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RECORD OF DECISION AMENDMENT #2
ALLIED CHEMICAL/IRONTON COKE SUPERFUND SITE
Ironton, Ohio

PURPOSE

This decision document, together with the Allied Chemical/Ironton Coke Record of Decision (ROD) dated December 28, 1990, and the first Allied Chemical/Ironton Coke ROD Amendment dated July 31, 1995 (ROD Amendment #1), presents the selected remedial action for the Allied Chemical/Ironton Coke site. The cleanup remedy for the site has been 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), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and Agency Policy.

The State of Ohio concurs with the cleanup decisions embodied in ROD Amendment #2.

BASIS

The decision to further amend the Allied Chemical/Ironton Coke ROD and ROD Amendment #1 and select a modified remedial action is based upon the administrative record. The attached index lists the items that comprise the administrative record for ROD Amendment #2.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response actions selected in the ROD, ROD Amendment #1, and ROD Amendment #2, may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE REMEDY

The remedy selected for the site is a final remedial action. It consists of:

- Incineration of approximately 122,000 cubic yards of lagoon waste materials and on-site re-use of the waste heat generated during incineration.
- In-situ bioremediation of approximately 457,000 cubic yards of contaminated soil materials.
- Off-site disposal of approximately 40,000 cubic yards of contaminated soil material, referenced as the "ROD Soils."

- Pumping and on-site treatment of groundwater.

- Downgradient groundwater monitoring of Ice Creek and preparation of a contingency plan. Implementation of deed restrictions, fencing and security.

DESCRIPTION OF THE MODIFIED REMEDY

The cleanup remedy selected for the 40,000 cubic yards of Rod Soils by ROD Amendment #2 consists of:

- Replacing prepared pad bioremediation with off-site disposal in an approved landfill.

STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with, at a minimum, federal and state requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. Off-site disposal does not meet the requirement of reduction of toxicity, mobility, or volume through treatment. Since the ROD Soils are not as contaminated as previously thought, off-site disposal instead of treatment through landfarming is justified.

The remedial action selected in the ROD and unchanged by ROD Amendments #1 and #2 will result in a hazardous substance remaining on-site above health-based levels. Therefore, a "Five-Year Review" will be conducted after commencement of the remedial action and every five years thereafter to ensure that the remedy continues to provide protection of human health and the environment.

Sept 4 1997

William E. Muno, Director
Superfund Division

Date

RECORD OF DECISION AMENDMENT #2
ALLIED CHEMICAL/IRONTON COKE SUPERFUND SITE

INTRODUCTION

The Allied Chemical/Ironton Coke Superfund Site, located in Ironton, Lawrence County, Ohio is approximately 95-acres in size. The site consists of a dismantled Coke Plant which operated from 1920 to 1982 and five lagoons which received process wastewater and hazardous solid waste from the former Coke Plant. A 4-acre waste pit called the Goldcamp Disposal Area is also part of the site and an operating AlliedSignal Tar Plant is within the site boundaries. The Allied Chemical/Ironton Coke site is divided into two operable units, the Goldcamp Disposal Area (GDA) and the Coke Plant/Lagoon Area (CPLA).

The GDA Record of Decision (ROD) which describes the GDA site remedy was executed on September 29, 1988. The remedial design/remedial action (RD/RA) for the GDA is through a Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended Section 106 Unilateral Administrative Order. The Unilateral Administrative Order (UAO) was issued to AlliedSignal, Inc. and Amcast Industrial Corporation on March 9, 1989. AlliedSignal has complied with the UAO.

The CPLA RD/RA is also being performed through a CERCLA Section 106 Unilateral Administrative Order which was signed on July 1, 1991 and was issued to AlliedSignal, Inc. The CPLA remedy was finalized through the ROD signed on December 28, 1990 and subsequently amended on July 31, 1995.

Pursuant to CERCLA Section 117 and the National Contingency Plan (NCP), Section 300.435(c)(2)(I), the United States Environmental Protection Agency (U.S. EPA) is publishing this ROD Amendment. The ROD Amendment by the United States Environmental Protection Agency (U.S. EPA) is a result of new information discovered during the remedial design and remedial action. This ROD Amendment describes a fundamental change to the CPLA ROD. The change is for a group of soils designated as the "ROD Soils" in the December 1990 ROD for the CPLA. A Proposed Plan was published on July 15, 1997, followed by a 30 day public comment period which ended on August 15, 1997. This ROD amendment will become part of the Allied Chemical/Ironton Coke Administrative Record (NCP 300.825(a)(2)), which is available for review at the Briggs Lawrence County Library, located in Ironton, Ohio. The information used in U.S. EPA's assessment of this change is currently available at the above repository.

II. REASONS FOR ISSUING THE ROD AMENDMENT

During the design and construction for the CPLA remedy, new information was discovered that supports a fundamental change to the original 1990 CPLA ROD. Additional sampling and analysis for a group of soils classified as the ROD Soils determined that carcinogenic

polynuclear aromatic hydrocarbons (PAH_c) within the ROD Soils was not as high as previously thought. The lower level of PAH_c within the ROD Soils allowed the Agency to revisit the remedy for the ROD Soils. Correspondence and drawings dated March 25, 1997 and June 24, 1997 show sample locations and analytical results for the ROD Soils.

The remedy as described in the original ROD for the CPLA operable unit contains the following components:

- Incineration of approximately 122,000 cubic yards of lagoon waste materials and on-site re-use of the waste heat generated during incineration.

- In-situ bioremediation of approximately 457,000 cubic yards of contaminated soil materials.

- Prepared pad surface bioremediation of approximately 40,000 cubic yards of contaminated soil material, referenced as the "ROD Soils."

- Pumping and on-site treatment of groundwater.

- Downgradient groundwater monitoring of Ice Creek and preparation of a contingency plan. Implementation of deed restrictions, fencing and security.

The cleanup standard for soil contamination listed in the CPLA ROD states that the sum total of four PAH_c must be less than 0.97 ppm. The four PAH_c are benzo(a)pyrene, dibenz(a)anthracene, benz(a)anthracene and chrysene. The area located with the five lagoons also has an alternative cleanup standard of 100 ppm for the four PAH_c if the bioremediation cannot achieve the 0.97 ppm in a timely manner. At the former coke plant property, excavation of ROD Soils will cease when the 0.97 ppm value for PAH_c has been reached or to a maximum depth of 10 feet. At the operating tar plant, excavation will be to a maximum depth of 5 feet. All excavated areas will be backfilled with clean fill.

The 1995 ROD Amendment made four changes to the 1990 ROD and they are as follows:

- Removal of the waste heat boiler from the incineration process for lagoon 5.

- Removal of the dismantlement provision for the incinerator.

- Excavate and store on-site for eventual treatment or placement into the lagoon area, 135,000 cubic yards of soils referenced as the "Site Soils."

- Revise the cleanup standard for groundwater constituents benzo(a)pyrene and dibenz(a,h)anthracene at the GDA and CPLA from a total of 5 parts per trillion (ppt) to safe drinking water standards of 200 ppt for benzo(a)pyrene and 300 ppt for

dibenz(a,h)anthracene.

The groundwater pump and treatment system for the CPLA began operation on June 1997 and is treating approximately 200 gallons per minute of groundwater through metals precipitation, carbon adsorption and UV oxidation. The design for in-situ bioremediation and prepared pad surface bioremediation is completed and construction began on those facilities on March 3, 1995. In August 1996, the U.S. EPA agreed to halt construction of all bioremediation facilities at a request by AlliedSignal. The Agency has been evaluating other alternatives to bioremediation and will either conclude that bioremediation construction should resume or present new alternatives shortly. The incineration of lagoon 5 is also being re-evaluated and it appears that different technology at a lower cost may be available. Cost of the CPLA remedy is well over $100 million over the life of the project.

III. DESCRIPTION OF THE NEW ALTERNATIVES

In the original ROD, the 40,000 cubic yards of soil contaminated with PAH_c compounds, classified as the ROD Soils, was to be bioremediated through the use of a prepared pad. These ROD soils are affected by this ROD Amendment. Prepared pad bioremediation is sometimes referred to as landfarming. A thin layer of contaminated soil is spread over a prepared pad and nutrients are added to facilitate the growth of naturally occurring soil microorganisms. These microorganisms break down and metabolize the contaminants to acceptable levels. The concentration of PAH_c compounds was thought to be from approximately 250 parts per million (ppm) to 1000 ppm. It is expected to take 12 years for the landfarming to reach the 0.97 ppm PAH_c cleanup value and cost $4.8 million. The ROD Soils are located at the AlliedSignal Tar Plant and former location of the AlliedSignal coke plant (see Figure 1).

During additional characterization of the ROD Soils (see documents in administrative record dated March 25, 1997 and June 24, 1997), it was discovered that the soils were not as contaminated as previously thought. Sampling results showed that most samples were at 100 ppm or below for PAH_c compounds. The lower than anticipated contamination allowed a re-evaluation of the landfarming treatment option. Further analysis demonstrated that most of the ROD Soils would pass the toxicity characteristic leaching potential (TCLP) test, thereby classifying the ROD Soils as non-hazardous. Even though the ROD Soils are classified as non-hazardous, they still must be disposed of off-site in a Subtitle D landfill. Since alternative treatment options were not superior to landfarming for the ROD Soils, off-site disposal in a landfill is being evaluated against landfarming.

IV. EVALUATION OF THE ALTERNATIVES

The Administrative Record, located at the Briggs Lawrence County Library, is available for review and contains the information which was used to evaluate the alternatives. The U.S. EPA uses nine evaluation criteria as set forth in the National Contingency Plan, 40 CFR Part 300.430, to evaluate the fundamental change and the different alternatives associated with the

change. The alternative for each fundamental change which complies with Criteria 1 and 2, achieves the best balance among Criteria 3-7, and considers Criteria 8 and 9 is the one chosen.

The nine evaluation criteria are listed below:

Criteria 1 - Overall Protection of Human Health and Environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

Criteria 2 - Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) addresses whether or not a remedy will meet all other Federal and State environmental statutes and/or provide grounds for issuing a waiver.

Criteria 3 - Long-Term Effectiveness and Permanence refers to the amount of risk remaining at a site and the ability of a new remedy to maintain reliable protection of human health and the environment over time once cleanup standards have been met.

Criteria 4 - Reduction of Toxicity, Mobility, or Volume through Treatment is the anticipated performance of the treatment technologies that may be employed in a remedy.

Criteria 5 - Short-Term Effectiveness refers to the speed with which the remedy achieves protection, as well as the remedy's potential to create adverse impacts on human health and the environment that may result during the construction and implementation period.

Criteria 6 - Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement the chosen solution.

Criteria 7 - Cost addresses the estimated capital and operation and maintenance costs, as well as present-worth cost. Present worth is the total cost of an alternative in terms of today's dollars.

Criteria 8 - Support Agency Acceptance indicates whether, based on its review of the ROD Amendment, the support agency (usually a state environmental agency) concurs with, opposes or has no comment on the recommended alternative.

Criteria 9 - Community Acceptance will be assessed in the Record of Decision following a review of the public comments received on the Proposed Plan Amendment.

Overall Protection of Human Health and Environment

In comparing off-site disposal of the ROD Soils to landfarming, both alternatives are protective of human health and the environment. Landfarming will reduce the PAH_c to the

0.97 ppm cleanup standard through treatment and off-site disposal will remove the ROD Soils to an approved landfill where they will be managed.

Compliance with Applicable or Relevant and Appropriate Requirements

Compliance with applicable or relevant and appropriate requirements (ARARs) must be met for every alternative. As was described in the 1990 ROD, landfarming will require waivers of portions of the Ohio Administrative Code (OAC). Pursuant to CERCLA Section 121 (d), waivers of ARARs are allowed under limited circumstances. The waivers are appropriate since compliance with such requirements is technically impracticable from an engineering perspective and landfarming will attain a standard of performance that is equivalent to that required under the otherwise applicable standard, requirement, criteria, or limitation, through use of another method or approach. The following is a list of ARARs that require waiver for the landfarming option:

- OAC 3745-27-07, Location Criteria for Solid Waste Disposal Facility. Placement of the ROD Soils after landfarming back on-site would not meet the requirements of this rule. Landfarming is expected to achieve concentrations of PAH_c below risk based levels, therefore, waiving of this rule would be justified.

- OAC 37454-27-08, Construction Specifications for Sanitary Landfills. Placement of the ROD Soils after landfarming in an engineered unit would not meet the design criteria presented in this rule. Landfarming is expected to achieve concentrations of PAH_c below risk based levels, therefore, waiving of this rule would be justified.

Off-site disposal in a landfill would require compliance with the State's regulatory equivalent of RCRA 40 CFR Part 261, Toxicity characteristics. Preliminary testing and analysis of the ROD Soils indicates that the soil will pass the toxicity characteristic leaching potential which would allow disposal in a RCRA Subtitle D landfill. ROD Soils which do not pass the TCLP test would require disposal in a RCRA Subtitle C landfill. Ohio Revised Code (ORC) 3734-03 - Open Burning or Dumping, OAC 3745-27-05 - Authorized, Limited, and Prohibited Solid Waste Disposal Methods and OAC 3745-54-13 - General Waste Analysis are applicable to off-site disposal.

Disposal off-site for soils which do not pass TCLP will also require compliance with the CERCLA Off-site Rule, 40 CFR 300.440. Waste which contains CERCLA hazardous substances or pollutants or contaminants must be managed in a U.S. EPA approved facility.

Long-Term Effectiveness and Permanence

Both alternatives meet the requirements of Long-Term Effectiveness and Permanence. Landfarming would reduce the PAH_c levels to acceptable levels that would minimize risk to public health and the environment. Off-site disposal would remove the ROD Soils to a landfill

and be managed in a way that is protective of public health and the environment.

Reduction of Toxicity, Mobility, or Volume through Treatment

Landfarming of the ROD Soils would meet the criteria for reduction of toxicity, mobility, or volume through treatment. Landfarming will reduce levels of PAH_c compounds to acceptable risk levels. Off-site disposal of the ROD Soils does not include treatment and would not reduce the toxicity, mobility, or volume through treatment.

Short-Term Effectiveness

Both landfarming and off-site disposal of the ROD Soils are effective in the short term. Both options require excavation of the ROD Soils and impacts to public health and the environment are not anticipated due to the nature of PAH_c compounds which do not volatize into the air easily. Since consumption of the ROD Soils is not probable, both alternatives will meet the short term effectiveness requirement. However, off-site disposal is more effective in the short term because it removes the contaminated soils immediately, thereby reducing the time until protection of public health is achieved by as much as twelve years.

Implementability

Both alternatives can be implemented and both technologies have been used at a number of Superfund sites. Off-site disposal within an approved landfill is used at many Superfund and non Superfund sites. Landfarming has proved to be effective in reducing PAHs to acceptable levels. Off-site disposal of the ROD Soils would begin immediately and be completed during the fall of 1997. Landfarming is scheduled to take 12 years to complete.

Cost

The cost associated with landfarming is $4.8 million compared with $2.6 million for off-site disposal. The off-site disposal option includes a contingency that 5 percent of the ROD Soils will require disposal within a hazardous waste Subtitle C landfill.

Support Agency Acceptance

The Ohio EPA supports the off-site disposal of the ROD Soils.

Community Acceptance

No public comments were received on the proposed plan.

In comparing the alternatives to the nine criteria, the best balance of the criteria would be off-site disposal of the ROD Soils in an U.S. EPA approved landfill. Due to the PAH_c

concentrations within the ROD Soils being at levels below 100 ppm and the time saved along with the $2.2 million cost savings, off-site disposal is the best approach.

V. STATUTORY DETERMINATIONS

The off-site transport and disposal of waste containing hazardous materials without treatment is the least favored alternative remedial action where practicable treatment technologies are available. Based upon the new information that the ROD Soils are not as contaminated as previously thought, deviating from the landfarming treatment option is justified. The timeframe to complete the ROD Soils excavation will be a few months compared with 12 years for the landfarming along with a $2.2 million cost savings.

Off-site disposal of the ROD Soils is protective of human health and the environment since the ROD Soils will be managed in an U.S. EPA approved landfill. Remaining soils will meet the PAH_c cleanup standard or be at a depth which will not affect public health or the environment.

Compliance with ARARs, specifically the State equivalent of RCRA 40 CFR Part 260 to 271, ORC 3734-03, OAC 3745-27-05 and OAC 3745-54-13 will be met with off-site disposal of the ROD Soils. Disposal of soils containing CERCLA hazardous substances must meet the CERCLA Off-Site Rule, 40 CFR 300.440. AlliedSignal is expected to spend over $100 million on the CPLA, and off-site disposal of the ROD Soils is a cost effective solution since $2.2 million is saved compared with landfarming.

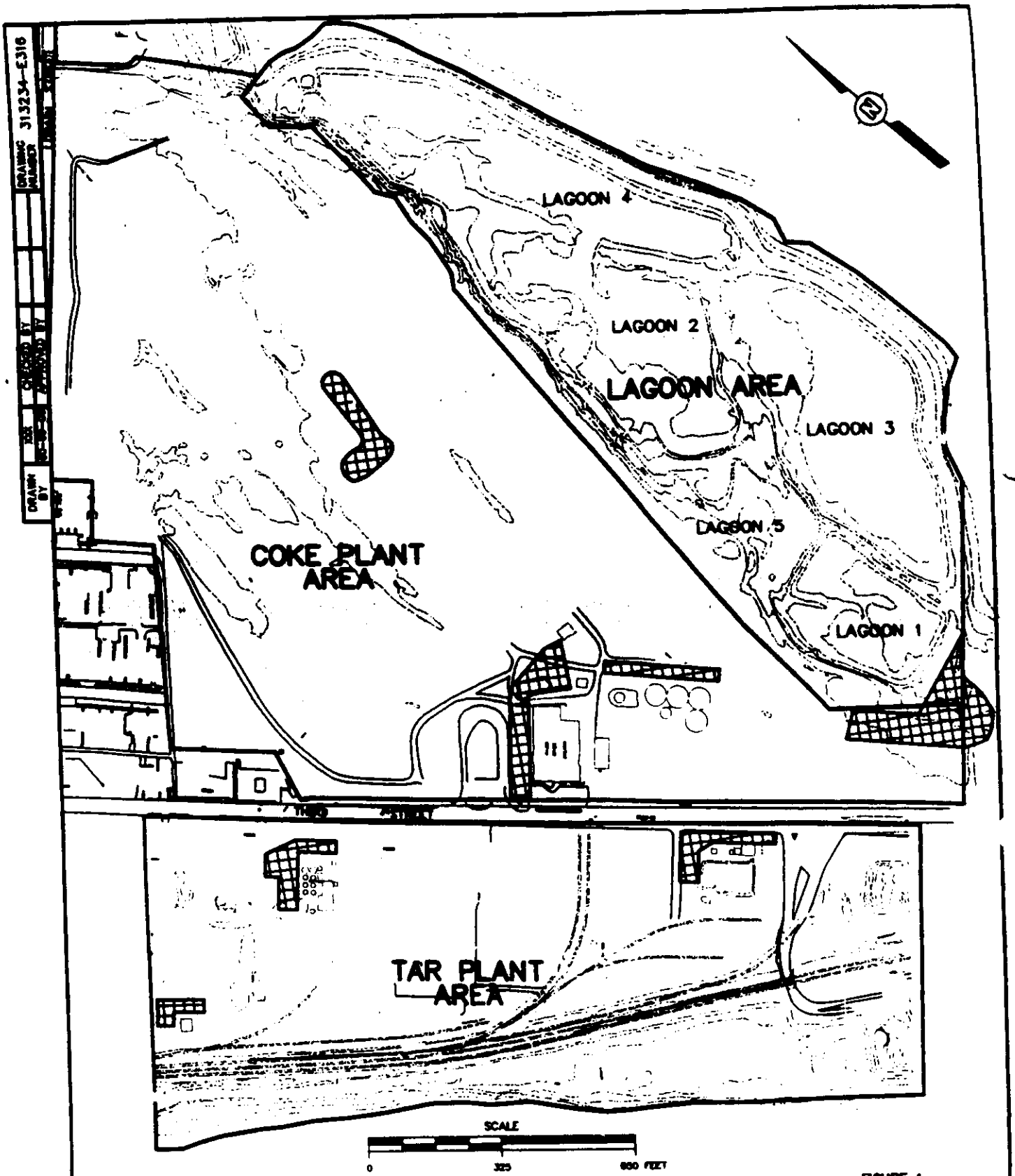

FIGURE 1

CPLA ROD SOILS AREAS

PREPARED FOR

ALLIEDSIGNAL
MORRISTOWN, NEW JERSEY

LEGEND

APPROXIMATE LIMITS OF CPLA ROD SOILS AREAS

INTERNATIONAL TECHNOLOGY CORPORATION

DRAWING NUMBER 313234-E316

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U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION

ADMINISTRATIVE RECORD
FOR
ALLIED CHEMICAL AND IRONTON COKE SITE
IRONTON, LAWRENCE COUNTY, OHIO

OPERABLE UNIT #2: COKE PLANT/LAGOON AREA
UPDATE #8

AUGUST 25, 1997

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	04/00/91	U.S. EPA/ OSWER	U.S. EPA	Quick Reference Fact Sheet: "Guide to Addressing Pre-ROD and Post-ROD Changes" (Publication 9355.3-02FS-4)	6
2	02/00/96	International Technology Corporation	U.S. EPA	Neal Junkyard Delineation Workplan	26
3	03/08/96	Alcamo, T., U.S. EPA	Ford, R., AlliedSignal, Inc.	Letter re: U.S. EPA's Acceptance of the Neal Junkyard Delineation Workplan	2
4	04/10/96	Alcamo, T., U.S. EPA	Ford, R., AlliedSignal, Inc.	Letter re: U.S. EPA's Acceptance of the Bid Specification for Work Item 1 Construction and Neal Junkyard Delineation Program	1
5	05/15/96	Alcamo, T., U.S. EPA	Ford, R., AlliedSignal, Inc.	Letter re: U.S. EPA's Acceptance of the Lagoon 2 Material Segregation/ Excavation Workplan	1
6	06/20/96	Gupta, S., International Technology Corporation	Alcamo, T., U.S. EPA and K. Gilmer, Ohio EPA	Letter Forwarding Attached Figures from the Neal Junkyard Delineation Program Investigation	4
7	06/24/96	U.S. EPA	File	Table: Summary of Neal Junkyard Samples; TPHC, TCLP, and Hazardous Characteristic Testing	1
8	08/23/96	Ford, R., AlliedSignal, Inc.	Alcamo, T., U.S. EPA and K. Gilmer,	Letter Forwarding Attached Petition to Amend the Record of	20

			Ohio EPA	Decision for the Ironton Coke Plant CP/LA Operable Unit	
9	08/27/96	Alcamo, T., U.S. EPA	Ford, R., AlliedSignal, Inc.	Letter re: Shutdown of the Current Bioremediation Construction	2

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11	01/28/97	Lewis, M., AlliedSignal, Inc.	Alcamo, T., U.S. EPA and K. Gilmer, Ohio EPA	Letter Forwarding Attached Survey Map of Neal Junkyard Area w/ Previously Surveyed Sample Point Locations	2
12	02/19/97	Shott, D., International Technology Corporation	Alcamo, T., U.S. EPA and K. Gilmer, Ohio EPA	Letter Forwarding Attached ROD Soils Delineation Work Plan	12
13	02/26/97	Alcamo, T., U.S. EPA	Ford, R., AlliedSignal, Inc.	Letter re: U.S. EPA's Comments on the February 19, 1997 ROD Soils Delineation Work Plan	1
14	03/25/97	Shott, D., International Technology Corporation	Alcamo, T., U.S. EPA and K. Gilmer,	Letter Forwarding Attached Revised Drawing for Neal Junkyard Delineation	2
15	03/28/97	Alcamo, T., U.S. EPA	Ford, R., AlliedSignal, Inc.	Letter re: U.S. EPA/OEPA Conclusions Concerning the Tar Plant ROD Soils (UNSIGNED)	2
16	05/06/97	U.S. EPA	File	Table: Summary of Coke Plant ROD Soils Samples (Areas 1 and 3); TPHC, TCLP, and Hazardous	1

				Characteristic Testing	
17	05/28/97	U.S. EPA	File	Table: Summary of Tar Plant ROD Soils Samples (Areas 5, 6, and 7); Total PAHs, Arsenic, TCLP, and Hazardous Characteristic Testing	1
18	06/23/97	Ford, R., AlliedSignal, Inc.	Alcamo, T., U.S. EPA and K. Gilmer, Ohio EPA	Letter Forwarding Attached Lagoon PAH Data Table and Sample Location Map	8
19	06/24/97	Shott, D., International Technology Corporation	Alcamo, T., U.S. EPA and K. Gilmer, Ohio EPA	Letter Forwarding Attached April 1997 ROD Soils Delineation Program Analytical Results	4

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20	07/15/97	Alcamo, T., U.S. EPA	Ford, R., AlliedSignal, Inc.	Letter re: U.S. EPA's Review of the April 1997 ROD Soils Delineation Program Analytical Results	1
21	07/15/97	Alcamo, T., U.S. EPA	Ford, R., AlliedSignal, Inc.	Letter re: Lagoon Area Carcinogenic Polynuclear Aromatic Hydrocarbons Data Table	2