Based upon consideration of the requirements of CERCLA, the detailed evaluation of the alternatives, and public comments, EPA has determined that Alternative 3B (Excavation, Solidification/Fixation Treatment Onsite Landfill) for Operable Unit #1 in combination with Alternative 2A (Seep Interceptor System and Offsite Treatment) for Operable Unit #3 is the most appropriate remedy for the Craig Farm Site in Perry Township, Pennsylvania.

Approximately 32,000 cubic yards of contaminated soil and source material will be excavated from the two source pits. A treatability study of the solidification procedure will be done, and its effectiveness will be evaluated using the TCLP prior to the full-scale remedial action. The results of this study will be submitted to EPA and PADER for review and comment. If the solidification procedure is not found to be effective, then other remedial alternatives will be considered. If the solidification procedure is effective in the treatability study, the source material will then be solidified, and the solidified waste and the contaminated soil will be placed in a double-lined landfill. All soil around the two disposal pits containing detectable levels of resorcinol will be placed in the landfill. The pits will be excavated until there are no longer any detectable levels of resorcinol in the soil.

Fill material will be placed in the excavated areas, and a minimum of six inches of soil cover will be placed on top of the fill material to support vegetation. The landfill will be lined with a two-foot clay barrier, and two layers of liner with filter fabric on each side. A one-foot leak detection zone would be placed above the secondary liner and a one-foot thick seepage collection zone will be placed above the primary liner. After all impacted soil has been placed in the landfill, a cap would be constructed over the landfill. The cap will be composed of a two-foot clay barrier, one layer of liner, one-foot drainage area, and two feet of cover soil. After the cap is constructed, the area would be vegetated for erosion control.

The selected remedy also includes collection and treatment of the groundwater via a seep interceptor system. Collection trenches will be installed perpendicular to the slope several feet above the location where Seeps A and B appear on the hill side. Each trench will be approximately twenty feet long, five feet deep and two feet wide. The flow rate from the two seeps is approximately 4000 gallons per day. A sump pump with level control would pump the water to a 40,000 gallon tank providing a minimum of 10 days storage time. A pump truck would collect the water once a week and transport it to an offsite water treatment plant. This collection and treatment of the contaminated water will continue indefinitely until the remediation is judged to be complete. The completeness of the remedy will be determined by using a bioassay testing procedure that is approved by the EPA.

A ground water verification study will also be done to determine whether or not the ground water (both on- and offsite), not being addressed in the selected remedy needs any further remediation. If additional ground water remediation is required, it will be considered a separate operable unit, and will be addressed in a subsequent ROD for this site.

Some changes may be made to the remedy as a result of the remedial design and construction process. Such changes in general will reflect modifications resulting from the engineering design process.

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Section 121 of CERCLA, 42 U.S.C. Section 9621, requires that remedial actions comply with applicable or relevant and appropriate requirements (ARARs) of promulgated federal and state laws.

A requirement may be either "applicable" or "relevant and appropriate" to a remedial action. Applicable requirements are cleanup standards, criteria, or requirements established under federal or state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstances at a CERCLA site. Relevant and appropriate requirements may not be "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, but may address problems or situations sufficiently similar to those encountered at the CERCLA site.

ARARs are divided into three separate groups of requirements: chemical-specific, location-specific, and action-specific. Chemical-specific ARARs are requirements which set health or risk-based concentration limits or ranges for specific hazardous substances, pollutants, or contaminants. Maximum Contaminant Levels (MCLs) are examples of chemical-specific ARARs. Location-specific ARARs set restrictions on activities based upon the characteristics of the site and/or the immediate environs. Examples of this type of ARAR include federal and state siting laws for hazardous waste facilities and sites on the National Register of Historic Places. The third classification of ARARs, action-specific, refers to the requirements that control remedial activities selected to accomplish a remedy. RCRA regulations for closure of hazardous waste storage units, RCRA incineration standards, and pretreatment standards under the Clean Water Act for discharges to wastewater treatment plants are examples of action-specific ARARs.

Chemical-Specific ARARs

As previously stated, chemical-specific ARARs set health or risk-based concentration limits or ranges for specific hazardous substances, pollutants, and/or contaminants. Based on the results of the Remedial Investigation, chemical specific ARARs for air-related impacts were not considered. Table 4 is a list of the state chemical-specific ARARs, and Table 5 is a list of the federal chemical-specific ARARs identified for the Craig Farm site. Table 6 shows the limits for the PCOCs under the chemical-specific ARARS.

Location-Specific ARARs

Location-specific ARARs are requirements that set restrictions on activities based upon the characteristics of the site and immediate environs. Table 4 includes a review of state location-specific ARARs. Federal location-specific ARARs are listed in Table 5.

Action-Specific ARARs

ARARs for the development of the remedial action alternatives under consideration for the Craig Farm Site can also be divided in state and federal ARARs. Table 7 sets forth federal action-specific ARARs, and state action-specific ARARs can be found in Table 4.

It should be noted that the RCRA Land Disposal Restrictions found at 40 CFR Section 268 apply only to RCRA hazardous wastes that are land disposed or placed after the effective date of the restrictions. The waste present at the Craig Farm Site is a CERCLA hazardous substance, not a RCRA hazardous waste, so the Land Disposal Restrictions are not applicable. Further, EPA has determined that the waste is not similar enough to a RCRA waste to make Land Disposal Restrictions relevant and appropriate. Thus, Land Disposal Restrictions are not ARARs.

TABLE 4

STATE ARARS

Standard, Requirement, Criteria, or Limitation	Citation	Description	Applicable/ Relevant and Appropriate	Comment
Chemical-Specific				
PA Water Quality Criteria including Toxic Management Strategy	25 PA Code Chapter 93 Chapter 97 Chapter 101	Establishes acceptable levels in surface waters for pollutants of concern.	Yes/No	phenol limit 0.005 mg/l
Location-Specific				
Solid Waste Management Act -Environmental Siting Criteria	25 PA Code Chapter 75	Establishes criteria for siting and operating solid waste disposal facilities.	Yes/No	Landfills may not be permitted in environmentally sensitive areas.
Clean Streams Law	25 PA Code Sec. 88.1	Establishes criteria for protection of streams.	Yes/No	Proposed limits expected to be promulgated in Fall 89.
Management Act - Wetlands	25 PA Code Sec. 105.1	Criteria for wetlands	Yes/No	Applicable if sited in or within 300 feet of an important wetland.

TABLE 5

FEDERAL CHEMICAL-SPECIFIC ARARs

andard, Requirement, iteria, or Limitation	Citation	Description	Applicable/ Relevant and Appropriate	Comment
fe Drinking Water Act	40 U.S.C. 300			
tional Primary inking Water andards	40 C.F.R. Part 141	Establishes health-based standards for public water systems(maximum contaminant levels).	No/Yes	The MCLs for PCOCs are relevant and appropriate for groundwater used for drinking purposes.
tional Secondary inking Water andards	40 C.F.R. Part 143	Establishes welfare-based standards for public water systems (secondary maximum contaminant levels).	No/Yes	Secondary MCLs for PCOCs are relevant and appropriate for groundwater used for drinking purposes.
ean Water Act	33 U.S.C. 1251-1376			
ter Quality Criteria	40 C.F.R. Part 131 Quality Criteria for Water	Sets criteria for water quality based on toxicity to aquatic organisms and human health	No/Yes	AWQCs for PCOCs are relevant and appropriate

FEDERAL LOCATION-SPECIFIC ARARs

ecutive Order on otection of Wetlands	Exec. Order No. 11,990 40 C.F.R. Part 6 Appendix A	Requires Federal agencies to avoid to the extent possible, the adverse impacts associated with the destruction or loss of wetlands and to avoid support of new construction in wetlands if a practical alternative exists.	Yes/No	Applicable because there are wetlands on site. A wetlands delineation will be done during the remedial design.

CHEMICAL-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)

PCOCs	Safe Drinking Water Act MCL[(a)] (mg/l)	SMCL[(b)] (mg/l)	Proposed MCLG[(c)] (mg/l)	Human Health AWQC Water and Aquatic[(d)] Organisms (ug/l)	Aquatic Life AWQC Fresh Water (ug/l)[(d)] Acute	Chronic	PADER Standards[(e)] (mg/l)	RCRA Groundwater Protection(f) Standard MCL (mg/l)
admium	0.01	--	--	10 ug/l	3.9	1.1	--	0.01
hromium VI	0.05	--	--	50	16	11	--	0.05
opper	--	1.0	--	1000	18.0	12.0	--	--
ead	0.05	--	--	50	82.0	3.2	--	0.05
inc	--	5.0	--	--	120	110	--	--
enzene	0.005	--	0	0.66	5300	--	--	--
esorcinol	--	--	--	--	--	--	--	--
henol	--	--	--	3.5 mg/l	10,200	2,560	--	--
SA	--	--	--	--	--	--	--	--
MDSA	--	--	--	--	--	--	--	--
PSA	--	--	--	--	--	--	--	--
PSA	--	--	--	--	--	--	--	--
HD	--	--	--	--	--	--	--	--

) Maximum Contaminant Levels Standards, promulgated under the Safe Drinking Water Act (40 CFR 141).
) Secondary Maximum Contaminant Levels, proposed under the Safe Drinking Water Act (40 CFR 141).
) Proposed Maximum Contaminant Level Goals.
) Ambient Water Quality Criteria for the protection of human health, promulgated under the Clean Water Act.
) Maximum Allowable Limits of the PADER.
) Maximum Contaminant Levels under RCRA (40 CFR 264.94).

Table 6

TABLE 7

FEDERAL ACTION SPECIFIC ARARs

tandard, Requirement, riteria, or Limitation	Citation	Description	Applicable/ Relevant and Appropriate	Comment
esource Conservation ecovery Act	42 U.S.C. 6901-6987			
riteria for lassification of Solid aste Disposal Facilities nd Practices	40 C.F.R. Part 257	Establishes criteria for use in determining which solid waste disposal facilities and practices pose a reasonable probability of adverse effects on public health or the environment and thereby constitute prohibited open dumps.	Yes/No	Only if a selected alternative includes onsite disposal.
tandards Applicable to enerators of Hazardous aste	40 C.F.R. Part 262	Establishes standards for generators of hazardous waste	No/Yes	If remedial action alternative involves offsite transportation of either soil or source material for treatment or disposal.
tandards Applicable to ransporters of azardous Waste	40 C.F.R. Part 263	Establishes standards which apply to transporters of hazardous waste within the U.S. if the transportation	No/Yes	If remedial action involves offsite transportation of soil or source material for treatment or disposal.
tandards for Owners and f Hazardous Waste reatment, Storage nd Disposal Facilities	40 C.F.R. Part 264	Establishes minimum national which define the acceptable management of hazardous wastes for owners and operators of facilities which treat, store or dispose of hazardous wastes.	No/Yes	The site contains no RCRA hazardous wastes, however, part 264 requirements are relevant and appropriate for incineration and landfilling.

Table 7 (continued)

tandard, Requirement, riteria, or Limitation	Citation	Description	Applicable/ Relevant and Appropriate	Comment
ccupational Safety and ealth Act	29 U.S.C. 1910 & 1926	Regulates worker health and safety in industry and construction.	Yes/No	Under 40 C.F.R. 360.38, requirements, of the Act apply to all response activities under the NCP.
	29 CFR 1910-120 or 54 FR 9294	Health and Safety standards for employes engaged in hazardous waste operations.	Yes/No	Final rule replaces existing interim final rule on March 6, 1990.
azardous Materials ransportation Act	49 U.S.C. 1801-1813			
azardous Materials ransportation egulations	49 C.F.R. Parts 107,171-177	Regulates transportation of hazardous materials.	Yes/No	Only if an alternative developed would involve transportation of hazardous materials.

STATUTORY DETERMINATIONS

Protection of Human Health and the Environment

The selected remedy would greatly reduce or eliminate potential migration of PCOC's, thereby reducing the potential for impacts on Unnamed Creek or the surrounding wetlands. The site presently has little or no impact on human health. This human health risk would be even lower after the selected remedy is implemented. The excavation process would be controlled to ensure that fugitive dust emissions and subsequent inhalation by nearby residents would be minimized. The implementation of the remedy will not pose unacceptable short-term risks or adverse cross-media impacts.

Cost-Effectiveness

The selected remedy is cost-effective because it has been determined to provide overall effectiveness proportional to its cost, the net present value being $4,479,000. The estimated costs of the selected remedy are within an order of magnitude of the costs associated with onsite landfilling of the source material, and yet the selected remedy assures a much higher degree of certainty that the remedy will be effective in the long term due to the reduction of the toxicity and mobility of the wastes achieved through solidification of the wastes prior to landfilling. While the selected remedy effectively reduces the hazards posed by all of the contaminants at the site, it costs approximately $10 million less than the onsite incineration alternative. Additionally, the cost-efficiency will be furthered by value engineering conducted during the remedial design. Treatability testing to determine the optimal reagent and its concentration for the solidification will also improve cost-efficiency of the remedy.

Utilization of Permament Solutions to the Maximum Extent Practicable

EPA has determined that the selected remedy represents the maximum extent to which permanent solution and treatment technologies can be utilized in a cost-effective manner for the Craig Farm Site. Of those alternatives that are protective of human health and the environment and comply with ARARs, EPA has determined that the selected remedy provides the best balance of tradeoffs in terms of long-term effectiveness and permanence, reduction in toxicity, mobility, or volume achieved through treatment, short-term effectiveness, implementability, cost, and also considering the statutory preference for treatment as a principal element.

While the selected remedy does not offer as high a degree of long-term effectiveness and permanence as the incineration alternative, it will significantly reduce the inherent hazards posed by the source material through stabilization such that the residual material that remains to be managed can be contained with a high degree of certainty over the long term. Since the remaining material will be bound up, even if the containment system were to fail, the impact on human health and the environment would be minimal.

The selected remedy treats the principal threats posed by the source materials and soils only slightly less effectively than the incineration. The selected remedy is as least as effective as all the all other treatment options in the short-term, requiring only six months to implement as opposed to possibly four years for incineration. The implementability of the selected remedy is comparable to the non-treatment options, and significantly better than the incineration option. The selected remedy is also one of the two least expensive treatment options, and costs significantly less than both incineration and offsite disposal.

The selection of treatment of the source material is consistent with program expectations that indicate that toxic and mobile wastes are a priority for treatment and often necessary to ensure the long-term effectiveness of a remedy. The major tradeoffs that provide the basis for this selection decision are short-term effectiveness, implementability, and cost. The selected remedy has better long-term effectiveness than in-situ treatment which is the only other treatment remedy that is less expensive. Excavation, solidification and onsite landfilling (3B) is therefore determined to be the most appropriate solution for the Craig Farm Site.

<u>Preference for Treatment</u>

By treating the source material with a solidification/stabilizing reagent, the selected remedy addresses one of the principal threats posed by the site through the use of treatment technologies. Therefore, the statutory preference for remedies that employ treatment as a principal element is satisfied.

FINAL RESPONSIVENESS SUMMARY
FOR THE CRAIG FARM SITE
PERRY TOWNSHIP, PENNSYLVANIA

The U.S. EPA established a public comment period from August 25, 1989 through September 25, 1989 on the Remedial Investigation and Feasibility Study (RI/FS) and the Proposed Plan for the Craig Farm Site in Perry Township, Pennsylvania. The RI/FS and other site-related documents utilized by the EPA to select a preferred remedial alternative are included in the site repository and have been available to the public since the beginning of the public comment period. The purpose of this Responsiveness Summary is to summarize comments on these documents as expressed by local residents, and other interested parties during the public meeting, and to provide EPA's responses to the comments. The only written comments that were received during the public comment period was a single letter from Beazer. The EPA responses to the comments in the letter are listed after the responses from the public meeting.

Summary of Major Comments and EPA Responses

A public meeting was held on the Proposed Plan at the Petrolia Fire Hall on September 13, 1989 at 7:00 P.M. Those attending the meeting included representatives from EPA, PADER, and approximately 20 members of the general public. During the meeting, EPA staff presented an overview of the background of the site, the nature and extent of contamination, the alternatives that have been considered for site contamination, and EPA's preferred alternative for remediating the sources of contamination. Following the presentation, EPA staff answered questions from the citizens about the site.

Questions received during the meeting are summarized below and are categorized into the following topics: 1) Responsible Party Involvement; 2) Extent of Contamination; 3) Potential Health Hazards; 4) Site Remediation; 5) Miscellaneous. Each comment is followed by EPA's response. All significant questions and comments made during the public meeting are included in this responsiveness summary. A complete transcript of the meeting is available for public review as part of the Administrative Record established for this site at the Karns City Area High School, Karns City, Pennsylvania.

1). Responsible Party Involvement

Several questions were asked about the responsible party, and their role in both the RI/FS, and the future remediation of the site. Citizens were concerned about the responsible party's ability to properly remediate the site. EPA staff explained that the responsible party performed the RI/FS under the direction and supervision of both the EPA and PADER. Any future remediation, if performed by the responsible party, would also be performed under the same supervision.

Extent of Contamination

2) A citizen asked how far the contamination extended from the two disposal pits on the Craig Farm Site. EPA staff explained the extent of contamination, and also said that the contaminants from the site did not in any way impact the Allegheny River.

Human Health Threat

3) A question was asked about the human health risk that is associated with the site. EPA staff explained that the site's impact on human health is negligible. EPA staff also advised the citizens not to drink water from the Unnamed Creek.

Site Remediation

4) A question was asked about how long it would be before the site was remediated. EPA staff explained that the remedial design and remedial action would be completed in approximately two years.

Miscellaneous

5) A citizen asked about the possible interaction of several Superfund sites which are all located near Petrolia, Pennsylvania. EPA staff responded by saying that it is very unlikely that the sites would interact in such a manner to present a human health risk. It was also mentioned that this type of interaction has not been studied in that area.

Written Comments and EPA Responses

Beazer wrote that the separation of the site into three operable units needed further clarification. They also added an explanation of what they felt was in each of the operable units. The EPA is in agreement with Beazer as to the separation of the site into three operable units, and the definition of each unit.

Beazer also wanted to clarify the length of time that the OU3 water will be collected and treated. The EPA response is that this remediation will continue until judged complete using a bioassay test approved by the EPA and PADER.

Beazer wanted also express an opinion about the ground water verification study. The ground water verification study will be done to determine if any additional ground water remediation is necessary at this site.

Beazer Materials and Services, Inc.
A Member of THE BEAZER GROUP
Environmental Services
436 Seventh Avenue, Pittsburgh, PA 15219
Phone: 412-227-2500 Fax: 412-227-2042

September 25, 1989

Mr. Stephen R. Wassersug
Hazardous Waste Management Division
USEPA Region III
841 Chestnut Street
Philadelphia, Pennsylvania 19107

Re: Comments of Beazer Materials and Services, Inc. Regarding the Craig Farm Site Proposed Remedial Action Plan

Dear Mr. Wassersug:

Beazer Materials and Services, Inc. (BM&S) hereby submits comments with regard to the Proposed Remedial Action Plan (the Plan) dated August 22, 1989 for the Craig Farm Site in Perry Township, Armstrong County, Pennsylvania. BM&S generally is in agreement with the Proposed Plan as set forth by EPA Region III with the exceptions noted below. In addition, a number of points raised generally in the Plan require clarification based on the technical considerations addressed in the Remedial Investigation (RI) and Feasibility Study (FS) prepared for this Site.

Operable Unit #1

The Plan provides that Operable Unit #1 (OU1) consists of the distillation residue material in each pit area and the adjacent contaminated soils. BM&S agrees with this identification of the extent of OU1 and the preferred alternative for addressing these materials. However, BM&S believes that stabilization should be limited to the distillation residue material which was estimated in the FS to be approximately 5000 cubic yards. Non-residue materials should

Writer's Direct Dial ______________

not be required to be stabilized by the Record of Decision (ROD).

Operable Unit #2

Operable Unit #2 (OU2) is defined as the remaining portion of each pit area not defined as OU1 material, mainly overburden and adjoining soils that are determined analytically to be "clean". BM&S agrees with EPA's description of the operable unit. With regard to the requirement that overburden and soils be determined analytically to be "clean", BM&S believes that because the material in OU2 has not been demonstrated to have health or environmental impact, a practically based cleanup level for OU2 materials should be 50 ppm resorcinol although based upon the human health and environmental risks examined in the RI/FS an appropriate cleanup level would be much greater than 50 ppm. This recommendation is based upon the following factors:

- 50 ppm is the lowest quantifiable detection limit proven for resorcinol at this time;

- The lack of health or environmental risk has been documented for levels of resorcinol in soils that greatly exceed the 50 ppm limit. See, e.g., Chapter 9.0 of the RI for the Craig Farm Site (the Public Health and Environmental Assessment document).

BM&S wishes to clarify that the language of the preferred alternative on page 7 of the Plan should include the approach adopted by the description included in Alternative 2A described immediately above the preferred alternative on page 7. As contemplated in the Plan, BM&S will place OU2 material back into the pits for appropriate grading, covering and vegetation.

Operable Unit # 3

Operable Unit #3 (OU3) is described as the management of groundwater Seeps A and B located downgradient of the pits. BM&S agrees that the preferred alternative to managing this portion of the remedy should include the collection of OU3 water by use of a passive interceptor system and off-site treatment. The Plan, as proposed, does not address the criteria for determining the duration of seep collection and treatment. This issue is of critical importance to effective implementation of the preferred remedy. BM&S believes that management of the OU3 water should be limited to the duration of needed treatment. Once the source of contamination is removed, the quality of the groundwater is expected to improve dramatically over a reasonable period of time thereby eventually eliminating the necessity for continued collection and treatment.

BM&S recommends that the applicable cut-off criteria be determined by appropriate testing during the remedial design phase, possibly including an aquatic bioassay. It bears repeating that the RI has demonstrated that no effect is expected from the impact of the OU2 material on human health or the environment. Therefore, because the actual environmental impact will be the possible entry of constituents to Unnamed Creek, the appropriate standards should be applied to the water quality downstream of the location where seeps A and B converge. (See sampling point 5 as indicated on Figure 5-1 on page 5-2a of the RI for the Craig Farm Site).

In addition, BM&S believes that the parameters to be included in the testing protocol should be limited strictly to the potential constituents of concern (PCOCs) identified in the Plan on page 2-5 of the FS for the Craig Farm Site. Moreover, the applicable standards for determining when OU3 water collection and treatment may be terminated (which will be derived after appropriate testing as described above) must not be set at a level that is below the practical quantification limit for resorcinol or any other PCOC.

Finally, we note that the successful implementation of the preferred remedy for OU3, as envisaged by the Plan, may entail the cooperation of the Pennsylvania DER in modifying the NPDES permit for the Petrolia plant to accept these additional, albeit minimal, flows.

<u>Groundwater Verification Study</u>

Although the currently available data show no risk to the deeper aquifer at the Site, BM&S would agree to perform a limited groundwater verification study. However, BM&S restates its position expressed previously to Region III and the Pennsylvania DER that such study should involve only resorcinol and resorcinol-type compounds implemented via a limited well system. The existing data do not support a broad investigation of groundwater quality. Should additional studies indicate that concentrations of these constituents do not improve after source removal as expected, then a further focused study may be considered. However, this additional study should not be a stated requirement of the ROD.

In closing, BM&S adds that we object to the sending of a "special notice" letter to BM&S before the adoption of the ROD. In fact, the comment period for the Plan is just ending, thereby requiring BM&S to determine whether a good faith offer to conduct or finance the ROD should be made to EPA before we are certain of what will be contained in the ROD. BM&S requests that the 60 day period for responding to the special notice letters be stayed until the ROD issues.

Sincerely yours,

Shannon K. Craig /ed

Shannon K. Craig

cc: Deborah McNaughton, PADER
Garth Connor
Billie S. Nolan, Esquire
Dean A. Calland, Esquire

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
Post Office Box 2063
Harrisburg, Pennsylvania 17120

Deputy Secretary for
Environmental Protection

September 29, 1989

717-787-5028

RECEIVED

OCT 06 1989

EPA, I
OFFICE OF REGIONAL ADMINISTRATOR

Mr. Edwin B. Erickson
Regional Administrator
USEPA Region III
841 Chestnut Building
Philadelphia, PA 19107

Re: Craig Farms Superfund Site
draft Record Of Decision (ROD)

Dear Mr. Erickson:

The draft Record of Decision (as received September 25, 1989) for the Craig Farm site has been reviewed by the Department. It is understood that this draft document is in an on-going revision process and that a final document is not yet available. Therefore, the Department is not able to comment, or concur with, the actual final language of the ROD document at this time. I can provide the Department's position, on a general level, with the proposed remedy.

The proposed remedy for the Craig Farm site would include the following:

* The primary source material will be excavated and treated by solidification/fixation.

* A treatability study will be conducted to determine if the proposed solidification process will effectively stabilize the waste material. EPA and DER will jointly determine the effectiveness of the solidification process, based on the results of the treatability study.

* The treated primary source material along with any contaminated soils will be placed in a lined landfill, which will be constructed at the site.

* Interceptor trenches will be constructed at seepage points to collect some of the shallow groundwater for treatment and disposal.

* An additional groundwater study will be conducted to address all groundwater (on-site and off-site) not being collected by the interceptor trenches. All groundwater, which is not being addressed in this ROD, will be addressed by a later ROD.

The state does not concur with the proposed remedy, as currently stated in the draft ROD. The state hereby will concur, if the following comments and conditions are included as part of the final ROD.

* It is understood that the final ROD will contain language which will explain that the treatability study will evaluate the solidified test material using a TCLP, or similar type, leaching test. The data generated by the tests will be used by EPA and DER to determine the effectiveness of the treatment. A final determination that the treatment is effective, will require the joint approval of both EPA and DER.

* If it is determined that the treatment is not effective, then the portions of this ROD related to excavation, treatment, and on-site disposal will not be implemented. EPA would then propose an alternative remedy, which would be covered by a new ROD.

* Concurrent with the treatability study, an additional feasibility study will be conducted to evaluate an incineration remedy which would be equivalent to the proposed excavation, treatment, and on-site disposal remedy. This new incineration option would include incineration of the same volume of source material as is proposed for treatment under currently proposed remedy (estimated to be 5000 cubic yards), with the ash and the remaining contaminated soil being placed in an on-site landfill. This new incineration option would be considered as an alternative to the currently proposed remedy, if it is determined that the solidification process is not effective.

* It is understood that this ROD only addresses the groundwater which will be collected by the collection trenches. All other groundwater, on-site and off-site, and including the shallow groundwater not collected by the trenches, will be addressed as a separate unit in an additional groundwater study, which will be covered by a later ROD.

* The collection trenches, as proposed in the draft ROD, only collect a small portion of the shallow aquifer. The final design of these collection trenches must attempt to maximize collection of contaminated groundwater, and these details will be addressed during the remedial design process.

* The groundwater collection and treatment will continue until the collected groundwater reaches background concentrations, or until the PCOCs are below detection limits, or until otherwise determined jointly by EPA and DER.

* EPA will assure that the Department is provided an opportunity to fully participate in any negotiations with responsible parties.

* The Department will be given the opportunity to concur with decisions related to the design of the remedial action, to assure compliance with DER design specific ARARs. (ie. landfill siting criteria)

* The Department's position is that its design standards are ARARs pursuant to SARA Section 121, and we will reserve our right to enforce those design standards.

* The Department will reserve our right and responsibility to take independent enforcement actions pursuant to state and federal law.

* This concurrence with the selected remedial action is not intended to provide any assurances pursuant to SARA Section 104(c)(3).

If you have any questions regarding this matter please do not hesitate to contact me.

Sincerely,

Mark M. McClellan
Deputy Secretary

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
841 Chestnut Building
Philadelphia, Pennsylvania 19107

Mr. James Snyder
Director, Bureau of Hazardous Waste
Pennsylvania Department of
Environmental Resources
P.O. Box 2063
Harrisburg, PA 17120

Re: Concurrence Letter for the Craig Farm Site

Dear Mr. Snyder:

I am writing to you about DER's concurrence letter for the Record of Decision (ROD) at the Craig Farm Site, which was received by the EPA on October 6, 1989. The ROD went through a number of changes during the last week of September, and it was signed on September 29, 1989. A number of comments were received from both Jim Shack and David Crownover of DER during that week, and changes were made to the ROD to incorporate these comments.

There are two differences between the final ROD and the conditions in the state's concurrence letter that require further explanation because they weren't anticipated by the EPA. The state requested a feasibility study to further evaluate the incineration remedy. The ROD states that other remedial alternatives will be examined if the solidification is not found to be effective in the treatability study. Thus, the incineration remedy will only be examined if the solidification process is not effective. Secondly, the concurrence letter also mentions that the ground water collection system will be in operation until the collected ground water reaches background concentrations, or until the PCOCs are below detection limits, or until otherwise determined jointly by EPA and DER. The ROD states that the completeness of the remediation will be done by periodically analyzing the wastewater using a bioassay test for resorcinol approved by the EPA.

If you have any questions, do not hesitate to contact me.

Sincerely,

Thomas C. Voltaggio
Director, Superfund Office
Hazardous Waste Management Division