



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

File Earlysville, VA
Received 1/23/92
Champion

JAN 23 1992

CERTIFIED MAIL

RETURN RECEIPT REQUESTED

Charles M. Champion
Manager Environmental & Technical Services
Cooper Industries
P.O. Box 9050
Charlottesville, Virginia 22906-9050

Re: § 3008(h) RCRA Corrective Action Order

Dear Mr. Champion:

Enclosed is the Resource Conservation and Recovery Act (RCRA) Corrective Measure Implementation Order for Cooper Industries, Incorporated. EPA will provide a forty-five (45) day negotiation period for you to sign the Consent Order. Failure to sign the Consent Order may result in the pursuit of an unilateral enforcement action by EPA to resolve this matter.

EPA-Region III is committed to enforcing the provisions of RCRA and to protecting the public health and the environment. We are also committed to working with the regulated community to achieve these goals. To that end, we remain available to meet and discuss with you this Consent Order and associated issues.

If you have any questions or would like to arrange a meeting, please contact Yolaanda Ruffin of my staff at (215) 597-0568. Thank you for your cooperation in this matter.

Sincerely,

Robert E. Greaves, Chief
RCRA Enforcement/UST Branch

Enclosure

cc: Yolaanda Ruffin (3HW61)
Patricia Tan (3HW61)
Jeane Kane (3RC32)
Lesile Romanchik (VDWM)

cc: RW Teeter
Mark Ciola
Dale Stephenson
Mike O'Brien
For your info



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

IN THE MATTER OF:	)	FINAL ADMINISTRATIVE
	)	ORDER ON CONSENT
Cooper Industries, Inc.	)	
Cooper Distribution	)	
Equipment Division	)	U.S. EPA Docket No.
	)	RCRA-III-047-CA
	)	
Route 660	)	
Earlysville, Virginia 22936,	)	
	)	
RESPONDENT.	)	
	)	
EPA I.D. No. VAD023717853	)	Proceeding under Section
	)	3008(h) of the Resource
	)	Conservation and Recovery
	)	Act, as amended, 42 U.S.C.
	)	Section 6928(h).

FINAL ADMINISTRATIVE ORDER ON CONSENT

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ATTACHMENTS

- A. Scope of Work for Corrective Measure Implementation at Cooper Industries, Inc., Earlysville, Virginia.
- B. Scope of Work for a Health and Safety Plan
- C. Scope of Work for a Waste Minimization Plan
- D. RCRA Record of Decision, dated September 30, 1991.
- E. Scope of Work for Interim Measures

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	)	Section 6928(h).

FINAL ADMINISTRATIVE ORDER ON CONSENT

The parties to this Final Administrative Order on Consent ("Consent Order" or "Order"), the United States Environmental Protection Agency ("EPA") and Cooper Industries, Inc. ("Respondent"), having agreed to entry of this Consent Order, it is therefore Ordered and Agreed that:

I. JURISDICTION

This Consent Order is issued pursuant to the authority vested in the Administrator of the United States Environmental Protection Agency by Section 3008(h) of the Solid Waste Disposal Act, commonly referred to as the Resource Conservation and Recovery Act of 1976, as amended by the Hazardous and Solid Waste Amendments of 1984 (collectively referred to hereinafter as "RCRA"), 42 U.S.C. Section 6928(h). The authority vested in the Administrator has been delegated to the Regional Administrators by EPA Delegation Nos. 8-31 and 8-32 dated March 6, 1986.

On December 18, 1984, the EPA granted the Commonwealth of Virginia (the "State") authorization to operate a hazardous waste program in lieu of EPA, pursuant to Section 3006(b) of RCRA, 42 U.S.C. Section 6926(b). The State, however, does not have authority to enforce Section 3008(h) of RCRA.

This Consent Order is issued to Respondent, the current owner and operator of a facility located on Route 660 in Earlysville, Virginia. Respondent consents to and agrees not to contest EPA's jurisdiction to issue this Consent Order and to enforce its terms. Further, Respondent will not contest EPA's jurisdiction to: compel compliance with this Consent Order in any subsequent enforcement proceedings, either administrative or judicial; require Respondent's full or interim compliance with the terms of this Consent Order; or impose sanctions for violations of this Consent Order.

II. PARTIES BOUND

A. This Consent Order shall apply to and be binding upon EPA, Respondent and their agents, successors and assigns.

B. No change in ownership of any property covered by this Consent Order or in the corporate status of Respondent shall in any way alter, diminish, or otherwise affect Respondent's obligations and responsibilities under this Consent Order.

C. Respondent shall provide a copy of this Consent Order to all supervisory personnel, contractors, subcontractors, laboratories, and consultants retained to conduct and/or monitor any portion of the work performed pursuant to this Consent Order within seven (7) calendar days of the effective date of this Consent Order or date of such retention, whichever is later. All contracts, agreements, or other arrangements with such persons shall require such persons to conduct and/or monitor the work in accordance with the requirements of this Consent Order. Notwithstanding the terms of any such contract, agreement, or arrangement, Respondent is responsible for complying with this Consent Order and/or ensuring that all such persons conduct and/or monitor such work in accordance with this Consent Order.

D. Respondent shall provide a copy of this Consent Order to any successor in interest at least fifteen (15) calendar days prior to any proposed transfer of ownership, interest or operation of the Facility, as defined below. Respondent shall notify EPA in writing no later than thirty (30) calendar days prior to such transfer of the nature and effective date of such transfer and the name and address of such successor. Copies of all relevant documents relating to such a transfer must be mailed to the Project Coordinator identified in Section XII, infra, no later than three (3) days after receipt or generation of the document(s).

III. STATEMENT OF PURPOSE

In entering into this Consent Order, the mutual objective of EPA and Respondent is protection of human health and the environment through implementation of the Corrective Measure ("CM") selected by EPA in the RCRA Record of Decision ("RCRA ROD") for the Facility, as defined below, dated September 30, 1991. The Corrective Measure Implementation ("CMI") program shall consist of the design, construction, operation, maintenance and monitoring of the CM at the Facility, as defined below.

IV. FINDINGS OF FACT

A. Respondent is a corporation doing business in the Commonwealth of Virginia and is a "person" as defined in Section 1004(15) of RCRA, 42 U.S.C. Section 6903(15).

B. Respondent is a "generator" of hazardous waste as defined in 40 C.F.R Section 260.10 and is an owner and operator of a hazardous waste management facility located on Route 660 in Earlysville, Virginia. The property on which the facility is located, and all contiguous property under the ownership or control of Respondent on the date of execution of this Consent Order by Respondent and thereafter, constitutes and shall hereinafter be referred to as the "Facility".

C. Respondent owned and operated its Facility as a hazardous waste management facility on and after November 19, 1980, the applicable date which renders facilities subject to interim status requirements or the requirement to have a permit under Sections 3004 and 3005 of RCRA, 42 U.S.C. Sections 6924 and 6925.

D. Pursuant to Section 3010 of RCRA, 42 U.S.C. Section 6930, Respondent submitted to EPA a Notification of Hazardous Waste Activity ("Notification"). In its Notification, dated August 19, 1980, Respondent identified itself as a generator of hazardous waste and an owner/operator of a treatment, storage, and disposal facility for hazardous waste. EPA assigned the Facility the RCRA identification number VAD 023 717 853 on October 23, 1980.

E. On November 19, 1980, Respondent submitted to EPA a Part A Permit Application ("Part A"). In its Part A, Respondent identified itself as handling hazardous wastes from non-specific sources, identified in 40 C.F.R. Section 261.31 (EPA Hazardous Waste Number F006), at the Facility.

F. The Facility qualified for "interim status" pursuant to Section 3005(e) of RCRA, 42 U.S.C. Section 6925(e). Respondent engaged in the "storage" of hazardous waste at the Facility subject to interim status requirements as defined in 40 C.F.R. Part 265. Specifically, Respondent had interim status for

the drum storage area. EPA acknowledged the Facility's interim status in letter to Respondent dated January 8, 1981.

G. Respondent informed EPA by letter dated January 21, 1983 that effective January 1, 1983 Respondent would ship hazardous waste off-site within 90 days of generation at the Facility. This correspondence referred to the drums stored in the drum storage area. Respondent completed a RCRA closure of the drum storage area in June, 1985.

H. The Facility covers approximately 97 acres in a residential/industrial area. The Facility is bounded by Route 660 to the north, Graemont subdivision to the south, Graemont Road on the east, and by agricultural land on the west. Respondent manufactures various types of electrical distribution equipment at the Facility. Historically, the manufacturing process has included stamping, grinding, welding, painting and plating.

I. Respondent has conducted site investigations and some response/remediation activities at the Facility in a phased interactive manner with each activity providing improved focus for subsequent actions. The phases completed to date were conducted between May 1988 and July 1990. During the course of this phased approach, the following Solid Waste Management Units ("SWMUs") were identified: (1) final pond; (2) ten sludge trenches; (3) two sludge pits; (4) western and eastern drain pits; and (5) two concrete tanks.

J. From May to June 1988, Respondent conducted a Phase I investigation which involved a review of available information concerning waste management practices and previous investigations at the Facility. Eleven shallow auger borings were drilled around the sludge trenches, drain pits, concrete tanks, and sanitary lagoon to provide data on the subsurface materials. A groundwater investigation of six shallow and seven deep wells was conducted. The shallow wells were installed in the saturated overburden. The deep wells were completed in the upper part of the bedrock. Water levels were routinely measured to determine groundwater occurrence and flow.

K. Phase II, "Additional Site Characterization and Identification", began in July 1988 and was completed in August 1988. The main objectives of Phase II were to provide additional data on specific waste management units, potential soil and groundwater impacts, local hydrogeology, and to identify appropriate response alternatives.

L. In late October and early November 1988, Respondent conducted sampling of the monitoring wells upgradient and downgradient of all SWMUs at the Facility. Downgradient wells, which represent each well downgradient of each SWMU, revealed high concentrations of benzene, 1,1,1-trichloroethane ("1,1,1-

TCA"), and trichloroethylene ("TCE"). Other volatile organic compounds ("VOCs") present in high concentrations were acetone, trans-1,2-dichloroethene ("DCE"), tetrachloroethylene ("PCE"), chloroform, toluene, and xylenes (total).

M. A Site Investigation and Response Activities Report ("SIRA Report") was submitted to EPA by the Respondent on February 3, 1989. The SIRA Report was prepared in response to a December 19, 1988 request from EPA pursuant to Section 3007 of RCRA. The SIRA Report presented the results of a site investigation and response activities implemented by Respondent in 1988 at the Facility. The SIRA Report concluded that the SWMUs referred to in paragraph I at the Facility which had the potential to release hazardous waste or hazardous constituents into the environment were the following: (1) final pond; (2) ten sludge trenches; (3) two sludge pits; (4) western and eastern drain pits; and (5) two concrete tanks (locations of SWMUs are provided in Figure 2).

N. The final pond referred to in paragraphs I and M, above, received wastewater treatment plant effluent from 1970 to 1985. The final pond was used for retention of treated wastewater prior to discharge to a surface water tributary. The final pond was constructed by excavating and berming native soil. No bottom or side liners were constructed.

O. An Enforcement Order issued to Respondent by the Virginia Department of Waste Management ("VDWM") on March 6, 1989, required closure of the final pond. Section A, Paragraph 3 of the Enforcement Order stated that "[d]iversion of this effluent (a listed hazardous waste) to the pond prior to discharge constitutes management of a hazardous waste in a surface impoundment. The company did not have a permit for this activity."

P. Phase III, "Final Site Characterization and Response Action", completed in December of 1988, provided further characterization of onsite conditions and implementation of specific response activities. This phase included the installation of additional monitoring wells and recovery wells.

Q. Phase IV, which was completed in November 1989, included installation of additional monitoring wells between the Facility and the nearest private wells to the south and southeast. Sampling and analysis of groundwater, surface water, and sediment as well as in-situ aeration of the east drain pit subsoils was also performed.

R. In Phase V, the east drain pit and final pond were closed in accordance with plans approved by Region III of the U.S. EPA and the VDWM, respectively.

S. Thirty-two (32) monitoring wells, both shallow and deep, have been installed at EPA-approved locations (Figure 2) at the Facility. The monitoring wells and the five water supply wells have all been sampled numerous times over the past three years for an extensive list of possible contaminants.

T. On March 3, 1990, EPA issued a Unilateral Administrative Order, U.S. EPA Docket Number RCRA-III-026-CA, to Respondent pursuant to RCRA Section 3008(h), 42 U.S.C. § 6928(h). Under the terms of this Unilateral Order, Cooper was required to complete, inter alia, a RCRA Facility Investigation ("RFI") in order to determine the nature and extent of onsite and offsite contamination emanating from its Facility and to conduct a Corrective Measures Study ("CMS") to evaluate various clean-up alternatives.

U. Prior to the issuance of the Unilateral Order, Respondent had undertaken numerous environmental studies, referred to in paragraphs J through L and P through R, above, in order to evaluate the extent of contamination in soils and groundwater at its Facility. EPA reviewed these various environmental studies in order to determine if these studies constituted the equivalent of an RFI. In a letter to Respondent dated October 12, 1989, EPA identified several deficiencies in these studies with regard to the requirements of the Scope of Work for an RFI. In response to this letter, Respondent performed additional onsite and offsite investigations (Phase VI). The results and conclusions of these additional onsite and offsite investigations were integrated into an RFI Report submitted to EPA in November 1990.

V. Selected results from a July 1991 sampling conducted for the groundwater monitoring program were provided by Respondent and are shown in Table I, below.

TABLE I

SELECTED GROUNDWATER SAMPLING RESULTS (ppb)

<u>Monitoring Well</u>	<u>Parameter</u>	<u>Concentration</u>	<u>Maximum Contaminant Level</u>
1d	Chloroform	1400	100
	Tetrachloroethene	1000	5
2a	Trichloroethene	490	5
	Tetrachloroethene	3100	5
2d	1,2-Dichloroethene	1600	
	Trichloroethene	4900	5
	Tetrachloroethene	19000	5

WS-1	1,2-Dichloroethene	280	
	Tetrachloroethene	2900	5
	Trichloroethene	230	5
26d	Tetrachloroethene	260	5

The Maximum Contaminant Level ("MCL") is defined as the maximum allowable concentration of a particular substance in water used for public consumption. MCLs for specific substances are set forth in 40 C.F.R. Part 141, Subpart B.

W. The results of the Phase I through VI investigations conducted by the Respondent have shown that:

1. Shallow groundwater flow in the vicinity of the Facility generally follows topography with groundwater basins approximately coinciding with surface water basins. Groundwater recharge occurs principally along the uplands with discharge to the local stream channels, the recovery wells or the Facility supply wells. Groundwater discharge to the surface water system is evidenced by the seeps along the lower reaches of the surface water drainages. Surface water flow measurements along Camp Faith Creek, taken during periods of time in which there was no precipitation, indicate increasing flow downstream, confirming groundwater discharge to the creek.

2. PCE is the predominant volatile organic compound found. Chloroform, 1,2-DCE, 1,1,1-TCA and TCE were found in several groundwater samples. These compounds, with the exception of chloroform, are probably degradation products of PCE.

3. The horizontal and vertical extent of groundwater impacts is well defined and contained within the Facility boundaries. No contamination was detected in the wells at the Facility boundaries. To the south of the Facility, there is 900 feet between the area of known detection and the Facility boundary. Groundwater from the Graemont subdivision flows to the northwest toward Camp Faith Creek. Groundwater flow from the Facility and the subdivision converges along Camp Faith Creek and is the source of the baseflow in the creek. The Graemont wells are located on the opposite side of a hydraulic boundary (i.e., Camp Faith Creek). The Graemont wells are not affected by the Cooper Facility.

4. The area of existing groundwater impacts is strongly influenced by the ongoing recovery system. The ongoing groundwater pump and treat system assures capture and hydraulic control of the onsite groundwater contaminant plume. Groundwater data collected over the last three years have shown a significant reduction in the concentration of VOCs.

5. The current or potential threats to human health or the environment from actual or threatened releases of hazardous wastes or hazardous constituents from this Facility (if not further addressed by the CM), are identified in the Record of Decision for the Facility dated September 30, 1991 ("RCRA ROD"), Attachment D, at pages 14 through 18.

X. Additional information regarding the characterization and distribution of VOCs in the soil, sediment, surface water, groundwater, and air may be found in the Administrative Record for the RCRA ROD at pages 10 through 13 and the Final RFI Report at pages 32 through 57.

Y. By a letter dated January 29, 1991, EPA conditionally approved Respondent's RFI Report. In March of 1991, Respondent provided EPA with an addendum (a revised risk assessment) to the RFI Report. In a letter dated May 10, 1991, EPA approved the RFI Report.

Z. The information in paragraphs L and W(2), and Table I, above, show a release of hazardous wastes and/or hazardous constituents into the environment from the Facility.

AA. The hazardous waste and/or hazardous constituents identified in paragraphs L and W(2), and Table I, may pose a threat to human health and the environment. Human health impacts for some of these hazardous waste and/or hazardous constituents are described in the EPA report entitled "Chemical, Physical and Biological Properties of Compounds Present at Hazardous Waste Sites" (EPA, 1985), relevant excerpts of which are included in the Administrative Record in the Section entitled "Technical Support Documents".

BB. In June 1991, Respondent submitted to EPA a Corrective Measure Study ("CMS") Report. The CMS Report discussed four (4) Corrective Measure Alternatives ("CMAs") to address releases of hazardous waste or hazardous constituents at the Facility. In a letter to Respondent dated July 10, 1991, EPA provided comments to this Report. Respondent resubmitted a revised CMS Report which evaluated five (5) CMAs for contaminant remediation. By a letter to Respondent dated July 31, 1991, EPA approved Respondent's CMS Report.

CC. Respondent's CMS Report and an EPA Statement of Basis, which proposed CMA #5 as the preferred remediation alternative, were made available to the public from August 14, 1991 to September 13, 1991 at the Earlysville, Virginia post office for a thirty (30) day comment period. A public meeting was held September 13, 1991 at the Earlysville Fire House in Earlysville, Virginia. No comments which supported changing the proposed preferred remediation alternative were received by EPA during this public comment period. Concerns raised during the public comment period and EPA's response to these concerns are

available in the Administrative Record for the RCRA ROD at pages 36 through 42.

DD. In the RCRA ROD EPA selected CMA #5 as the CM to be implemented by Respondent at the Facility. CMA #5 provides for the use of water supply well No. 3 as the sole source of potable water on-site, modification of the ongoing pumping/treatment/discharge system and the installation of a new recovery well (which will be subjected to pulsed pumping) at the east drain pit which is at the center of the onsite groundwater contaminant plume.

EE. As described in the RCRA ROD, the following table illustrates the media clean-up standards for the six contaminants in the groundwater:

TABLE II

MEDIA CLEAN-UP STANDARDS FOR GROUND WATER CONTAMINATION

<u>Contaminant</u>	<u>Media Clean-up Standards(ppb)</u>
TCE	5
1,1,1 - TCA	200
Chloroform	100
PCE	5
1,2 - DCE	58

FF. As described in the RCRA ROD, the points of compliance to monitor the media clean-up standards are as follows:

TABLE III

POINTS OF COMPLIANCE FOR MEDIA CLEAN-UP STANDARDS

<u>Point of Compliance</u>	<u>PCE</u>	<u>1,2 - DCE*</u>	<u>TCE**</u>	<u>1,1,1 - TCA**</u>	<u>Chloroform**</u>
New Proposed Well at SWMU boundary, i.e., east drain pit	5	58	5	200	100
Monitoring Well 23d at down-gradient property boundary	5	58	5	200	100
Water Supply Well #4	5	58	5	200	100

at down-
gradient
property
boundary

* Proposed Maximum Contaminant Level or concentration corresponding to a 10^{-6} cancer risk. The 10^{-6} cancer risk is defined as the concentration of a particular compound which will cause one additional case of cancer per one million persons exposed over a lifetime to such compound.

** Maximum Contaminant Level

V. CONCLUSIONS OF LAW AND DETERMINATIONS

A. Respondent is a "person" within the meaning of Section 1004(15) of RCRA, 42 U.S.C. Section 6903(15).

B. Respondent is the owner and operator of a facility authorized to operate pursuant to Section 3005(e) of RCRA, 42 U.S.C. Section 6925(e).

C. The substances referred to in paragraphs L and W(2), and Table I of Section IV of this Consent Order are "hazardous wastes" within the meaning of Section 3008(h) of RCRA, 42 U.S.C. Section 6928(h).

D. There is or has been a "release of hazardous waste into the environment from a facility" within the meaning of Section 3008(h) of RCRA, 42 U.S.C. Section 6928(h).

E. The actions required by this Consent Order are necessary to protect human health and/or the environment.

VI. WORK TO BE PERFORMED

Pursuant to Section 3008(h) of RCRA, 42 U.S.C. Section 6928(h), Respondent agrees to and is hereby ordered to perform the following acts in the manner and by the dates specified herein. All work undertaken pursuant to this Consent Order shall be developed and performed in accordance with, at a minimum: the Scope of Work for Corrective Measure Implementation ("CMI") set forth in Attachment A; the Scope of Work for a Health and Safety Plan set forth in Attachment B; the Scope of Work for a Waste Minimization Plan set forth in Attachment C; the Scope of Work for Interim Measures set forth in Attachment E; RCRA and its implementing regulations; and relevant EPA guidance documents. All Attachments to this Consent Order are incorporated herein by reference. Relevant EPA guidance documents may include, but are not limited to, the "RCRA Ground Water Monitoring Technical Enforcement Guidance Document" (OSWER Directive 9950.1, September 1986), "Test Methods For Evaluating Solid Waste" (SW-846, November 1986) and "Construction Quality Assurance for Hazardous

Waste Land Disposal Facilities" (EPA 530/SW-85-031, July 1986), "OWRS Guidance for Preparation of QA Project Plans" (OWRS QA-1, May, 1984).

A. CORRECTIVE MEASURE PREDESIGN

1. Within forty-five (45) calendar days of the effective date of this Consent Order, Respondent shall submit to EPA for approval a Draft Corrective Measures Implementation Work Plan ("CMI Work Plan") which will describe the manner in which the Respondent shall implement the RCRA ROD and attain all requirements, including media cleanup standards, identified in the RCRA ROD. The CMI Work Plan shall be developed in accordance with Attachment A, Task I, and shall comply with, at a minimum, RCRA, its implementing regulations, and relevant EPA guidance.

2. The Draft CMI Work Plan shall include:

- a. a Program Management Plan;
- b. a Sampling and Analysis Plan; and
- c. a Community Relations Plan.

3. Within thirty (30) calendar days of receipt of EPA's comments on the Draft CMI Work Plan submitted pursuant to Section VI.A.2, above, Respondent shall submit to EPA for approval a Final CMI Work Plan which addresses and/or remedies any comments or deficiencies provided or identified by EPA.

B. CORRECTIVE MEASURE DESIGN

1. Within thirty (30) calendar days of receipt of EPA approval of the Final CMI Work Plan, Respondent shall commence implementation of CM Design as set forth in Attachment A, Task II.

2. The CM Design shall include:

- a. Design Plans and Specifications;
- b. Sampling and Analysis Plan Revision;
- c. Cost Estimate
- d. Operation and Maintenance Plan
- e. 50 Percent CM Design Report
- f. 90 Percent Corrective Measure Design Report; and

g. Final Corrective Measure Design Report.

3. Within thirty (30) calendar days of receipt of EPA approval of the Final CMI Work Plan, Respondent shall submit to EPA for approval a 50 Percent CM Design Report. The 50 Percent CM Design Report shall incorporate any modification of the design as a result of EPA's comments furnished on the Draft CMI Work Plan, and, shall include those items listed in Attachment A, Task V.C.

4. Within forty-five (45) days of receipt of EPA comments on the 50 Percent CM Design Report, Respondent shall submit to EPA for approval a 90 Percent CM Design Report. The 90 Percent CM Design Report shall include those items listed in Attachment A, Task V.D, shall respond to any comments made and/or remedy any deficiencies identified by EPA on the 50 Percent CM Design Report, and shall reflect ninety percent of design work completed.

5. Within fifteen (15) calendar days of receipt of EPA's comments on the 90 Percent CM Design Report submitted pursuant to Section VI.B.3, above, Respondent shall submit to EPA for approval a Final (100 Percent) CM Design Report. The 100 Percent CM Design Report shall include those items listed in Attachment A, Task V.E., and shall respond to any comments made and/or remedy any deficiencies identified by EPA on the 90 Percent CM Design Report and provide final design plans and specifications for the CM.

C. CORRECTIVE MEASURE CONSTRUCTION

1. The Respondent shall commence and complete all construction activities required to implement the RCRA ROD and Attachment A, Task III, in accordance with the schedule for such tasks set forth in the EPA-approved Final CMI Work Plan and as outlined in the Final CM Design Report.

2. In accordance with the schedule in the Final CMI Work Plan, Respondent shall submit a Draft CMI Report to EPA. The Draft CMI Report shall describe activities performed during construction, provide actual specifications of the implemented remedy, and provide a preliminary assessment of CMI performance.

3. Within thirty (30) calendar days of receipt of EPA's comments on the Draft CMI Report, the Respondent shall submit to EPA for approval a Revised Draft CMI Report which responds to any comments and/or remedies any deficiencies identified by EPA in the Draft CMI Report.

4. EPA shall determine, on the basis of the Revised Draft CMI Report and any other relevant information, whether the constructed project is consistent with the design specifications

and whether the CM is progressing towards the media cleanup standards set forth in the RCRA ROD. Once EPA has determined that the constructed project is consistent with the design specifications and that the CM is progressing towards the media cleanup standards set forth in the RCRA ROD, EPA shall notify the Respondent of such determination in writing and the Revised Draft CMI Report shall be considered the Final CMI Report.

D. HEALTH AND SAFETY PLAN

Concurrent with the submission of the CMI Work Plan, the Respondent shall submit a CMI Health and Safety Plan in accordance with the provisions of Attachment B of this Consent Order.

E. WASTE MINIMIZATION PLAN

1. Within one hundred and eighty (180) calendar days of the effective date of this Consent Order, Respondent shall submit to EPA for review and comment a plan to minimize the generation of hazardous waste at the Facility (the "Waste Minimization Plan" stet). This Plan shall be developed in accordance with the Scope of Work for a Waste Minimization Plan contained in Attachment C and shall describe procedures to minimize the volume, mobility and toxicity of hazardous waste generated at the Facility.

2. Within sixty (60) calendar days after receipt of EPA comments on the draft Waste Minimization Plan, Respondent shall submit to EPA a revised Plan incorporating EPA's comments to the extent practicable and why it would be impracticable to incorporate any EPA comments not incorporated. Concurrent with such submission, Respondent shall implement the Waste Minimization Plan, as revised, in accordance with the requirements and schedule contained therein.

3. Respondent shall review, assess the effectiveness of, and revise the Waste Minimization Plan, as appropriate, on an annual basis to further reduce the volume, mobility and/or toxicity of the hazardous waste generated at the Facility. During the effective life of this Consent Order, Respondent shall submit an annual Waste Minimization Report to EPA. Such Waste Minimization Report shall be prepared and submitted to EPA by March 1 of each year and shall include: an assessment of the effectiveness of Respondent's existing Plan; a description of the changes in volume, mobility and toxicity of waste actually achieved during the year in comparison to previous years; a description of areas where potential improvements in waste minimization at the Facility may be achieved; a copy of all revisions to the Waste Minimization Plan; an explanation and description of how such revision(s) have enabled the Respondent to further minimize the volume, mobility and/or toxicity of the hazardous waste generated at the Facility; and any anticipated

revisions to the Plan along with the projected changes in volume, mobility and/or toxicity of the waste generated as a result of implementing such revision(s).

F. CORRECTIVE MEASURE OPERATION AND MAINTENANCE

1. The Respondent shall begin performance of the Operation and Maintenance ("O&M") activities in accordance with the time table set forth in the Final CMI Work Plan and O&M Plan to be submitted pursuant to this Consent Order. The Respondent shall perform the O&M activities listed in Attachment A, Task IV.

2. Two (2) years from the effective date of this Consent Order, and every two (2) years thereafter until receipt of written notice from EPA that the media cleanup standards set forth in the RCRA ROD have been met, the Respondent shall submit a Draft CM Biannual O&M Assessment Report in accordance with Attachment A, Section V.G. Such Report shall contain an evaluation of the CM in attaining the media cleanup standards specified in the RCRA ROD.

3. Within thirty (30) calendar days of receipt of EPA's comments on each Draft CM Biannual O&M Assessment Report submitted pursuant to Section VI.F.2, above, the Respondent shall submit to EPA for approval a Final CM Biannual O&M Assessment Report which responds to and/or remedies any deficiencies identified by EPA after reviewing the Draft CM Biannual O&M Assessment Report.

4. At any time after EPA's receipt of the first Final CM Biannual O&M Assessment Report, EPA may determine, on the basis of such Biannual O&M Assessment Report, any subsequently submitted Biannual O&M Assessment Report(s) and/or any other relevant information, whether Respondent has achieved the media cleanup standards specified in the RCRA ROD and/or whether the continued implementation of the CM is likely to achieve the media cleanup standards specified in the RCRA ROD. EPA shall notify the Respondent of its determination, and the basis therefor, in writing.

G. SUBMISSIONS/EPA APPROVAL

1. EPA will review documents submitted pursuant to the terms of this Consent Order (hereinafter collectively referred to as "Submissions") and will notify Respondent in writing of EPA's approval or disapproval of each such Submission(s) or any part thereof (except for the Health and Safety Plan, Waste Minimization Plan and Bimonthly Progress Reports (see Section VI.F.3., infra)). In the event of EPA's disapproval, EPA shall specify in writing any deficiencies in the Submission(s). Such disapproval shall not be subject to the dispute resolution procedures of Section XIV, below. Notwithstanding any notice of disapproval, Respondent shall

implement, at the direction of EPA, any action required by any non-deficient portion of the Submission(s).

2. Within thirty (30) calendar days of receipt of EPA's comments on the Submission, Respondent shall submit to EPA for approval a revised Submission which responds to any comments received and/or corrects any deficiencies identified by EPA. In the event that EPA disapproves of the revised Submission, Respondent may invoke the dispute resolution procedures of Section XIV, below. In the event EPA disapproves the revised Submission, EPA reserves the right to revise such Submission and seek to recover from Respondent the costs thereof, in accordance with Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §§ 9601 et seq. ("CERCLA"), and any other applicable law. Such performance by EPA shall not release the Respondent from complying with all other terms and conditions of this Consent Order. Any submission approved or revised by EPA under this Consent Order shall be deemed incorporated into and made an enforceable part of this Consent Order.

3. Beginning with the first day of the second full month following the effective date of this Consent Order, and every two months thereafter on the first day of the month, throughout the period that this Consent Order is effective, Respondent shall provide EPA with bimonthly (every two months) progress reports. The Bimonthly Progress Reports shall contain the information required in Attachment A, Task V.A.

4. All work performed pursuant to this Consent Order shall be under the direction and supervision of a professional engineer or geologist with expertise in hazardous waste site remediation. Within ten (10) calendar days after the effective date of this Consent Order or date of retention of such engineer or geologist, whichever is later, Respondent shall submit to EPA, in writing, the name, title, and qualifications of the engineer or geologist and of any contractors or subcontractors to be used in carrying out the terms of this Consent Order. Notwithstanding Respondent's selection of an engineer, geologist, contractor or subcontractor, nothing herein shall relieve Respondent of its obligation to comply with the terms and conditions of this Consent Order. EPA shall have the right to disapprove at any time the use of any professional engineer, geologist, contractor or subcontractor selected by Respondent. EPA's disapproval shall not be subject to review under Section XIV of this Consent Order ("DISPUTE RESOLUTION") or otherwise. Within fifteen (15) calendar days of receipt from EPA of written notice disapproving the use of any professional engineer, geologist, contractor or subcontractor, Respondent shall notify EPA, in writing, of the name, title and qualifications of the personnel who will replace the personnel disapproved by EPA. Respondent shall notify EPA twenty-one (21) days prior to voluntarily changing its engineer or geologist, and/or contractors or subcontractors to be used in

carrying out the terms of this Consent Order, and shall submit to EPA in writing, the name, title, and qualifications of the substitute engineer, geologist, contractor or subcontractor.

5. Any notice, report, certification, data presentation or other document submitted by Respondent pursuant to this Consent Order which discusses, describes, demonstrates or supports any finding or makes any representation concerning Respondent's compliance with any requirement of this Consent Order shall be certified by a responsible corporate officer of Respondent. A responsible officer means: (a) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function or any other person who performs similar policy or decision-making functions for the corporation, or (b) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$35 million (in 1987 dollars when the Consumer Price Index was 345.3), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

6. The certification of the responsible corporate officer required by Section VI.G.5., supra, of this Consent Order shall be in the following form:

"I certify that the information contained in or accompanying this [type of submission] is true, accurate and complete.

As to [the/those] portions of this [type of submission] for which I cannot personally verify [its/their] accuracy, I certify under the penalty of law that this [type of submission] and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."

[signature]:_____

Name [print]:_____

[title]:_____

H. ADDITIONAL WORK

1. If EPA determines, pursuant to Section VI.C.4., supra, that the media cleanup standards specified in the RCRA ROD have not been met and that the continued implementation of the CM is not likely to achieve those standards EPA may select an alternative and/or a supplemental CM pursuant to applicable EPA regulations and/or guidance regarding selection of CM under RCRA Section 3008(h).

2. After selection by EPA of an alternative or supplemental CM pursuant to Section VI.H.1. of this Consent Order, EPA may provide Respondent with an opportunity to negotiate the terms of an administrative order on consent for implementation of such alternative or supplemental CM. Nothing in this provision shall limit EPA's authority to implement the alternative or supplemental CM or to take any other appropriate action under RCRA, CERCLA or any other legal authority, including issuance of a unilateral administrative order or the filing of a civil action seeking a judicial order directing Respondent to implement the alternative or supplementary CM.

3. Nothing in this Consent Order, or in EPA's approval of the Final CMI Work Plan, the Final CM Design Report, or of any other submission, shall constitute a warranty or representation of any kind by EPA that full performance of the CM will achieve the media cleanup standards set forth in the RCRA ROD and to be set forth in the Final CM Design Report. Respondent's compliance with such approved documents does not foreclose EPA from seeking additional work or an alternative or supplemental CM from Respondent or any other person to achieve the applicable media cleanup standards.

4. EPA may determine that certain tasks and deliverables required under this Consent Order may require additional work. These tasks and deliverables may or may not have been included in the Final CMI Work Plan. If EPA determines that such additional work is necessary to implement the CM described in the RCRA ROD, EPA may request that Respondent perform the additional work and, in such case, shall specify the reasons for EPA's determination that such additional work is necessary. Within fifteen (15) calendar days after the receipt of such request, Respondent shall have the opportunity to meet or confer with EPA to discuss the additional work EPA has requested. In the event that Respondent agrees to perform the additional work, this Consent Order may be modified in accordance with Section XXII ("SUBSEQUENT MODIFICATION"), below, and, the additional work shall be performed in accordance with this Consent Order. In the event Respondent declines or fails to perform the additional work, EPA reserves the right to order Respondent to perform such additional work; to perform such additional work itself and to seek to recover from Respondent all

costs of performing such additional work; and to disapprove of the Final CMI Work Plan, Final CM Design Report and/or the Final CMI Report.

I. INTERIM MEASURES ("IM") / SITE STABILIZATION

1. If at any time during the pendency of this Consent Order Respondent obtains or discovers information concerning a release of any hazardous waste or hazardous constituent at or from the Facility into the environment in addition to or different from that described in Section IV, "FINDINGS OF FACT", above, Respondent shall immediately notify EPA orally of such release and in writing within three (3) calendar days of providing oral notification. The notification shall describe the nature and extent of the release and any threat or potential threat to human health or the environment posed by such release. If EPA determines that corrective action for such release is necessary to protect human health or the environment, EPA shall notify Respondent. Within ten (10) calendar days of receipt of such notice from EPA, Respondent shall submit to EPA for approval an IM Workplan which identifies Interim Measures which will protect human health and the environment from such release and which are, to the extent practicable, consistent with and integrated into the CM at the Facility.

2. Each IM Workplan shall be developed in accordance with the IM Scope of Work in Attachment E to this Order. Each IM Workplan shall document the procedures to be used by Respondent for the implementation of Interim Measures and shall include, but not be limited to, a Community Relations Plan and IM Objectives. In addition to an IM Workplan, Respondent shall submit in accordance with Attachment E to this Consent Order: a Data Collection Quality Assurance Plan; a Data Management Plan; Design Plans and Specifications; an Operation and Maintenance Plan; a Project Schedule for expeditious completion of Interim Measures; an Interim Measures Construction Quality Assurance Plan; and Reporting Requirements.

3. Concurrent with submission of an IM Workplan, Respondent shall submit to EPA an IM Health and Safety Plan in accordance with Attachment B of this Consent Order.

4. Upon receipt of EPA approval of the IM Workplan, Respondent shall implement the approved IM Workplan in accordance with the requirements and schedules contained therein.

VII. QUALITY ASSURANCE

A. Throughout the Corrective Measure Design, Corrective Measure Construction and Corrective Measure O&M Phases, Respondent shall use EPA-approved quality assurance,

quality control, and chain-of-custody procedures as specified in the approved Quality Assurance Project Plans, Field Sampling Plans, and Sampling and Analysis Plans to accompany the CMI Work Plan, Design Plans, CMI Plan, and/or O&M Plan. In addition, Respondent shall:

1. Ensure that laboratories used for analyses by Respondent perform such analyses according to the EPA methods included in "Test Methods for Evaluating Solid Waste" (SW-846, November 1986) or other methods deemed satisfactory to EPA. If methods other than EPA methods are to be used, Respondent shall submit all protocols to be used for analyses to EPA for approval at least thirty (30) calendar days prior to the commencement of such analyses.

2. Ensure that laboratories used by Respondent for analyses participate in a quality assurance/ quality control program equivalent to that which is followed by EPA in RCRA and/or Superfund Program. As part of such a program, and upon request by EPA, such laboratories shall perform analyses of samples provided by EPA to demonstrate the quality of the analytical data.

3. Inform the EPA Project Coordinator designated pursuant to Section XII of the Consent Order, at least fourteen (14) calendar days in advance of any laboratory analysis regarding which laboratory will be used by Respondent and ensure that EPA personnel and/or EPA authorized representatives are allowed reasonable access to the laboratory(s), records, and personnel utilized or documents generated by Respondent in connection with the analysis of samples collected pursuant to this Consent Order.

VIII. PUBLIC REVIEW OF ADMINISTRATIVE RECORD

The Administrative Record supporting the issuance of this Consent Order will be available for public review by contacting:

Yolanda Ruffin
U.S. Environmental Protection Agency
841 Chestnut Building
Philadelphia, Pennsylvania 19107
Telephone # (215) 597-6681
(Mondays through Fridays, from 9:00 a.m. to 5:00 p.m.)

-or-

Earlsville Post Office
Earlsville, Virginia 22936-9998
Telephone: (804) 973-5214

(Mondays through Fridays, from 8:00 a.m. to 5:00 p.m.,
and Saturdays from 10:00 a.m. to 12:00 p.m.)

IX. ONSITE AND OFFSITE ACCESS

A. EPA and/or its authorized representatives shall have the authority to enter and freely move about all property at the Facility during the effective dates of this Consent Order for the purposes of, inter alia: interviewing Facility personnel and contractors; inspecting records, operating logs, and contracts related to the Facility; reviewing the progress of the Respondent in carrying out the terms of this Consent Order; conducting such tests, sampling or monitoring as EPA or its Project Coordinator deem necessary; using a camera, sound recording, or other documentary type equipment; and verifying the reports and data submitted to EPA by the Respondent. The Respondent shall permit such persons to inspect and copy all records, files, photographs, documents, and other writings, including all sampling and monitoring data, that pertain to work undertaken pursuant to this Consent Order.

B. To the extent that work required by this Consent Order, or by any approved plan, document or submission prepared pursuant hereto, must be done on property not owned or controlled by Respondent at the time performance of such work is required, Respondent shall use its best efforts to obtain access agreements from the person(s) owning or controlling such property, present owner(s) and/or lessee(s), as appropriate, of such property within fourteen (14) calendar days of receipt of EPA approval of any such plan, document or submission pursuant to this Consent Order. "Best efforts" as used in this paragraph, shall include at a minimum, but not be limited to: a) a certified letter from Respondent to the present owner(s) and/or lessee(s) of such property requesting agreements to permit Respondent, EPA and their authorized representatives access to such property; and b) the payment of reasonable sums of money in consideration of access. "Reasonable sums of money" means the fair market value of the right of access necessary to implement the requirements of this Consent Order. In the event that such agreements for access are not obtained within fourteen (14) calendar days as set forth in this paragraph, Respondent shall notify EPA, in writing, within seven (7) calendar days after failure to obtain such agreements regarding both the efforts undertaken to obtain access and the failure to obtain such agreements.

C. In the event that Respondent fails to obtain access as required by Section IX.B., above, despite the exercise of best efforts, EPA, in its discretion, may assist the Respondent in obtaining such access. Respondent shall reimburse EPA for all costs incurred by EPA in obtaining access, including but not limited to, attorney fees and the amount of just compensation and costs incurred by EPA.

D. Nothing in this Consent Order shall limit or otherwise affect EPA's right of access and entry, or right to gather information, pursuant to applicable law, including, but not limited to, RCRA and CERCLA.

X. SAMPLING AND DATA/DOCUMENT AVAILABILITY

A. Respondent shall submit to EPA the results of all sampling and/or tests or other data generated by, or on behalf of, the Respondent pursuant to the requirements of this Consent Order and the Attachments appended hereto and incorporated herein.

B. Respondent shall notify EPA at least fourteen (14) calendar days before engaging in any field activities, including, but not limited to, well drilling, installation of equipment, or sampling. At the request of EPA, Respondent shall provide or allow EPA or its authorized representatives to take split and/or duplicate samples of all samples collected by Respondent pursuant to this Consent Order. Nothing in this Consent Order shall limit or otherwise affect EPA's authority to collect samples pursuant to applicable law, including, but not limited to RCRA and CERCLA.

C. Respondent may assert a business confidentiality claim in the manner described in 40 C.F.R. Section 2.203(b) covering all or part of any information submitted to EPA pursuant to this Consent Order. Any assertion of confidentiality shall be adequately substantiated by Respondent when the assertion is made in accordance with 40 C.F.R. Section 2.204(e)(4). Information subject to a confidentiality claim shall be disclosed only to the extent and by the means of the procedures set forth in 40 C.F.R. Part 2, Subpart B. If no such confidentiality claim accompanies the information when it is submitted to EPA, it may be made available to the public by EPA without further notice to the Respondent. Respondent agrees not to assert any confidentiality claim with regard to any physical, sampling, monitoring or analytical data.

D. If Respondent wishes to assert a privilege with regard to any document which EPA seeks to inspect or copy pursuant to this Consent Order, Respondent shall identify the document, the privilege claimed, and the basis therefor in writing. For the purposes of this Consent Order, privileged documents are those documents exempt from discovery from the United States in litigation under the Federal Rules of Civil Procedure. Respondent shall not assert as privileged analytical, sampling and monitoring data.

XI. RECORD PRESERVATION

Respondent agrees that it shall preserve, during the pendency of this Consent Order and for a minimum of at least six (6) years after its termination, all data, records and documents in its possession or in the possession of its divisions, officers, directors, employees, agents, contractors, successors, and assigns which relate in any way to this Consent Order or to hazardous waste management and/or disposal at the Facility. After six (6) years, Respondent shall make such records available for EPA inspection or shall provide copies of such records to EPA. Respondent shall notify EPA at least thirty (30) calendar days prior to the proposed destruction of any such records, and shall provide EPA with the opportunity to inspect, copy and/or take possession of any such records. Respondent shall not destroy any record to which EPA has requested access for inspection and/or copying until EPA has obtained such access or withdrawn its request for such access. Nothing in this Section XI shall in any way limit the authority of EPA under Section 3007 of RCRA, 42 U.S.C. Section 6927, or any other access or information gathering authority.

XII. PROJECT COORDINATORS AND NOTIFICATIONS

- A. EPA designates the following Project Coordinator:

Yolaanda Ruffin
U.S. EPA (3HW61)
841 Chestnut Building
Philadelphia, PA 19107
(215) 597-0568.

- B. Respondent designates the following Project Coordinator:

Cooper Industries, Inc.
[Cooper to provide name, address and
telephone number]

C. Each Project Coordinator shall be responsible for overseeing the implementation of this Consent Order. The EPA Project Coordinator will be EPA's primary designated representative at the Facility. The absence of the EPA Project Coordinator from the Facility shall not be cause for the delay or stoppage of work.

D. The parties agree to provide at least seven (7) calendar days written notice to the other party prior to changing Project Coordinators.

E. To the maximum extent possible, all communications between Respondent and EPA, and all documents, reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Consent Order, shall be directed through the Project Coordinators as follows:

1. Four copies of each document require to be sent to EPA, including work plan(s), draft and final reports, bimonthly progress reports, and other submissions, shall be hand-delivered or sent by Certified Mail, Return Receipt Requested, to the EPA Project Coordinator designated pursuant to paragraph A of this Section.

2. Documents to be sent to the Respondent shall be sent to the Respondent's Project Coordinator.

3. One copy of all documents sent to EPA shall also be sent to the following State contact:

Ms. Lesile Romanchik
Virginia Department of Waste Management
11th Floor, Monroe Building
101 N. 14th Street
Richmond, Va. 23219

XIII. DELAY IN PERFORMANCE/STIPULATED PENALTIES

A. Subject to the provisions of this Consent Order, including, but not limited to, Section XIV ("DISPUTE RESOLUTION"), Section XV ("FORCE MAJEURE AND EXCUSABLE DELAY"), and Section XXII ("SUBSEQUENT MODIFICATION"), in the event Respondent fails to comply with any requirement set forth in this Consent Order, Respondent shall pay stipulated penalties, as set forth below, upon written demand by EPA. Compliance by Respondent shall include commencement or completion of any activity, plan, study or report required by this Consent Order in an acceptable manner and within the specified time schedules in and approved under this Consent Order. Stipulated penalties shall accrue as follows:

1. For failure to commence, perform or complete work as prescribed in this Consent Order: \$3,000 per day for one to seven days or part thereof of noncompliance, and \$5,000 per day for each day of noncompliance, or part thereof, thereafter;

2. For failure to submit any draft or final Work plans or reports as required by this Consent Order: \$2,000 per day for one to seven days or part thereof of noncompliance, and \$4,000 per day for each day of noncompliance, or part thereof, thereafter;

3. For failure to submit other deliverables as required by this Consent Order: \$1,000 per day for one to seven days or part thereof of noncompliance, and \$2,000 per day for each day of noncompliance, or part thereof, thereafter;

4. For any failure to comply with the provisions of this Consent Order after receipt of notice of noncompliance by EPA: \$3,000 per day for one to seven days or part thereof of noncompliance, and \$5,000 per day for each day of noncompliance, or part thereof, thereof, in addition to any stipulated penalties imposed for the underlying noncompliance;

5. For any failure to comply with this Consent Order not described in subparagraphs (1)-(4), above: \$1,000 per day for one to seven days or part thereof of noncompliance, and \$2,000 per day for each day of noncompliance, or part thereof, thereafter.

B. All penalties shall begin to accrue on the date that complete performance is due or a violation occurs, and shall continue to accrue through the final day of or correction of the violation. Nothing herein shall prevent the simultaneous accrual of separate stipulated penalties for separate violations of this Consent Order.

C. Except as provided in Section XIII.E., below, all penalties owed to EPA under this Section XIII shall be payable within thirty (30) calendar days of receipt of a notification of noncompliance. Such notification shall describe the noncompliance and shall indicate the amount of penalties due. Interest shall begin to accrue on the unpaid balance at the end of the thirty (30) calendar day period and shall accrue at the United States Tax and Loan Rate.

D. All penalty payments shall be made by certified or cashier's check payable to the "Treasurer of the United States of America" and shall be remitted to:

Regional Hearing Clerk
U. S. Environmental Protection Agency, Region III
P.O. Box 360515M
Pittsburgh, Pennsylvania 15251.

All payments shall reference the name of the Facility, the Respondent's name and address, and the EPA Docket Number of this Consent Order. Copies of the transmittal of payment shall be sent simultaneously to the EPA Project Coordinator and the Regional Hearing Clerk (3RC00), U.S. Environmental Protection Agency, Region III, 841 Chestnut Building, Philadelphia, Pennsylvania 19107.

E. Respondent may dispute EPA's assessment of stipulated penalties for any alleged violation of this Consent Order by

invoking the dispute resolution procedures under Section XIV, ("DISPUTE RESOLUTION"), below. Stipulated penalties shall continue to accrue, but need not be paid, for any alleged noncompliance which is the subject of Dispute Resolution during the period of such dispute resolution. To the extent that Respondent does not prevail upon resolution of the dispute, Respondent shall remit to EPA within seven (7) calendar days of receipt of such resolution any outstanding stipulated penalty payment in the manner described in Section XIII.D., above. This payment shall include any accrued interest, as calculated pursuant to Paragraph C, supra. To the extent Respondent prevails upon resolution of the dispute, no stipulated penalties for the alleged noncompliance which was the subject of the dispute shall be payable.

F. Neither the filing of a petition to resolve a dispute, nor the payment of penalties, shall alter in any way Respondent's obligation to comply with the requirements of this Consent Order.

G. The stipulated penalties set forth in this Section XIII shall not preclude EPA from pursuing any other remedies or sanctions which may be available to EPA by reason of Respondent's failure to comply with any of the requirements of this Consent Order.

XIV. DISPUTE RESOLUTION

A. If Respondent disagrees, in whole or in part, with any EPA disapproval, modification or other decision or directive made by EPA pursuant to this Consent Order, Respondent shall notify EPA in writing of its objections, and the basis therefor, within fourteen (14) calendar days of receipt of EPA's disapproval, decision or directive. Such notice shall set forth the specific points of the dispute, the position which Respondent asserts should be adopted as consistent with the requirements of this Consent Order, the basis for Respondent's position, and any matters which it considers necessary for EPA's determination. EPA and Respondent shall have an additional fourteen (14) calendar days from the receipt by EPA of the notification of objection, during which time representatives of EPA and Respondent may confer in person or by telephone to resolve any disagreement. If an agreement is reached, the resolution shall be written and signed by an authorized representative of each party. In the event that resolution is not reached within this fourteen (14) calendar day period, EPA will provide Respondent, in writing, its decision on the pending dispute.

B. Except as provided in Sections XIII.C. and E., the existence of a dispute, as defined in this Section XIV, and EPA's consideration of matters placed into dispute shall not excuse, toll or suspend any compliance obligation or deadline required pursuant to this Consent Order during the pendency of the dispute resolution process.

C. Notwithstanding any other provisions of this Consent Order, no action or decision by EPA, including, but without limitation to, decisions of the Regional Administrator, Region III, pursuant to this Consent Order, shall constitute final agency action giving rise to any right to judicial review prior to EPA's initiation of judicial action to compel Respondent's compliance with this Consent Order.

XV. FORCE MAJEURE AND EXCUSABLE DELAY

A. Respondent shall perform the requirements of this Consent Order in the manner and within the time limits set forth herein, unless the performance is prevented or delayed by events which constitute a force majeure. Respondent shall have the burden of proving such a force majeure. A force majeure is defined as any event arising from causes not reasonably foreseeable and beyond the control of Respondent, which cannot be overcome by due diligence and which delays or prevents performance in the manner or by the date required by this Consent Order. Such events do not include increased costs of performance, changed economic circumstances, reasonably foreseeable weather conditions or weather conditions which could have been overcome by due diligence, or failure to obtain Federal, State, or local permit unless Respondent has submitted a timely and complete application for such permit and has met all of its obligations with respect to obtaining such permit, and the failure to obtain the permit is not attributable to Respondent.

B. Respondent shall notify EPA, in writing, within seven (7) calendar days after it becomes or should have become aware of any event which causes or may cause a delay in complying with any requirement of this Consent Order or prevents compliance in the manner required by this Consent Order and any event which Respondent claims constitutes a force majeure. Such notice shall estimate the anticipated length of delay, including necessary demobilization and remobilization, its cause, measures taken or to be taken to prevent or minimize the delay, and an estimated timetable for implementation of these measures. Failure to comply with the notice provision of this Section XV shall constitute a waiver of Respondent's right to assert a force majeure claim with respect to such event. In addition to the above notification requirements Respondent shall further undertake all reasonable actions to prevent or to minimize any delay in achieving compliance with any requirement of this Consent Order after it becomes or should have become aware of any event which may delay such compliance.

C. If EPA determines that the failure to comply or delay has been or will be caused by a force majeure event, the time for performance of that requirement of this Consent Order may be extended, upon EPA approval, for a period equal to the delay resulting from such circumstances. This shall be accomplished through an amendment to this Consent Order pursuant to Section

XXII ("SUBSEQUENT MODIFICATION"). Such an extension shall not alter the schedule for performance or completion of any other tasks required by this Consent Order, unless these tasks are also specifically altered by amendment of the Consent Order.

D. In the event that EPA and Respondent cannot agree that any delay or failure has been or will be caused by a force majeure event, or if there is no agreement on the length of the extension, Respondent may invoke the dispute resolution procedures set forth in Section XIV, ("DISPUTE RESOLUTION").

XVI. RESERVATION OF RIGHTS

A. EPA expressly reserves all rights and defenses that it may have, including the right both to disapprove of work performed by Respondent pursuant to this Consent Order, to require that Respondent correct and/or reperform any work disapproved by EPA, and to request that Respondent perform tasks in addition to those stated in the Scope(s) of Work, Work Plans, or this Consent Order.

B. EPA hereby reserves all of its statutory and regulatory powers, authorities, rights and remedies, both legal and equitable, including any which may pertain to Respondent's failure to comply with any of the requirements of this Consent Order, including, without limitation, the assessment of penalties under Section 3008(h)(2) of RCRA, 42 U.S.C. Section 6928(h)(2). This Consent Order shall not be construed as a covenant not to sue, or as a release, waiver or limitation of any rights, remedies, powers and/or authorities, civil or criminal, which EPA has under RCRA, CERCLA, or any other statutory, regulatory or common law authority.

C. Compliance by Respondent or any future owner(s) or lessee(s) of the Facility with the terms of this Consent Order shall not relieve Respondent of its obligations to comply with RCRA or any other applicable local, state, or federal laws and regulations.

D. The signing of this Consent Order and Respondent's consent to comply shall not limit or otherwise preclude EPA from taking additional enforcement action pursuant to Section 3008(h) of RCRA, 42 U.S.C. Section 6928(h), or any other authority, should EPA determine that such action is warranted.

E. This Consent Order is not intended to be, nor shall it be construed as, a permit. This Consent Order does not relieve Respondent or any future owner(s) or lessee(s) state, or federal permit or approval.

F. EPA reserves the right to perform any portion of the work consented to herein or any additional site characterization,

feasibility study, and response/corrective actions it deems necessary to protect public health or welfare or the environment. EPA may exercise its authority under RCRA, CERCLA and any other authority to undertake or require the performance of response actions at any time. EPA reserves the right to seek reimbursement from Respondent for costs incurred by the United States in connection with any such response actions. Notwithstanding compliance with the terms of this Consent Order, Respondent is not released from liability, if any, for the costs of any response actions taken by EPA.

G. EPA reserves whatever rights it may have under CERCLA or any other law, or in equity, to recover from Respondent any costs incurred by EPA in overseeing the implementation of this Consent Order.

H. If EPA determines that conditions or activities at the Facility, whether or not in compliance with this Consent Order, have caused or may cause a release or threatened release of hazardous wastes, hazardous constituents, hazardous substances, pollutants or contaminants which threaten or may pose a threat to the public health or welfare or to the environment, EPA may direct that Respondent stop further implementation of this Consent Order for such period of time as may be needed to abate any such release or threatened release and/or to undertake any action which EPA determines is necessary to abate such release or threatened release.

I. Because this Consent Order was entered into with the consent of both parties, Respondent waives its right to request a public hearing pursuant to Section 3008(b) of RCRA, 42 U.S.C. §6928 (b) and 40 C.F.R. Part 24.

XVII. OTHER CLAIMS

Nothing in this Consent Order shall constitute or be construed as a release from any claim, cause of action or demand in law or equity against any person, firm, partnership, or corporation, or other entity for any liability it may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous constituents, hazardous substances, hazardous wastes, pollutants, or contaminants found at, taken to, or taken from the Facility.

XVIII. OTHER APPLICABLE LAWS

All actions required to be taken pursuant to this Consent Order shall be undertaken in accordance with the requirements of all applicable local, state, and federal laws and regulations. Respondent shall obtain or require its authorized representatives

to obtain all permits and approvals necessary under such laws and regulations.

XIX. INDEMNIFICATION OF THE UNITED STATES GOVERNMENT

Respondent agrees to indemnify and save and hold harmless the United States Government, its agencies, departments, agents, and employees, from any and all claims or causes of action arising from or on account of acts or omissions of Respondent or its agents, independent contractors, receivers, trustees, and assigns in carrying out activities required by this Consent Order. This indemnification shall not be construed in any way as affecting or limiting the rights or obligations of Respondent or the United States under their various contracts. The United States shall not be deemed to be a party to any contract entered into by Respondent for the purpose of carrying out any activities required by this Consent Order.

XX. NOTICE OF NON-LIABILITY OF EPA

EPA shall not be deemed a party to any contract involving Respondent and relating to activities at the Facility and shall not be liable for any claim or cause of action arising from or on account of any act, or the omission of Respondent, its officers, employees, contractors, receivers, trustees, agents or assigns, in carrying out the activities required by this Consent Order.

XXI. FINANCIAL RESPONSIBILITY

A. Within thirty (30) calendar days after submittal of the revised cost estimate required to be submitted as part of the 90 Percent CM Design Report, Respondent shall provide financial assurances, in one or more of the forms described in 40 C.F.R. § 264.151, which EPA may assess for the purpose of ensuring the completion of the requirements of this Consent Order, including the tasks set forth in the Scope(s) of Work to this Consent Order.

B. Prior to drawing upon any such assurance measure, EPA shall notify Respondent in writing of its alleged failure to perform the requirements of this Consent Order and shall provide Respondent with a time period of not less than fifteen (15) calendar days within which to remedy the alleged nonperformance.

C. This Section XXI shall not be construed to limit whatever obligation Respondent and any future owner(s) or lessee(s) may have to establish and maintain financial assurances for closure and post-closure care under Virginia Hazardous Waste Management Regulations § 10.7 (40 C.F.R. Part 265, Subpart H).

XXII. SUBSEQUENT MODIFICATION

A. This Consent Order may be amended only by mutual agreement of EPA and Respondent. Any such amendment shall be in writing, shall be signed by an authorized representative of each party, shall have as its effective date as the date on which it is signed by EPA, and shall be incorporated into this Consent Order. Any oral agreement between EPA and Respondent, the purpose of which is to modify this Consent Order to address exigent circumstance, and which is subsequently ratified in writing by EPA and Respondent shall have as its effective date the date of such oral agreement.

B. Any reports, plans, specifications, schedules, other submissions and attachments required by this Consent Order are, upon written approval by EPA, incorporated into this Consent Order. Any noncompliance with such EPA-approved reports, plans, specifications, schedules, and attachments shall be considered a violation of this Consent Order and shall subject Respondent to the stipulated penalty provisions included in Section XIV, ("DELAY IN PERFORMANCE/STIPULATED PENALTIES").

C. Notwithstanding paragraph A of this section, minor modifications in the studies, techniques, procedures, designs or schedules utilized in carrying out this Consent Order and necessary for the completion of the project may be made by written agreement of the Project Coordinators. Such modifications shall have as an effective date the date on which the agreement is signed by the EPA Project Coordinator.

D. No informal advice, guidance, suggestions, or comments by EPA regarding reports, plans, specifications, schedules, and any other writing submitted by Respondent shall be construed as relieving Respondent of its obligation to obtain written approval, if and when required by this Consent Order.

XXIII. SEVERABILITY

If any provision or authority of this Consent Order or the application of this Consent Order to any party or circumstance is held by any judicial or administrative authority to be invalid, the application of such provision to other parties or circumstances and the remainder of this Consent Order shall not be affected thereby and shall remain in full force.

XXIV. TERMINATION AND SATISFACTION

The provisions of this Consent Order shall be deemed satisfied upon Respondent's receipt of written notice from EPA that Respondent has demonstrated, to the satisfaction of EPA, that the terms of this Consent Order, including any additional tasks determined by EPA to be required pursuant to this Consent

Order, have been satisfactorily completed. This notice shall not, however, terminate Respondent's obligation to comply with any continuing obligations hereunder including, but not limited to, Sections XI ("RECORD PRESERVATION"), XVI ("RESERVATION OF RIGHTS"), XVII ("OTHER CLAIMS"), XVIII ("OTHER APPLICABLE LAWS"), XIX ("INDEMNIFICATION OF THE UNITED STATES") and XX ("NOTICE OF NON-LIABILITY OF EPA").

XXV. SURVIVABILITY/PERMIT INTEGRATION

A. Subsequent to the issuance of this Consent Order, a RCRA permit may be issued to the Facility incorporating the requirements of this Consent Order by reference into the permit.

B. No requirement of this Consent Order shall terminate upon the issuance of a RCRA permit unless such requirement is expressly replaced by a requirement in the permit.

XXVI. ATTORNEYS' FEES

The Respondent shall bear its own costs and attorneys fees.

XXVII. EFFECTIVE DATE

The effective date of this Consent Order shall be the date on which a true and correct copy of this Consent Order is received by Respondent.

IT IS SO AGREED AND ORDERED:

DATE: _____ BY: _____

EDWIN B. ERICKSON
REGIONAL ADMINISTRATOR
UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY, REGION III

DATE: _____ BY: _____

NAME

TITLE

RESPONDENT



-DRAMA PTTS

3. HORIZONTAL CONTOUR INTERVAL - 5 feet

ALL LAND BASED SOLID WASTE MANAGEMENT UNITS HAVE BEEN REMOVED AND/OR CLOSED IN ACCORDANCE WITH EPA AND/OR VDM REGULATIONS AND APPROVALS.



Westinghouse Environmental Services

**CARVER OF
ENOSVILLE, MINNESOTA**

WASTE MANAGEMENT UNITS

ATTACHMENT A

Scope of Work for Corrective Measure Implementation
at Cooper Industries, Inc. Electrical Distribution Products
Earlysville, Virginia

ATTACHMENT A

**SCOPE OF WORK FOR THE CORRECTIVE MEASURE IMPLEMENTATION
AT**

**COOPER INDUSTRIES, INC.
COOPER DISTRIBUTION EQUIPMENT DIVISION
EARLYSVILLE, VIRGINIA**

PURPOSE

This Statement of Work ("SOW") sets forth the requirements for implementation of the design, construction, operation, maintenance, and monitoring of the performance of the corrective measure or measures pursuant to the Final Administrative Order on Consent ("Consent Order" or "Order") to which this SOW is attached. The work to be performed under the Order will implement the corrective measure that has been selected by EPA in the September 30, 1991 Record of Decision ("RCRA ROD") for the Cooper Industries, Inc. Facility in Earlysville, Virginia to protect human health and the environment. The Respondent will furnish all personnel, materials and services necessary for the implementation of the corrective measure or measures.

SCOPE

The Corrective Measure Implementation ("CMI") Program consists of four tasks:

Task I: CMI Work Plan

- A. Program Management Plan
- B. Sampling and Analysis Plan
- C. Community Relations Plan

Task II: Corrective Measure Design

- A. Design Plans and Specifications
- B. Sampling and Analysis Plan Revision
- C. Cost Estimate
- D. Operation and Maintenance Plan
- E. Design Phases

- 1. Preliminary Design
- 2. Final Design

Task III: Corrective Measure Construction

Task IV: Corrective Measure Operation and Maintenance

Task V: Reports

Further specification of the work outline in this SOW will

be provided in the CMI Work Plan and subsequent plans to be approved by EPA. Variations from the SOW will be made, if necessary, to fulfill the objectives of the Corrective Measure set forth in the RCRA ROD.

Additional studies may be needed as part of CMI to supplement the available data. At the direction of EPA for any such studies required, the Respondent shall furnish all services, including field work, materials, supplies, plant, labor, equipment, investigations, and superintendence. Sufficient sampling, testing and analysis shall be performed to optimize the required treatment and/or disposal operations and systems.

TASK I: CMI WORK PLAN

The Respondent shall prepare a CMI Work Plan. The CMI Work Plan shall outline the design, construction, operation, maintenance and monitoring of all actions taken to implement the Corrective Measure as defined in the Order and the RCRA ROD. The CMI Work Plan will include several plans, which require concurrent preparation. Respondent will revise plans as necessary during the performance of the work under this Order.

The Work Plan will include a proposal of work to be performed throughout CMI and include the following:

A. Program Management Plan

The Respondent shall prepare a Program Management Plan. Specifically, the Program Management Plan will include:

1. documentation of the overall management strategy for implementing the corrective measure;
2. description of the responsibility and authority of all organizations and key personnel involved with the implementation;
3. description of qualifications of key personnel directing the CMI, including contractor personnel;
4. conceptual Design of the ground water treatment system to be installed;
5. an outline of proposed field activities necessary to complete the CMI Design;
6. proposed locations of ground water monitoring wells and a detailed well development plan;
7. proposed discharge options for treated ground water, with a proposed option upon which the CMI

Design will be based;

8. proposed detailed performance criteria for ground water treatment, consistent with those selected in the RCRA ROD and appropriate for the proposed option for discharge of treated water
9. a description of how the conceptual design is expected to meet the technical requirements of the RCRA ROD; and
10. flow chart and schedule of work to be performed during the CMI.

B. Sampling and Analysis Plan

Respondent shall submit a Sampling and Analysis Plan with focus on work to be performed during Corrective Measure Design and comprised of:

1. data quality objectives for Design Phase activities;
2. Quality Assurance Project Plan (QAPP);
3. Field Sampling Plan;
4. a schedule for performance evaluation audits;
5. Data Management Plan.

C. Community Relations Plan (CRP)

The Respondent shall submit and/or revise the CRP to include significant changes in the level of concern or information needs of the community during design and construction activities. The CRP will be consistent with the EPA "Region III RCRA Corrective Action Community Relations Guide," dated August 1, 1990, and will, at a minimum, include provisions for the following:

1. During the Design Phase , the following specific community relations activities will be conducted:
 - a. revision of the facility CRP to reflect citizen concerns and involvement at this stage of the process; and
 - b. preparation and distribution of a public notice and an updated fact sheet at the completion of Design Phase.
2. During the Construction Phase, specific community

relations activities may range from group meetings to fact sheets on the technical status, as appropriate to address citizen interest.

TASK II: CORRECTIVE MEASURE DESIGN

The Respondent shall prepare final construction plans and specifications to implement the corrective measure at the facility as defined in the Corrective Measure set forth in the RCRA ROD. The final product of the Corrective Measure Design is a technical package (or packages) that contains or addresses all elements necessary to accomplish the corrective measure. This includes all design support activities, initial permitting and access requirements, operation and maintenance, and institutional controls, as well as technical elements.

A. Design Plans and Specifications

The Respondent shall develop clear and comprehensive design plans and specifications which include but are not limited to the following:

1. Discussion of the design strategy and the design basis, including:
 - a. compliance with all applicable or relevant environmental and public health standards,
 - b. minimization of environmental and public health impacts, and
 - c. updated schedules from commencement through completion of construction, also to be included in Revised Program Management Plan;
2. Discussion of the technical factors of importance including:
 - a. use of currently accepted environmental control measures and technology,
 - b. constructability of the design, and
 - c. use of currently acceptable construction practices and techniques;
3. Description of assumptions made and detailed justification of these assumptions;
4. Discussion of the possible sources of error and references to possible operation and maintenance problems;

5. Detailed drawings of the proposed design including:
 - a. qualitative flow sheets, and
 - b. quantitative flow sheets.
6. Tables listing equipment and specifications;
7. Tables giving material and energy balances;
8. Appendices including:
 - a. sample calculations (one example presented and explained clearly for significant or unique design calculations)
 - b. derivation of equations essential to understanding the report, and
 - c. results of laboratory or field tests.

B. Sampling and Analysis Plan Revision

The Respondent shall update the Sampling and Analysis Plan, including the QAPP, during each phase of Design, as appropriate, to reflect changes in the following: responsibility and authority; personnel qualifications; inspection activities; sampling requirements; documentation, and other changes to the sampling and analytical program.

C. Cost Estimate

The Respondent shall develop cost estimates for the purpose of assuring that the Facility has the financial resources necessary to construct and implement the corrective measure. The cost estimate developed in the Corrective Measure Study shall be refined to reflect the more detailed/accurate design plans and specifications being developed. The cost estimate shall include both capital and operation and maintenance costs.

D. Operation and Maintenance (O&M) Plan

The Respondent shall prepare an O&M Plan to identify the processes to occur, submissions during O&M, and schedule for O&M activities consistent with remedial objectives set forth in the RCRA ROD. The plan shall be composed of the following elements:

1. Description of normal O&M:

- a. description of tasks for operation
 - b. description of tasks for maintenance
 - c. description of prescribed treatment or operation conditions, and
 - d. schedule showing frequency of each O&M task, also to be included in the Program Management Plan;
2. Description of potential operating problems:
 - a. description and analysis of potential operation problems
 - b. sources of information regarding problems, and
 - c. common and/or anticipated remedies;
3. Revision of Sampling and Analysis Plan described in Task I.B and Task II.B, including the QAPP, to address the systematic, periodic sampling and analytical program to monitor the progress of the corrective measure over time during operation and maintenance, including:
 - a. identification of data quality objectives
 - b. description of monitoring tasks
 - c. description of required laboratory tests and their interpretation
 - d. delineation of quality assurance and quality control practices and procedures to be implemented during the O&M phase, and
 - e. schedule of monitoring frequency, also to be included in Program Management Plan;
4. Description of alternate O&M:
 - a. should systems fail, alternate procedures to prevent undue hazard, and
 - b. analysis of vulnerability and additional resource requirements should a failure occur;
5. Operations and Maintenance Manual
 - a. equipment identification

- b. installation of monitoring components, and
 - c. replacement schedule for equipment and installed components;
6. Mechanisms of keeping records and reporting:
- a. daily operating logs
 - b. laboratory records
 - c. records for operating costs
 - d. mechanism for reporting emergencies
 - e. personnel and maintenance records
 - f. contents of periodic progress reports described in Task V.A and providing details on how Task V.A requirements will be met
 - g. monthly/annual reports to State agencies.

E. Design Phases

The design of the corrective measure should include the phases outlined below:

1. Preliminary (50 Percent) Design
 - a. The Respondent shall submit the Preliminary Design Report when the design effort is approximately 50 percent complete. At this stage the Respondent shall have field verified the existing conditions of the facility. The preliminary design shall reflect a level of effort such that the specifications may be reviewed to determine if the final design will provide an operable and usable corrective measure. Supporting data and documentation shall be provided with the design documents defining the functional aspects of the program. Preliminary construction drawings shall reflect organization and clarity. The Respondent shall include with the preliminary submission design calculations reflecting the same percentage of completion as the designs they support.
 - b. Correlating plans and specifications. The project specifications to be included in the 50 Percent Corrective Measure Design Report shall demonstrate that the Respondent has:

- i. coordinated and cross-checked the specifications and drawings
 - ii. completed the proofing of the edited specifications and required cross-checking of all drawings and specifications.
- c. Equipment start-up and operator training

As part of the draft O&M Plan to be included with the 50 Percent Corrective Measure Design Report, the Respondent shall include, in the technical specifications governing treatment systems, contractor requirements for providing: appropriate service visits by experienced personnel to supervise the installation, adjustment, startup and operation of the treatment systems, and training covering appropriate operational procedures once the startup has been successfully accomplished.

2. Final (90 and 100 Percent) Design

The Respondent shall execute the required revisions and submit the final documents as draft Final (90 percent complete) and Final (100 percent complete) with reproducible drawings and specifications. The quality of the final design documents should be such that the Respondent would be able to include them in a bid package and invite contractors to submit bids for the construction project.

TASK III: CORRECTIVE MEASURE CONSTRUCTION

Following EPA approval of the Final Design Report, the Respondent shall implement construction in accordance with procedures, specifications, and schedules in the EPA-approved Final Design Report and CMI Work Plan. During the Construction Phase, Respondent will continue to submit periodic progress reports. The Respondent shall also implement, as appropriate the elements of the approved O&M Plan.

The Respondent shall update the QAPP during the Construction Phase, as appropriate, to reflect changes in the following: responsibility and authority, personnel qualifications, construction quality assurance, inspection activities, documentation, and other changes affecting quality assurance.

The Respondent shall conduct the following activities during construction:

A. Preconstruction inspection and meeting

The Respondent shall conduct a preconstruction inspection and meeting to:

1. Review methods for documenting and reporting inspection data;
2. Review methods for distributing and storing documents and reports;
3. Review work area security and safety protocol;
4. Discuss any appropriate modifications of the construction quality assurance plan to ensure that site-specific considerations are addressed; and
5. Conduct a site walk-around to verify that the design criteria, plans, and specifications are understood and to review material and equipment storage locations.

The preconstruction inspection and meeting shall be documented by a designated person and minutes will be transmitted to all parties.

B. Inspections

Respondent will conduct inspections to monitor the construction and/or installation of components of the corrective measure. Inspections shall verify compliance with all environmental requirements and include, but not be limited to, review of air quality and emissions monitoring records, waste disposal records (e.g., RCRA transportation manifests), etc. Inspections will also ensure compliance with all health and safety procedures. Treatment equipment will be operationally tested by the Respondent. The Respondent will certify that the equipment has performed to meet the purpose and intent of the specifications. Retesting will be completed where deficiencies are revealed.

C. CMI Report

Upon completion of construction and in accordance with the schedule included in the Program Management Plan, Respondent will prepare and submit a CMI Report.

TASK IV: CORRECTIVE MEASURE OPERATION AND MAINTENANCE

Respondent will continue to operate and maintain, monitor and report on the corrective measure in accordance with the O&M Plan. O&M shall also include periodic reevaluation of clean-up goals in Biannual O&M Evaluation Reports.

TASK V: REPORTS

The Respondent shall prepare plans, specifications, and reports as set forth in Tasks I through III to document the design, construction, operation, maintenance, and monitoring of the corrective measure. The documentation shall include, but not be limited to the following:

A. Bimonthly Progress Reports

The Respondent shall at a minimum provide the EPA with signed, bimonthly progress reports containing:

1. A description of work performed during the preceding monitoring interval and estimate of the percentage of the CMI completed;
2. Summaries of all findings;
3. Summaries of all changes made in the CMI during the reporting period;
4. Summaries of all contacts with representative of the local community, public interest groups, or State government during the reporting period;
5. General assessment of system performance during the reporting period including a summary of all problems or potential problems encountered or anticipated in carrying out the terms of this Order;
6. Actions being taken to rectify problems;
7. Changes in personnel during the reporting period;
8. Projected work for the next reporting period; and
9. Results of sampling and tests, analytical data, and all other information and interpretations of such information, including results, data, and other information not meeting QA/QC standards gathered by Respondent during the reporting period.

B. CMI Work Plan

The Respondent shall submit draft and final CMI Work Plans as outlined in Task I. The QAPP, included with

the CMI Work Plan, will be revised, as appropriate, throughout CMI.

C. 50 Percent Corrective Measure Design Report

The 50 Percent Corrective Measure Design Report shall include:

1. draft Design Plans and Specifications reflecting 50 percent of design work to be completed;
2. a draft Operation and Maintenance Plan;
3. a preliminary cost estimate;
4. a revised project schedule, also to be included in a revised CMI Program Management Plan.

D. 90 Percent Corrective Measure Design Report

The 90 Percent Corrective Measure Design Report shall include:

1. a summary of activities performed and data generated during Corrective Measure Design, including results and interpretation of treatability studies;
2. draft detailed Corrective Measure Design Plans and Specifications reflecting 90 percent of design work to be completed;
3. final performance criteria for ground water treatment, consistent with comments to have been provided by EPA on the Conceptual Design proposed in the Program Management Plan;
4. proposal of means to evaluate system performance against clean-up criteria listed in the RCRA ROD;
5. a Final Operation and Maintenance Plan;
6. a revised Cost Estimate;
7. revision to the Sampling and Analysis Plan, including the QAPP, to address sampling activities to be performed during the Corrective Measure Construction Phase, including the sampling activities, sample size, sample locations, frequency of testing, acceptance and rejection criteria, and plans for correcting problems as addressed in the project specifications;

8. revision to the Sampling and Analysis Plan, including the QAPP, to address construction activities to be performed to ensure that the completed corrective measure meets or exceeds all design criteria, plans, and specifications. The revision to the Sampling and Analysis Plan will include, but may not be limited to:
 - a. an outline of the responsibility and authority of all organizations (i.e., technical consultants, construction firms, etc.) and key personnel involved in the construction of the corrective measure
 - b. identification and qualifications of the Quality Assurance officer and the necessary supporting inspection staff to demonstrate that they possess the training and experience necessary to fulfill their identified responsibilities
 - c. observations and tests that will be used to monitor the construction and/or installation of the components of the corrective measure
 - d. scope and frequency of each type of inspection
 - e. reporting requirements for quality assurance and quality control activities, including daily summary reports, inspection data sheets, problem identification and corrective measures reports, design acceptance reports, and final documentation
 - f. provisions for the final storage of all records;
9. proposed changes to the Project Schedule, if appropriate, with emphasis on short-term Construction schedule. These proposed changes in schedule also will be included in a revised Program Management Plan.

E. Final (100 Percent) Corrective Measure Design Report

The Respondent shall submit a Final, 100 Percent Corrective Measure Design Report as outlined in Task II to this SOW.

F. CMI Report

The CMI Report shall describe activities to have been performed during construction, provide actual

specifications of implemented remedy, and provide a preliminary assessment of CMI performance.

The CMI Report shall include, but not be limited to, the following elements:

1. synopsis of the corrective measure;
2. explanation of any modifications to the EPA-approved construction and/or design plans and why these were necessary for the project;
3. listing of the criteria, established in EPA-approved Design Report, for judging whether the corrective measure is functioning properly, and also explaining any modification to these criteria;
4. certification by registered professional engineer that the construction is complete, consistent with contract documents, and the EPA-approved corrective measure, and that the equipment performs to meet the intent of the specifications.
5. results of Facility monitoring, indicating whether the Corrective Measure will meet or exceed the clean-up goals set forth in the RCRA ROD.
6. detail of contents to be included in the Biannual O&M Assessment Reports, in conformance with the items listed in Section V.G of this SOW.

G. Biannual O&M Assessment Reports

Biannual O&M Assessment Reports shall document assessment of performance of the corrective measure over time and provide one basis for EPA's Five-Year Evaluation of the corrective measure. Biannual O&M Assessment Reports shall include but may not be limited to:

1. summarized data representing corrective measure performance during respective two-year intervals;
2. any proposed changes to the corrective measure and summary of changes to have been previously made;
3. isoconcentration maps for ground water and soils, identifying concentrations of each contaminant of concern listed in the Order;
4. isoconcentration maps for ground water and soils, illustrating the concentration of total VOCs;

5. statistical assessment of the progress of the corrective measure towards achievement of clean-up goals;
6. when appropriate, notification that cleanup goals have been achieved.

Details of the components of the Biannual O&M Assessment Report shall be described in the CMI Report. The first Biannual O&M Assessment Report is due to EPA 24 months after Respondent receives approval from EPA of the CMI Report. Ensuing O&M Biannual Assessment Reports shall be submitted every two years thereafter.

SCHEDULE

<u>Facility Submission</u>	<u>Due Date</u>
Draft CMI Work Plan Health and Safety Plan	Within 45 days of effective date of Order
Final CMI Work Plan	Within 30 days of receipt of EPA comments on Draft
50 Percent CM Design Report	Within 30 days of EPA approval of CMI Work Plan
Waste Minimization Plan	Within 180 days of effective date of Order
90 Percent CM Design Report	Within 45 days of receipt of EPA comments on 50 Percent CM Design Report
100 Percent CM Design Report	Within 15 days of receipt of EPA comments on 90 Percent CM Design Report
Waste Minization Implementation Report	Within 60 days after implemen- tation of Waste Minimization Plan
Draft CMI Report	According to schedule in CMI Program Plan
Revised Draft CMI Report	Within 30 days of receipt of EPA comments on Draft CMI Report
Biannual O&M Assessment Reports	Every two years beginning 24 months after EPA approval of CMI Report

ATTACHMENT B

Scope of Work for a Health and Safety Plan

Attachment B

Scope of Work for a Health and Safety Plan

The Respondent shall prepare a facility Health and Safety Plan. The Health and Safety Plan shall be submitted to EPA concurrent with the RFI Work Plan and revised as appropriate.

1. Major elements of the Health and Safety Plan shall include:
 - a. Facility description including availability of resources such as roads, water supply, electricity, and telephone service;
 - b. Description of the known hazards and evaluations of the risks associated with the incident and with each activity conducted, including, but not limited to on and off-site exposure to contaminants;
 - c. List of key personnel and alternates responsible for site safety, response operations, and for protection of public health;
 - d. Delineation of work area;
 - e. Description of levels of protection to be worn by personnel in work area;
 - f. Establishment of procedures to control site access;
 - g. Description of decontamination procedures for personnel and equipment;
 - h. Establishment of site emergency procedures;
 - i. Emergency medical care for injuries and toxicological problems;
 - j. Description of requirements for an environmental surveillance program;
 - k. Routine and special training required for responders; and
 - l. Establishment of procedures for protecting workers from weather-related problems.

2. The Facility Health and Safety Plan shall be consistent with:
 - a. NIOSH Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (1985);
 - b. EPA Order 1440.3 - Respiratory Protection;
 - c. EPA Order 1440.2 - Health and Safety Requirements for Employees engaged in Field Activities;
 - d. Facility Contingency Plan;
 - e. EPA Standard Operating Safety Guide (1984);
 - f. OSHA regulations particularly in 29 C.F.R. 1910 and 1926;
 - g. State and local regulations; and
 - h. Other EPA guidance as provided.
3. The Respondent shall revise the Health and Safety Plan to address any additions and/or changes in planned activities.

ATTACHMENT C

Scope of Work for a Waste Minimization Plan

Attachment C

Scope of Work for a Waste Minimization Plan

Task I. MANAGEMENT INITIATIVE PROGRAM

- A. Employee Training
- B. Incentives
- C. Waste Audits

Task II. WASTE MINIMIZATION OPTION PROGRAM

- A. Reduction Options
 - 1. Good Operating Practices
 - 2. Material Substitution Practices
 - 3. Technological Modification Practices
- B. Recycling Options
 - 1. Uses and Reuse Practices
 - 2. Reclamation Practices
- C. Treatment Options
- D. Waste Exchange Options

Task III. MANAGEMENT INITIATIVES PROGRAM

The objective of this program will be to encourage employees to conscientiously strive to reduce waste. This program should consist of the following:

A. Employee training

Training should be developed and implemented to increase employee awareness of operating practices that reduce both solid and hazardous waste generation. A training program should include:

- 1. Occupational health and plant safety,
- 2. Company regulatory compliance requirements, and
- 3. A statement of the company's approach to waste minimization and/or its waste minimization plan.

B. Incentives

An incentive program should be developed and implemented to provide motivation and to boost employees cooperation and participation in waste minimization. This incentive program should include:

1. Providing incentives for the development of useful waste minimization ideas,
2. Providing recognition and financial awards for outstanding waste minimization programs, practices and/or suggestions, and
3. Implementing or revising the operational supervisory structure and/or management procedures.

C. Waste audits

A program of waste audits should be developed and implemented to provide a systematic and periodic survey of the company's operations designed to identify areas of potential waste reduction. This program should include:

1. Identification of hazardous substances in waste and the sources of these substances.
2. Prioritization of various waste reduction actions to be undertaken.
3. Evaluation of some technically, economically, and ecologically feasible approaches to waste minimization.
4. Development of an economic comparison of waste minimization and waste management options.
5. Evaluation of waste minimization modification results.

Task IV. WASTE MINIMIZATION OPTIONS PROGRAM

This program should be developed to investigate, evaluate and recommend waste minimization options. This program should include a step-by-step analysis of waste reduction options, recycling options and finally, only after acceptable waste minimization techniques have been investigated and evaluated, waste treatment options.

A. Reduction options

These options would be characterized as good operating practices (also know as good housekeeping practices), material and technology changes. These techniques avoid the generation of hazardous waste, thereby eliminating the

problems associated with handling these waste.

1. Good operating practices

These practices involve the procedural or organizational aspects of a manufacturing process, and in some areas changes in operating practices, in order to reduce the amount of waste generated. These practices would include, at a minimum, the following elements:

- a. Material handling improvements
- b. Scheduling improvements
- c. Spill and leak prevention
- d. Preventive maintenance
- e. Corrective maintenance
- f. Material/waste tracking or inventory control
- g. Communication documentation
- h. Waste stream segregation according to toxicity, type of contaminant and physical state.

2. Material substitution practices

The purpose of these practices is to find substitute process/manufacturing materials which are less hazardous than those currently utilized and which result in the generation of waste in smaller quantities and/or of less toxicity.

3. Technological modification practices

These practices should be oriented toward process and equipment modification to reduce waste, primarily in a production setting. These practices can range from changes that can be implemented in a matter of days at low cost, to the replacement of process involving large capital cost. These modifications include changes in the following:

- a. Processes
- b. Equipment
- c. Process automation
- d. Operation settings, including, but not limited to flow rates, temperatures, pressures, and/or residence times
- e. Water conservation
- f. Energy conservation

B. Recycling options

These options are characterized as use/reuse and resource recovery techniques.

1. Use and reuse practices

These practices involve the return of a waste material either to the originating process or to another process as a substitute for an input material.

2. Reclamation practices

These practices differ from the use and reuse practices in that the recovered material is not used in the facility, rather it is sold to another company.

C. Treatment options

These options should be oriented to the changes of physical, chemical or biological character of any hazardous waste in order to reduce the toxicity and the volume to render such waste available for storage and safer to manage.

D. Waste exchange options

These options are attempts to match the waste from one business with the raw material requirements of another business, thereby finding a market for what one business sees as a waste but what another business sees as a material.

ATTACHMENT D

RCRA Record of Decision, dated September 30, 1991.

**UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION III**

**RCRA RECORD OF DECISION
FOR
COOPER INDUSTRIES, INC.
EARLYSVILLE, VIRGINIA**

000001

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**STATEMENT OF BASIS FOR PROPOSED CORRECTIVE MEASURES
UNDER SECTION 3008(h) OF RCRA
COOPER INDUSTRIES, INC.
EARLYSVILLE, VIRGINIA**

I. PURPOSE OF EPA's STATEMENT OF BASIS

On March 9, 1990, the U.S. Environmental Protection Agency, Region III (EPA) and Cooper Industries, Inc. (Cooper) entered into a Unilateral Administrative Order, Docket No. RCRA-III-022-CA (Unilateral Order) pursuant to Section 3008(h) of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6928(h). Under the terms of this Unilateral Order, Cooper was required to complete a RCRA Facility Investigation (RFI) in order to determine the nature and extent of onsite and offsite contamination emanating from its Earlysville, Virginia, site (hereinafter referred to as "Facility") and to conduct a Corrective Measure Study (CMS) to evaluate various clean-up alternatives.

Cooper has completed and EPA has reviewed and approved both the RFI and CMS Reports. The Corrective Measure Study Report evaluated five (5) Corrective Measure Alternatives (CMAs or Alternatives) for contaminant remediation.

This document describes these Alternatives and presents EPA's justification for making a proposal regarding the preferred Corrective Measure Alternative. These CMAs were developed by Cooper and provided to EPA in the CMS report. This document will summarize the findings of the RFI and the CMS conducted by Cooper as well as EPA's rationale for its proposal regarding the selection of the EPA preferred Corrective Measure.

This document highlights certain information presented in the RFI Report and the Corrective Measure Study Report but does not serve as a substitute for these documents. Persons desiring more complete sources of information regarding these reports should consult the EPA Project Coordinator, Thomas J. Buntin, at the address/telephone number given at page 30 of this document, and the Administrative Record, a copy of which is available for review at the offices of EPA Region III, 841 Chestnut Building, Philadelphia, Pennsylvania. Comments on this document may be sent to the attention of Mr. Buntin.

EPA welcomes public comment on all of the alternatives described and on any additional options not previously identified and/or studied. Public input on all potential alternatives, and on the information that supports the alternatives, is an important contribution to the Corrective Measure selection process. Public comments can influence EPA's final selection of a corrective measure(s). If new and/or substantive information or arguments are presented to EPA through public comments, EPA may integrate these comments and so modify the proposed CMA. The final Corrective Measure Alternative selected by EPA will be

implemented either through a Corrective Measure Implementation (CMI) Administrative Consent Order, Administrative Unilateral Order or civil judicial enforcement action.

II. PROPOSED REMEDY

The remedy proposed to be implemented at Cooper's Facility requires the recovery of contaminated groundwater from both shallow and deep wells located on-site. No off-site recovery wells are proposed since no off-site migration of contamination has occurred. However, groundwater sample results indicate that the Drum Heller residential well, which lies immediately northwest of the Cooper Facility, is contaminated with 1,1,1 - Trichloroethane (1,1,1 - TCA) at levels below 20 parts per billion (ppb). The Maximum Contaminant Level (MCL) for 1,1,1 - TCA is 200 ppb. MCLs are federally enforceable drinking water standards developed under the Safe Drinking Water Act. See 40 C.F.R. Part 141. Cooper reportedly never used 1,1,1 - TCA at its Facility, nor is 1,1,1 - TCA a chemical, physical or biodegradation product of the volatile organic compounds (VOCs) known to exist within on-site groundwater. However, Cooper has installed a two stage granular activated carbon (GAC) system at this residential well. Cooper provides periodic sampling of the water after it passes through the two stage GAC system and 1,1,1 - TCA has never been detected.

The pumping of the on-site recovery/production wells will not only result in the recovery of contaminated groundwater but will also contain any potential future off-site migration of contaminants. Treatment of the VOCs (tetrachloroethylene (PCE)) and associated biodegradation products such as trichloroethylene (TCE) and 1,2 - dichloroethylene (1,2 - DCE)) found in the recovered groundwater will be accomplished via Cooper's onsite waste water treatment plant. The waste water treatment plant utilizes a biologically activated sludge which degrades PCE and other volatile organic compounds into carbon dioxide and water. Therefore, the waste water treatment plant converts these VOCs into harmless compounds.

Finally, the medium of soil has not been significantly impacted as documented in the EPA-approved risk assessment for on-site soils. The RFI confirmed that no contaminants exist in surface water, sediments and air at the Facility. Therefore, no remediation of the media of soil, surface water, sediments or air are proposed.

III. FACILITY BACKGROUND

The Cooper Facility, which is operated by Cooper's Distribution Equipment Division, is located in the rural

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community of Earlysville, Virginia, seven (7) miles north of the City of Charlottesville, Virginia. A site map is provided as Attachment A. The Earlysville Facility has been in operation since 1962. Arrow Hart, Inc. - Murray Division owned and operated the Facility from 1962 until the plant was purchased by the Crouse-Hinds Company in 1975. Cooper purchased the Facility from Crouse-Hinds in 1982.

From 1962 to present, various types of electrical distribution equipment have been manufactured at the Facility. The manufacturing process includes stamping, grinding, welding, painting and plating operations. These manufacturing processes resulted in the generation of various hazardous wastes and/or hazardous constituents as defined in 40 C.F.R Part 261. These wastes include wastewater treatment sludges from electroplating and painting operations (F006 hazardous waste as defined in 40 C.F.R Part 261). The hazardous constituents from the electroplating operation are metal hydroxides, primarily aluminum, copper, tin, zinc and cyanide while the hazardous constituents from the painting operation are metal hydroxides, principally chromium and phosphates. Finally, Cooper used tetrachloroethylene in its parts deburring machine as well as a demister in its automatic press room. Tetrachloroethylene used for this purpose, once spent, is defined in 40 C.F.R Part 261 as an F001 hazardous waste.

In September of 1984, Cooper discovered the existence of VOCs in the onsite production wells. On September 13, 1984 Cooper began treating water from these production wells, which was being used by facility personnel, with GAC units.

IV. ENVIRONMENTAL SETTING

1. Physiography and Climate

Albemarle County, Virginia is within the Piedmont and Blue Ridge Physiographic Provinces. About 80 percent of the county (including the Cooper Facility) is situated within the Piedmont Physiographic Province. This region is characterized by broad, flat uplands and hills which are separated by numerous, small winding streams generally flowing southeastward. Elevations range from 500 to 1,500 feet above mean sea level (msl), with an average of 700 feet msl.

The western edge of the county is within the Blue Ridge province. The boundary between the two provinces is located about seven miles west of the Cooper facility. Rounded, elongated ridges with steep eastern facing slopes and broad valleys characterize this region. Elevations range from 800 to 3,300 feet msl.

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Warm, humid summers and mild winters characterize the climate of Albemarle County, Virginia. Average summer temperature is 75°F, and the average winter temperature is 37° F. Total annual precipitation is around 46 inches. Of this precipitation, around 24 inches occur from April through September as showers or thunderstorms. Average seasonal snowfall is around 23 inches.

2. Soils and Geology

The geology at the Cooper facility generally consists of 15 to 50 feet of residuum-saprolite overlying Precambrian bedrock. The bedrock in this area is the Precambrian Lovington Formation (Nelson 1962).

The residuum-saprolite consists of red-brown, micaceous, clayey silt with occasional lenses of sand and clay. The lower part of this unit is mottled, reflecting intermittent saturation, and contains highly weathered bedrock (saprolite).

The Lovington Formation consists of granitic gneiss and quartz monzonite. Regional data indicate the upper 100 to 300 feet of the bedrock are fractured with the greatest amount of fracturing occurring within the upper 100 feet. Onsite borehole data indicate the upper ten to 20 feet of bedrock is weathered and highly fractured. Based on the response of the drill rig used onsite, weathering and fracturing decreased with depth.

Depth to bedrock varies throughout the site. Attachment B shows bedrock topography. In general, the bedrock surface slopes to the south following the land surface topography. Borehole data suggest a bedrock trough trending north-south, near monitoring well 12d, north of the plant. This may be associated with greater fracture occurrence in this area.

3. Hydrogeology

Two hydrogeologic units, residuum-saprolite and granitic bedrock, occur at the Cooper facility. These units are in hydraulic communication and basically respond as one unit. The residuum-saprolite is usually considered to be the unit where most groundwater occurs. Groundwater pumping from the bedrock is mainly from stored groundwater in the overlying residuum-saprolite (Heath 1980).

Groundwater at the Cooper facility generally occurs at a depth of 15 to 35 feet below the land surface. In most areas of the site, the lower three to thirty feet of the residuum-saprolite are saturated. North of the site, the residuum-saprolite may be only intermittently saturated.

Shallow groundwater flow within the residuum-saprolite in

the vicinity of the plant generally follows topography with groundwater basins approximately coinciding with surface-water basins. Groundwater recharge occurs principally along the uplands with discharge to the local stream channels or the facility supply wells. Attachment C depicts shallow groundwater flow at the facility. As the plant site occurs along a groundwater divide, flow is somewhat radial. Except for the area north of the main plant building, groundwater flow is generally from the groundwater divide southwest toward Camp Faith Creek, and its tributary stream channels. Groundwater discharge to the surface-water system is evidenced by the seeps along the lower reaches of the surface-water drainages. Shallow flow is also influenced by the facility supply wells and groundwater recovery wells.

Deeper groundwater flow in the bedrock also generally follows topography with recharge mainly along the divide and discharge to the major drainages and the facility supply wells. Attachment D depicts deep groundwater flow at the facility. At the site, most deep groundwater flow is from the groundwater divide southwest toward the onsite active production wells WS 2 and WS 4, Camp Faith Creek, and its tributary stream channels located in the southern part of the plant property.

Groundwater flow in the bedrock is controlled by fractures. Significant fractures are generally limited to the upper 100 to 300 feet in this geologic terrain (Sterrett and Hinkle 1980). Logs of nearby private wells indicate significant water producing fractures are generally limited to within 200 feet of the ground surface. These logs are consistent with data presented in LeGrant (1960) which indicated the well yields do not significantly increase below a depth of about 200 feet. The upper part of the bedrock is sufficiently fractured so that the hydraulic regime approaches that of a porous media. The deep wells at the site are completed in the upper bedrock, as this zone probably has the highest hydraulic conductivity, and therefore, the greatest groundwater flux.

Shallow horizontal hydraulic gradients average about 0.05 ft/ft. Horizontal gradients in the bedrock part of the flow system range from 0.1 ft/ft near the plant to 0.3 ft/ft in downgradient areas. During the period of June through August 1988, water levels decreased at most wells in response to the low precipitation. Over the past two years, water levels have fluctuated in response to variable precipitation.

Vertical hydraulic gradients are generally downward near the main plant building. The vertical gradients are generally low indicating most flow is horizontal rather than downward. Data from shallow/deep well pairs in the vicinity of Camp Faith Lake demonstrate an upward vertical gradient. This is important, as an upward vertical gradient effectively limits the extent of

groundwater impacts within the bedrock aquifer beneath Camp Faith Lake.

Attachment E depicts the cross-sectional view of the groundwater regime at the Cooper facility. These cross sections show the downward gradients near the plant and at the supply wells. Note the potentiometric contours are projected to extend to a depth of about 300 feet, the probable maximum depth of fracturing. It is believed a no-flow hydraulic boundary exists at the maximum depth of fracturing because the hydraulic conductivity would approach zero. All flow would be parallel to the hydraulic boundary (mainly horizontal). The decrease in hydraulic conductivity with depth will limit the depth of groundwater impacts. Attachment E also shows the groundwater divide at the creek. Groundwater flow from both directions is discharged to the creek indicating a hydraulic boundary that prevents contaminant migration across Camp Faith Creek.

4. Aquifer Hydraulic Properties

The hydraulic properties of the geologic units at the site were determined by conducting 24-hour constant discharge tests on water supply wells 1 and 5 and an eight day test on well 26d in August of 1988.

The data for wells 1, 5, and 26d indicate a bedrock transmissivity ranging from 21 to 610 ft²/day with an average of 72 ft²/day. The average storage coefficient of 3.7×10^{-4} indicates semi-confined conditions. No evidence of delayed yield was present in the data indicating good hydraulic connection between the bedrock and overburden. No significant bedrock anisotropy is evident in the data.

Assuming the upper part of the bedrock is sufficiently fractured so the hydraulic regime approaches that of a porous media, anisotropy is low, and Darcy's Law is valid, the average linear flow velocity (V) may be estimated from the equation:

$$V = \frac{ki}{n} \quad \text{where} \quad \begin{array}{ll} k & = \text{hydraulic conductivity (ft/day)} \\ i & = \text{hydraulic gradient (ft/ft)} \\ n & = \text{porosity} \end{array}$$

Using the data from monitoring well 26d, and assuming a saturated thickness of about 75 feet, a hydraulic conductivity of approximately one ft/day can be estimated. This is a typical value for fractured granite (Heath, 1980). Based on this hydraulic conductivity value, a hydraulic gradient ranging from 0.03 to 0.1 ft/ft, and a porosity of 0.10, the average linear groundwater flow velocity is estimated to range from 0.03 to 1.0 ft/day.

5. Groundwater Use

Cooper has five onsite water supply wells with three wells currently supplying water to the plant (wells 2, 3, and 4). These wells supply the plant's daily water usage of about 32,00 gallons per day (gpd). A reverse osmosis system was installed in January 1990 at the water treatment plant so that about 50 percent of the process water is recycled for plant use. Water from well 3, which has never shown contamination, is used as a potable supply. Water from wells 2 and 4 is treated through two activated carbon cells connected in series prior to use. Water from wells 1 and 5, along with wells 2d, 20d and 26d which are operating purely for the ongoing groundwater remediation program, goes directly to the water treatment plant. The wells have been used extensively for groundwater recovery and treatment since September of 1988. The facility wells are completed as open holes in the bedrock with total depths ranging from 198 feet to 555 feet.

Landowners in the vicinity of the Cooper plant are supplied by domestic wells, because no public water supply systems serve the area. A search of the State Water Control Board files identified records for twenty seven (27) domestic wells within a two-mile radius of the plant. Twenty four (24) of these domestic wells are located in the Graemont subdivision which is located immediately beyond the southern boundary of the Facility.

Completion data indicate most private wells in the area are less than 300 feet deep; one-half are less than 200 feet deep. Furthermore, the deeper wells have the lowest yield which is additional evidence indicating the rapid decrease in fracturing and water occurrence with depth.

Analysis of Attachments B, C, D and E demonstrates that groundwater from the Graemont subdivision flows to the northwest toward Camp Faith Creek. Groundwater flow from the plant and the Graemont subdivision converges along Camp Faith Creek and is the source of the baseflow in the creek. The low water consumption typical of domestic wells in the Graemont subdivision would not alter the discharge pattern to Camp Faith Creek. That is, the Graemont wells are located on the side of Camp Faith Creek which is opposite of the Facility and, therefore, the Graemont wells are not affected by Cooper's ongoing groundwater recovery operation. Finally, none of the proposed CMAs, as discussed later in this Statement of Basis, would affect the Graemont wells.

B. Previous Investigations

The overall objective of the Facility investigation was to determine not only the lateral and vertical distribution of VOC contaminants in both onsite and offsite groundwater but also to chemically characterize and determine the distribution of contaminants in the media of soil, sediment, surface water and

air. The activities at the Facility progressed in a phased, interactive manner with each activity providing improved focus for the subsequent actions.

The following phases have been completed to date:

- o Phase I: Preliminary Site Evaluation (May - June 1988)
- o Phase II: Additional Site Characterization and Identification of Potential Response Alternative (July - August 1988)
- o Phase III: Final Site Characterization and Response Action (March - November 1989)
- o Phase IV: Site Characterization and Response Action Study (March - November 1989)
- o Phase V: East Drain Pit and Final Pond Closure (December 1989 - July 1990)
- o Phase VI: RCRA Facility Investigation, Groundwater and Treatment System Monitoring (September 1990 - April 1991)

Attachment F presents the chronological listing of all previous facility investigation reports.

The objectives of Phase I were to provide a preliminary evaluation of existing and former waste management practices and to collect initial data on the physical setting of the Facility. Phase I was completed in May and June of 1988.

Phase I included a review of available Facility information on the Facility waste management and past investigations. Eleven shallow auger borings were drilled around the sludge trenches, drain pits, concrete tanks, and sanitary lagoon to provide data on the subsurface materials. A groundwater investigation plan was implemented. This plan included the installation of six shallow and seven deep wells. The shallow wells were installed in the saturated overburden. The deep wells were completed in the upper part of the bedrock. Water levels were routinely measured to determine groundwater occurrence and flow.

The main objectives of Phase II were to provide additional data on specific waste management units, potential soil and groundwater impacts, local hydrogeology, and to identify appropriate response alternatives. Phase II was completed in July and August of 1988.

The sludge trenches, concrete tanks and drain pits were

investigated by hand auguring and organic vapor surveys. Samples of background and final pond soils were collected and analyzed for EP Toxicity and total RCRA metals, total nickel, cyanide, pH, percent solids, and VOCs. Constant discharge pump tests were conducted on water supply wells WS 1 and WS5. Samples from nine of the wells were collected and analysed for volatiles, RCRA metals, nickel, and major ions.

Phase III provided for further characterization of onsite conditions and implemetation of specific response activities. Phase III was mainly completed from September to December of 1988. This phase included the installation of additional monitoring wells and recovery wells. The initial wells (1a, 2a, and 3a) were decommissioned and replaced with 2-inch wells for sampling purposes. Four shallow perimeter wells were sampled and analyzed for VOCs. Another round of sampling at all wells and the five facility water supply wells was performed in October 1988. The samples were analyzed for VOCs. A third round of sampling was performed at selected locations to evaluate the previous sampling data.

The concrete tanks, which had received discharges from both the paint line and the Facility sanitary waste line, were cleaned and excavated. The impacted material from the concrete tanks was disposed at a RCRA hazardous waste facility.

Soils at the east drain pit were found to contain tetrachloroethene (PCE.) The impacted drain pit material was excavated and incinerated at a RCRA hazardous waste facility. Implementation of additional groundwater recovery and treatment was initiated.

Phase IV, which was completed by November of 1989, included installation of the additional monitoring wells between the Facility and the nearest private wells to the south and southeast. Sampling and analysis of groundwater, surface water, and sediment as well as in-situ aeration of the east drain pit subsoils was also performed.

In Phase V, the east drain pit and final pond were closed-out as described in Section III (C) (2-3) of this Statement in accordance with plans approved by Region III of the U.S. EPA and the Virginia Department of Waste Management (VDWM), respectively. Documentation of these activities provided in the Administrative Record.

Phase VI included the development and submittal of the RCRA Facility Investigation (RFI) (September 1990 - April 1991), and the ground water and treatment system monitoring data. A Quality Assurance Project Plan for the Groundwater Monitoring Program (QAPjP) at the Facility was submitted to EPA in September of 1990. The first round of sampling under the EPA-approved QAPjP

was performed in December of 1990, and submitted to the EPA in April of 1991 with full data validation. The treatment system monitoring has consistently showed no detection of VOCs in the effluent samples.

C. Summary of the Remedial Investigations

Two hydrogeologic units, residuum-saprolite and bedrock, occur at the Cooper facility. These units are in hydraulic communication and basically respond as one unit. The residuum-saprolite is usually considered to be the unit where most groundwater occurs. Groundwater pumping from the bedrock is mainly from stored groundwater in the overlying residuum-saprolite.

Shallow groundwater flow in the vicinity of the plant generally follows topography with groundwater basins approximately coinciding with surface-water basins. Groundwater recharge occurs principally along the uplands with discharge to the local stream channels, the recovery wells or the facility supply wells. As the plant site occurs along a groundwater divide, flow is somewhat radial. Except for the small area north of the main plant building, groundwater flow is generally from the divide southeast toward Camp Faith Creek and its tributary stream channels. Groundwater discharge to the surface-water system is evidenced by the seeps along the lower reaches of the surface-water drainages. Surface-water flow measurements along Camp Faith Creek, taken during periods of time in which there was no precipitation, indicate increasing flow downstream, confirming groundwater discharge to the creek.

Thirty-two monitoring wells, both shallow and deep, have been installed at EPA-approved locations. The monitoring wells and the five water supply wells have all been sampled numerous times over the past three years for an extensive list of possible contaminants.

Tetrachloroethene (PCE) is the predominant volatile organic compound found. Chloroform, 1, 2 - DCE, 1,1,1 - TCA and TCE were found in several groundwater samples. These compounds, with the exception of chloroform, are probably degradation products of PCE.

The horizontal and vertical extent of groundwater impacts is well defined and contained within the plant property boundaries. A map depicting the horizontal extent of the groundwater contaminant plume is provided as Attachment G. No contamination was detected in the wells at the plant boundaries. To the south of the facility, there is 900 feet between the area of known detection and the facility boundary. Groundwater from the Graemont subdivision flows to the northwest toward Camp Faith

Creek. Groundwater flow from the plant and the subdivision converges along Camp Faith Creek and is the source of the baseflow in the creek. The Graemont wells are located on the opposite side of a hydraulic boundary, i.e., Camp Faith Creek. Consequently, the Graemont wells are not affected by the Cooper plant, the ongoing groundwater recovery operation or the proposed groundwater recovery program as discussed later in this Statement of Basis document.

The area of existing groundwater impacts is strongly influenced by the ongoing recovery system. Impacted groundwater is being drawn to the various recovery wells as shown in Attachment H. The ongoing groundwater pump and treat system assures capture and hydraulic control of the onsite groundwater contaminant plume. Consequently, significant reductions in the concentration of VOCs are evident in groundwater data collected over the last three years. The aerial extent of groundwater impacts has been reduced by about 50 percent since the initiation of the present pump and treat program. The volatile organic concentrations have generally decreased in a steady manner since groundwater collection has been performed in conjunction with the remediation of the principal source area for PCE, i.e., the east drain pit.

D. Summary of Contaminant Stabilization Activities Completed to Date

Cooper has carried out extensive stabilization activities at the Earlsyville facility. The following summarizes these activities in two categories, solid waste management units (hereinafter referred to as "SWMUs") and groundwater.

1. SWMUs

Seventeen SWMUs at the Facility have been identified and closed-out. Those land based units which received hazardous waste and/or hazardous constituents are the three concrete tanks, the final pond, the east drain pit, the two sludge pits and the ten sludge trenches. The sanitary lagoon reportedly never received hazardous waste or hazardous constituents. The following summarizes the remedial efforts associated with each unit.

a. Concrete Tanks

Initial investigation of the Facility in late 1987 revealed three concrete tanks associated with the paint line and the Facility sanitary waste disposal system. During the week of July 11, 1988, Cooper's consultant sampled the contents of the tanks as well as surrounding soils. Based upon the sampling results which showed contamination, Cooper removed the tanks and contaminated soil. These removal activities were observed by

personnel of the VDWM. The tanks, tank contents and soil, were manifested as non-hazardous waste and transported to a RCRA-regulated landfill in Pinewood, South Carolina. EPA approved the plan for excavation and removal of the tanks and in February of 1989, based on the finding that the residual hazardous waste constituents found in the soil beneath the excavated tanks did not pose a threat to human health and the environment. Cooper received certification of closure via a registered professional engineer in March of 1989.

b. Final Pond

From 1970 to 1985, effluent from the waste water treatment plant, which contained hazardous waste, was discharged to the final pond. The final pond was used by Cooper as a firewater retention basin. Discharge from the final pond was to a surface-water drainage ditch which flowed into Camp Faith Creek. In August of 1987, the VDWM proposed a draft enforcement order for closure of the final pond under the Virginia Hazardous Waste Management Regulations (VHWMR). A closure plan was submitted by Cooper and approved by the VDWM. Approved closure activities occurred in June of 1990. Quarterly groundwater compliance monitoring is currently being implemented according to a VDWM-approved sampling and analysis plan.

c. East Drain Pit

From the early 1960s to the late 1970s, a parts deburring machine and a demister in the automatic press room discharged to the east pit on the south side of the main plant at the Cooper Facility. Initial site investigations indicated that the soil in and around the east drain pit was a potential source of volatile organic compounds (VOCs) to the groundwater. Pit materials and impacted soil were excavated, manifested as F002 hazardous waste, and transported to a RCRA hazardous waste incinerator in Calvert City, Kentucky. Excavation of the east drain pit was completed in June, 1990 in accordance with VDWM-approved plans which required that subsoils in the pit be treated via an in-situ vapor extraction system. Subsoil sampling following completion of the in-situ vapor extraction operation demonstrated that no residual VOCs remained in the subsoil.

d. Sludge Pit

Cooper completed excavation of the sludge pit as well as 12 to 18 inches of the underlying subsoil on July 11, 1983. The sludge and subsoils were disposed of at a RCRA hazardous waste landfill in South Carolina. A total of 31 subsoil samples were taken to a depth of 6 inches on all the sides and bottom of the excavated sludge trenches. Analyses of these samples are provided in Volume I of the Administrative Record. EPA's review of these data, as set forth in the RFI Report, revealed that no

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significant levels of hazardous constituents were found in the subsoil and, therefore, the subsoil is not a threat to human health or the environment.

e. Sludge Trenches

In 1981 Cooper's consultant conducted an investigation of the sludge trenches used in connection with the WWTP. There were ten (10) trenches each of which has the approximate dimensions of 100 feet long, two feet wide and four to five feet deep. These trenches were investigated by taking soil samples up to 15 feet in depth and installing four observation or monitoring wells. Analyses of soil and groundwater analytical data demonstrates that no VOCs exist in the sludge trenches or soils beneath the trenches and that only low concentrations of cadmium, copper, iron, tin and zinc were found in the soil. Based upon the analyses of these soils, the soils were classified as non-hazardous. Since these soils were non-hazardous, the trenches were not excavated. Finally, none of the above-mentioned metals were found in groundwater beneath these trenches at concentrations exceeding the MCLs for these various metals.

f. Sanitary Lagoon

Useage of the sanitary lagoon was discontinued by Cooper in 1984. According to Cooper, hazardous waste and/or hazardous constituents never entered the sanitary sewer system and, therefore, the sanitary lagoon. Sampling data, as provided in the Administrative Record, confirmed that no hazardous waste or hazardous constituents exist in the soil beneath the sanitary lagoon.

2. Groundwater

The aquifer beneath and surrounding the Facility is classified as a II B aquifer. That is, the aquifer is a viable source of drinking water but many wells in the aquifer are low yielding as opposed to a II A aquifer which has high yielding wells. Cooper has initiated a progressive remedial action plan for the aquifer, which has been contaminated with VOCs. Water supply wells WS 2 and WS 4, both of which are contaminated with VOCs, have been routed through a new granulated activated carbon system that replaced existing smaller GAC units. WS 3, which has never had detectable VOC contamination, was also used for the water supply.

Making use of additional onsite wells, Cooper initiated groundwater recovery and treatment by routing water supply wells WS 1 and WS 5 to the onsite facility waste water treatment plant. In early 1989, wells 26d and 20d were added to the recovery system and treated at the onsite waste water treatment plant. In early 1990, well 2d was added to the recovery system. Facility wide groundwater monitoring was initiated, monitoring both the

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deep and shallow groundwater flow zones.

Potable water is used in the headquarters office building, drinking fountains, and safety showers in the production plant itself. Commodes in the process plant utilize recycled process water. The treatment plant discharges 14,000 gpd into Camp Faith Creek under a Virginia Pollutant Discharge Elimination System (VPDES) Permit (Permit No. 0027065.) Monitoring of the effluent is regulated by the Virginia State Water Control Board (SWCB), and to date no detections have been recorded.

In the last three years, over 15 million gallons of groundwater have been recovered and treated. An estimated 111 pounds of volatile organics have been removed from the groundwater. A groundwater monitoring program has been approved by EPA which has confirmed the effectiveness of the ongoing groundwater recovery program.

IV. Summary of Facility Risks

EPA Region III performed a risk assessment as part of its review of the plans for closing-out the concrete tanks and east drain pit. A risk assessment for the final pond was performed by Cooper's consultant and approved by EPA. These risk assessments are provided in the Administrative Record.

A baseline risk assessment for groundwater at the Facility was performed by Cooper's consultant and approved by EPA. EPA required this baseline risk assessment in order to provide criteria for evaluating the effectiveness of the ongoing groundwater recovery and treatment program in terms of reducing potential threats to human health and the environment, and to provide a measure of the overall protectiveness for the corrective measure alternatives evaluated in the CMS.

This baseline risk assessment evaluates potential risk to human health given no action in remediating groundwater at the facility based on two different "worst case" exposure scenarios. The first assessment is based on a worst case scenario of future residential use. The second assessment is a worst case industrial use scenario where the activated carbon cells, currently treating all water used at the facility, catastrophically fail and are not repaired, thereby potentially exposing Cooper employees to contaminated water.

The current risk to humans presented by groundwater at the Facility is zero. Risk is a function of exposure and harm. For there to be risk there must be exposure to a source of harm such as a toxic chemical. If there is no exposure or the chemical is not harmful, there is no risk. At the Cooper facility there is, under current conditions, no harm to facility personnel as all

water is carefully treated and monitored. All process and potable water is treated through two in-series activated carbon cells. Also, the results of the RFI demonstrate that there is no exposure of potential offsite receptors to contaminated groundwater. Potential exposure at the Drum Heller residence is eliminated by the GAC filter system. Therefore, there is currently no risk to the facility personnel or to potential offsite receptors. In addition, the ongoing groundwater recovery and treatment program is effectively reducing the potential risk.

The residential use risk assessment was based on a "worst case" scenario in which there would be potential exposure to individuals living for a lifetime at the facility. Ingestion is the main exposure route. However, other exposure routes including inhalation of vapors during showering, use of water on homegrown plants, use of water in cooking, and dermal contact with the water are evaluated.

In order to provide a worst case assessment, only historical data from the three most contaminated wells (recovery wells WS 1 and 2d, and monitoring well 1d) were used. These three wells are located near the east drain pit, the principal source of the groundwater contaminants.

The chemical constituents detected consist of both systemic toxicants and carcinogens. Hazard quotients (the ratio of the level of exposure to an acceptable level, e.g. an MCL) were calculated for each systemic toxicant. As a worst case evaluation, different toxicological end-points were ignored and a total hazard index (HI) for the systemic toxicants was calculated. The HI is obtained by summing the hazard quotients of all the systemic toxicants. For example, if the hazard quotients for individual chemicals are less than 1.0 but the sum of the hazard quotients for all substances in an exposure medium (i.e., the hazard index) is greater than 1.0, then there may be a concern for potential health effects. For carcinogens, the lifetime cancer risk is calculated for each constituent, as well as summed for all carcinogens to give a total cancer risk.

The sum of the potential risks indicates the following cumulative risks for exposure to non-carcinogens and carcinogens under average and worst case residential exposure scenarios:

Exposure to Non-Carcinogens

Hazard Index

<u>Average Case</u>	<u>Worst Case</u>
4.17	13.2

Exposure to Carcinogens

Lifetime Cancer Risk

<u>Average Case</u>	<u>Worst Case</u>
4.63×10^{-3}	1.43×10^{-2}

For the systemic toxicants the HI was greater than unity only for ingestion. The HI for the other exposure scenarios was well below unity.

The carcinogens pose a greater risk than one in one million (1×10^{-6}). Again, ingestion is the main exposure pathway with the other exposure pathways contributing low additional risks. Over 95 percent of the calculated risk is due to tetrachloroethene.

Potential exposure to facility workers was also evaluated. Cooper uses three wells (WS 2, WS 3, WS 4) for potable and process water. Water from WS 3 which has never had detectable contamination is piped directly into the facility water system. Water from WS 2 and WS 4 passes through two in-series activated carbon cells for each well prior to use. When break through occurs on the first cell the second cell prevents the constituents from entering the distribution system. The first cell is removed and the carbon is replaced. The second cell is placed in the first cell position and the first cell with new carbon is placed in the second position.

Start-up testing indicated that break through on the first cell did not occur until after 90 days. Therefore, a monitoring program was set up on a 90 day basis. Influent and effluent water after the first and second cells is monitored. No contaminants have ever been detected from the second cell (carbon filter #2 effluent). Therefore, there is no risk to facility employees as long as the cells are maintained and monitored.

However, at the direction of EPA, potential risks from a worst case scenario of facility employee exposure were calculated. Under this scenario it is assumed that the activated

carbon system fails completely and that no monitoring, maintenance or repair work is performed. Thus, under this scenario, the Facility employees would be exposed to the contaminants in the three supply wells.

All of the basic assumptions and exposure routes used for the residential use assessment were also used for this industrial use assessment except that no exposure was estimated for irrigation of homegrown vegetables. The sum of the potential risks indicates the following cumulative risks for exposure to non-carcinogens and carcinogens under average and worst case exposure scenarios:

Exposure to Non-Carcinogens

Hazard Index

<u>Average Case</u>	<u>Worst Case</u>
0.26	0.46

Exposure to Carcinogens

Lifetime Cancer Risk

<u>Average Case</u>	<u>Worst Case</u>
2.91×10^{-6}	6.96×10^{-6}

This assessment indicates that there is no risk due to systematic toxicants. Potential exposure to the carcinogens presents a risk in the range of 10^{-6} . This is chiefly due to ingestion and dermal exposure to tetrachloroethene.

For the Cooper Facility, cleanup goals have been established that are either Maximum Contaminant Levels (MCLs) or the concentration of a given contaminant which corresponds to a 10^{-6} cancer risk. The 10^{-6} cancer risk level represents the concentration of a carcinogen such that a person of average weight drinking 2 liters/day of water containing the contaminant would have no more than a 1 in 1 million chance of developing cancer from drinking the water during a 70 year lifespan. The MCLs for TCE, 1,1,1 - TCA and chloroform are 5, 200 and 100 parts per billion (ppb), respectively. MCLs have not been promulgated for PCE and 1,2 - DCE. Therefore, the concentration which corresponds to a 10^{-6} cancer risk for 1,2 - DCE is 58 ppb, while the proposed MCL for PCE is 5 ppb.

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Actual or threatened releases of hazardous wastes or hazardous constituents from this facility, if not further addressed by the proposed remedy or one of the other remedies considered, may present a current or potential threat to human health or the environment.

V. SCOPE OF CORRECTIVE ACTION

The history and distribution of contamination at the Cooper Facility is straightforward. All SWMUs have been characterized and the lateral and vertical distribution of the contaminants emanating from these SWMUs, if any, is known. The media of soil, surface water, sediment and air have not been impacted, in part, due to corrective action activities undertaken by Cooper as discussed earlier in this Statement of Basis. Consequently, groundwater is the only impacted medium at this facility. The groundwater contaminant plume is not migrating offsite due, in part, to the ongoing groundwater recovery program. Therefore, the scope of this proposed corrective action is restricted to recovery and treatment of groundwater and associated groundwater monitoring activities.

VI. SUMMARY OF ALTERNATIVES

<u>Corrective Measure Alternatives</u>	<u>Brief Discription</u>	<u>Costs</u>	
		<u>Capital</u>	<u>O&M</u>
CMA #1	No action Alternative; including discontinuation of ongoing pump and treat program.	1.2 M to date	No Cost
CMA #2	Maintenance of ongoing pump & treat program; maintenance of groundwater as well as waste water treatment plant monitoring program; inclusion of institutional controls.	1.2 M	\$105,000
CMA #3	CMA #2 with the inclusion of two new groundwater recovery wells.	1.2 M plus \$35,000 for two new wells	\$115,000
CMA #4	CMA #2 with the inclusion of an alternative onsite potable water supply coupled with the abandonment of the GAC system which is presently used to treat the potable water supply.	1.2 M	\$80,000
CMA #5	CMA #2 combined with CMA #4; with the inclusion of one additional groundwater recovery well (which will be subjected to pulsed pumping) immediately downgradient of the east drain pit which is at the center of the onsite groundwater contaminant plume.	1.2 M plus \$15,000 for one new well	\$80,000

In its revised CMS Report, Cooper evaluated five (5) Corrective Measure Alternatives (CMAs). These five (5) alternatives are discussed in more detail, below. The pumping and treatment of groundwater via biologically activated sludge has been conducted since 1988. This pump and treat program is reducing the size as well as volume of the groundwater

contaminant plume at the facility. In addition, this program is also preventing the offsite migration of contaminants. The pump and treat program proposed in CMA #3 and CMA #5 would expand the number of wells from which groundwater is recovered.

A. Alternative 1: No Action

In this alternative, no additional remedial actions are undertaken and existing groundwater recovery and treatment activity would be terminated, including the monitoring of groundwater. This CMA will not be considered as a corrective measure alternative because suspension of existing groundwater recovery and treatment would result in no remediation of contaminated groundwater beyond that which has already occurred as part of Cooper's ongoing pump and treat program and thus would not be protective of human health and the environment.

B. Alternative 2: Ongoing Pumping/Treatment/Discharge System

In this alternative, the ongoing groundwater remedial actions that have already been implemented at the Cooper facility to mitigate potential risks to human health and the environment would continue. The groundwater pumping, treatment, and disposal system was implemented in 1988 using four of the five existing water supply wells to contain the groundwater plume and remediate VOCs found in onsite groundwater. A new granular activated carbon system was installed to replace the existing small vessel carbon system to eliminate potential exposure to facility personnel. Containment of the onsite groundwater plume is being accomplished by groundwater pumping at four of the five water supply wells (WS 1, WS 2, WS 4 and WS 5) and three additional recovery wells (2d, 20d and 26d). Removal of the VOCs from the extracted groundwater is accomplished by the following technologies. The water supply wells WS 2 and WS 4 are treated using a two stage GAC system housed at a central point adjacent to the existing water treatment plant. Discharge of these wells is into the plant potable water supply. The remaining five recovery wells (WS 1, WS 5, 20d, 2d and 26d) are treated by the facility water treatment plant. Use of activated sludge in the waste water treatment plant is an innovative treatment technology.

Operation of the GAC units as well as the waste water treatment plant since 1988 has confirmed the effectiveness and reliability of these technologies for treating the groundwater. Effluent concentrations for the VOCs of concern have consistently been below effluent limits specified by Virginia in Cooper's VPDES permit. Monitoring the effectiveness of contaminant removal is achieved by monitoring the influent and effluent of the GAC system as well as the effluent from the activated sludge waste water treatment plant. Finally, additional components of CMA #2 would be the inclusion of the institutional actions of

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maintaining the existing fencing at the facility and limiting the future use of the facility via deed restriction to non-residential uses.

C. Alternative 3: Addition of Existing Wells to Ongoing Pumping/Treatment/Discharge System to Enhance CMA #2

In this alternative, CMA #3 combines the effective technologies of CMA #2 with increased groundwater recovery from two new additional recovery wells. The benefit of CMA #3 would be decreasing the time frame for meeting cleanup goals by increasing the rate of VOC removal from the groundwater. One of the two new additional wells would be located at the east drain pit. This well would be effective in expediting the groundwater cleanup by removing the most contaminated groundwater before it migrates to other recovery wells which are more distant from the east drain pit. The other recovery well would be drilled between well 12d and the Drum-Heller residential property. The addition of this well would: (1) possibly control the migration of contaminants to well WS 5, thereby expediting groundwater cleanup at well WS 5, and (2) potentially eliminate the recent detection of 1,1,1 - TCA at the Drum-Heller well by hydraulically isolating this well from the onsite groundwater contaminant plume. The very low concentration of 1,1,1 - TCA detected at the Drum-Heller well is not necessarily attributable to the Cooper Facility. However, Cooper has provided and will continue to indefinitely provide treatment of groundwater at this residential well by using GAC units.

D. Alternative 4: Development of an Alternative Water Supply and Modification of CMA #2

In this alternative CMA #4 would entail the development of an alternative onsite potable water supply and the abandonment of the GAC system now currently treating the potable water supply, as discussed in CMA #2. Process options considered for this CMA were the location and drilling of a new well or wells, the pumping of an existing contaminant free well or increasing the pumping rate on contaminant-free supply well WS 3 to supply all the facility's potable water. At this time, the use of existing supply well WS 3 is the most attractive option within this CMA. A pilot project would be initiated to fully evaluate the capacity of WS 3 to supply all the facility potable water. Treatment of the groundwater from the recovery wells that discharge into the water treatment plant would continue as discussed in CMA #2. Wells WS 2 and WS 4, currently treated with the existing GAC system and included in the potable supply, would be routed to the water treatment plant, bypassing the GAC system under most operating conditions. Occasionally, wells WS 2 and WS 4 will be routed through the GAC system for process water makeup in the reverse osmosis permeate tank. Discharge of water from the waste water treatment plant would continue under the existing VPDES

permit.

E. Alternative 5: Development of an Alternative Water Supply, Modification of CMA #2, and the Addition of a New Well to the Ongoing Pumping/Treatment/Discharge System

Corrective Measure Alternataive #5 is a combination of CMA 2, CMA 3, and CMA 4. It would include the use of WS 3 as a sole source potable water supply, modification of the ongoing pumping/treatment/discharge system of CMA 2, and the installation of a new recovery well at the east drain pit. A pilot project would be initiated to fully evaluate the capacity of WS 3 to supply the facility with its potable water needs. A new recovery well in the immediate vicinity of the east drain pit would be installed. Well 2d is currently serving as a recovery well in the vicinity of the east drain pit. As well 2d only recovers about 100 gallons per day, and the capture zone for well 2d is completely contained within the capture zone for well 20d, it will be removed from the recovery system following completion of the proposed new well.

In order to enhance the recovery of contaminants which may be sorbed to the soil matrix in the zone between the static and pumping water levels, a cycled pumping scenario is proposed for the new recovery well at the east drain pit. The proposed new well will be cycled on a schedule of five days on, two days off. Pumping at wells WS 2 and WS 4 would be modified in order to not adversely affect the existing VPDES permit or the capacity of the treatment plant.

The other components of CMA #2 would be included in CMA #5. Wells WS 2 and WS 4, currently treated through the GAS system, would be routed directly to the waste water treatment plant. Wells WS 2 and WS 4 may occasionally be routed through the GAC system to the reverse osmosis permeate tank for use as process makeup water. Discharge will continue under the existing VPDES permit.

VII. Media Cleanup Standards/Points of Compliance

Media cleanup standards will be used to establish when groundwater has been remediated. For the Cooper facility, media cleanup standards have been established that are either Maximum Contaminant Levels (MCLs) or the concentration of a given contaminant which corresponds to the 10^{-6} cancer risk level.

When establishing media cleanup standards, it is also necessary to establish where, i.e., in which groundwater monitoring wells, recovery wells and/or production wells, these media cleanup standards will be measured. The onsite points of compliance will be the wells designated 23d, WS #4 and the

proposed new recovery well in CMA #5, i.e., the new recovery well will be installed in the center of the onsite groundwater plume which is located immediately downgradient of the east drain pit. No offsite points of compliance are proposed as no offsite contamination exists. The MCL for TCE is 5 ppb, the MCL for 1,1,1 - TCA is 200 ppb and the MCL for chloroform is 100 ppb. MCLs have not yet been promulgated for PCE and 1,2 - DCE. Therefore, the media cleanup standard for PCE is the proposed MCL which is 5 ppb and the media cleanup standard for 1,2 - DCE is 58 ppb which is the concentration that corresponds to the 10^{-6} cancer risk. The following table lists the Points of Compliance and the respective Media Cleanup Standards for contaminated groundwater that Cooper would be required to attain under CMAs #2, #3, #4 or #5. All concentrations are expressed in ppb.

<u>Point of Compliance</u>	<u>PCE*</u>	<u>1,2 - DCE*</u>	<u>TCE**</u>	<u>1,1,1 - TCA**</u>	<u>Chloroform**</u>
New Proposed Well at SWMU boundary, i.e., east drain pit	5	5	58	200	100
Monitoring Well 23d at down-gradient property boundary	5	5	58	200	100
Water Supply Well #4 at down-gradient property boundary	5	5	58	200	100

* Proposed Maximum Contaminant Level or concentration corresponding to a 10^{-6} cancer risk.

** Maximum Contaminant Level.

The goal of the proposed remedial action is to restore the groundwater to its beneficial use, which is, at this facility, a drinking water aquifer. Based on information obtained during the RFI, and the analysis of all proposed CMAs, EPA finds that CMA #2, CMA #3, CMA #4 or CMA #5 will be able to achieve these groundwater media cleanup standards. However, groundwater contamination may be especially persistent in the immediate

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vicinity of the principal contaminant source (the eastern drain pit), where concentrations are relatively high. The ability to achieve media cleanup standards throughout the entire groundwater contaminant plume cannot be realized within a few years. Rather, it is likely that many years of groundwater pumping and treatment will be required in order to determine if groundwater media cleanup standards can be achieved. EPA acknowledges that due to the high concentrations of volatile organic compounds in the groundwater in the vicinity of the eastern drain pit as well as the kinetics of chemical and physical desorption of contaminants in both the groundwater and soil which lies below the bottom of the excavated eastern drain pit, it may be technically impossible to attain the media cleanup standards at all points of compliance. It is quite possible that concentrations of VOCs in the groundwater may reach a level at which (regardless of the pumping and treatment that is undertaken and the length of time pumping and treatment is implemented), a chemical equilibrium or steady-state concentration of these VOCs is established. The equilibrium or steady-state concentration of these VOCs in onsite groundwater may be greater than the corresponding MCL or 10^{-6} cancer risk for these VOCs. That is, the equilibrium or steady-state concentration may exceed the required media cleanup standard.

To account for this possibility, EPA may, on its own initiative or upon receipt of a petition from Cooper, modify the selected Corrective Measure to require implementation of an alternative technology or technologies which will achieve the groundwater media clean-up standards. Any such modification will be made in accordance with all applicable public participation requirements in EPA's regulations, guidances or policies. If EPA determines that no practicable alternative technology which will achieve the groundwater media clean-up standards is available, EPA may, on its own initiative or upon receipt of a petition from Cooper, relieve Cooper of the obligation to achieve such media cleanup standards, for so long as achievement of such standards continues to be technically impracticable. At such time, EPA may also modify the selected corrective measure to include additional measures (such as those described later in this Section) designed to ensure that human health and the environment are protected notwithstanding the technical impracticability of meeting such standards.

A necessary condition of a petition by Cooper as described in the previous paragraph would be a statistical analysis of time versus concentration data which would verify the attainment of equilibrium in the groundwater system. Furthermore, Cooper would be required to apply an appropriate transport and fate model in order to predict the concentration of groundwater contaminants at the downgradient facility boundary given, as input into the model, the equilibrium concentration which exists at a given POC within the facility boundary.

The proposed CMA would include groundwater extraction for an estimated period of approximately ten (10) to fifteen (15) years, during which time the system's performance will be carefully monitored on a regular basis and adjusted as warranted by the performance/monitoring data collected during operation of the groundwater pump and treat system. Additional modifications may include any or all of the following:

- a) at individual wells where media cleanup standards have been attained, pumping may be discontinued;
- b) alternating pumping at wells to eliminate stagnation points;
- c) pulse pumping to allow aquifer equilibration and encourage adsorbed contaminants to partition into ground water;
- d) installation of additional extraction wells to facilitate or accelerate cleanup of the contaminant plume; and
- e) additional in-situ vapor extraction program in the vicinity of the eastern drain pit.

To ensure that media cleanup standards continue to be maintained, the aquifer will be monitored at those recovery wells where pumping has ceased on an occurrence of every one year for a minimum of five (5) consecutive years following total discontinuation of the groundwater extraction program.

If it is determined, on the basis of the preceding criteria and the system performance data, that certain portions of the aquifer cannot be restored to their beneficial use, some or all of the following measures involving long-term management may occur, for an indefinite period of time, as a modification of the existing system:

- a) engineering controls such as physical barriers, or long-term gradient control provided by low level pumping, as containment measures;
- b) institutional controls will be maintained and potentially expanded to restrict access to those portions of the aquifer which remain above remediation goals;
- c) continued monitoring of specified wells; and
- d) periodic reevaluation of remedial technologies for ground water restoration.

The decision to invoke any or all of these Corrective Measure modifications may be made by EPA or upon receipt of a petition for such modification(s) by Cooper. EPA will conduct five (5) year periodic reviews of the progress of the Corrective Measure at the Facility and may determine that modifications, such as those described above, may be recommended at that time.

VIII. EVALUATION OF PROPOSED REMEDY AND ALTERNATIVES

Cooper has recommended Corrective Measure Alternative #5 as the remedy to be implemented. Based on the decision criteria that are identified in more detail below, EPA has determined that Alternative 2, Alternative 3, Alternative 4 and Alternative 5 are protective of human health and the environment. Nonetheless, EPA has preliminarily identified Alternative 5 as the most effective and expeditious means of addressing contamination at the Cooper Facility.

EPA prefers Alternative 5 because it utilizes proven technologies, is protective of human health and the environment, does not pose an unnecessary or undue financial burden on Cooper, and allows for continuous plant operation. EPA believes that this corrective measure can be effectively employed to remediate the entire onsite groundwater contaminant plume.

Alternative 1 does not provide for pumping and treatment of contaminants in groundwater. Alternative 5 will allow the groundwater cleanup goals to be attained more quickly and effectively, relative to Alternative 2 and Alternative 4, by providing remediation of the principal source area as well as contamination present at all depths beneath the facility. Alternative 3 does not propose having a source of drinking water at the Facility which does not require pretreatment with GAC units. Therefore, CMA 3 would allow the continued useage of wells contaminated with VOCs, i.e., WS 2 and WS 4, as the potable source of drinking water. Useage of WS 3, which is free of VOC contaminants, as the sole source of drinking water for Facility personnel is not proposed in CMA 3.

The preferred Corrective Measure, i.e., CMA #5, addresses groundwater contamination at the facility by implementing recovery of contaminated groundwater from a multiple recovery well network. Wells have been located to accomplish recovery and hydraulic control in the vicinity of the principal source area, i.e., the eastern drain pit, and to prevent offsite contaminant migration. Groundwater treatment will occur in the facility's waste water treatment plant where useage of a biologically activated sludge will convert the groundwater contaminants, which consist of volatile organic carbon compounds, into carbon dioxide and water. The treatment plant is a closed system and, therefore, there will be no transfer of contaminants from the

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groundwater to the air. Finally, a more detailed evaluation of CMA #5 is provided, below. This evaluation compares and contrasts the proposed Corrective Measure Alternative against four general standards (overall protection; attainment of clean-up standards; source control; and compliance) and five remedy-decision standards (long-term reliability and effectiveness; reduction in toxicity, mobility and volume; short-term effectiveness; implementability; and cost.)

1. Overall Protection: All of the alternatives, with the exception of CMA #1 (the "no action" alternative), provide protection of human health and the environment by reducing and/or controlling risk via groundwater containment, recovery and treatment, and institutional controls. Implementation of additional groundwater recovery via the new recovery well, as provided in CMA #5, will enhance the protection of human health and the environment by reducing the possibility of offsite contaminant migration and expeditiously removing all contaminants from the onsite groundwater.

Facility personnel are further protected by CMA #5 because it not only provides for the removal of VOCs from the recovered groundwater, but also provides that potable water will be supplied by a non-contaminated supply well (WS 3), thereby eliminating the need to treat potable water which is presently obtained from supply wells WS 2 and WS 4 which are contaminated with VOCs. In addition to VOC removal from onsite groundwater, the VOCs are remediated within the waste water treatment plant, thereby assuring no transfer of contaminants from the groundwater to the air or transfer of contaminants to surface water via the VPDES permitted outfall.

Because the "no action" alternative is not protective of human health and the environment, it is not considered further in this analysis as an option for the Cooper Facility.

2. Attainment of Media Clean-up Standards: Alternatives 2, 3, 4 and 5 provide for recovery and treatment of VOCs in groundwater and are expected to result in the achievement of media clean-up standards, i.e., remediating groundwater to either MCLs or the concentration which corresponds to a 10^{-6} cancer risk.

3. Controlling the Sources of Releases: Alternatives 2, 3, 4 and 5 provide control of contaminant sources by providing hydraulic control of groundwater as well as groundwater recovery and treatment. However, only CMAs #3 and #5 require a new recovery well in the center of the onsite contaminant plume.

4. Compliance with Waste Management Standards: CMAs 2, 3, 4 and 5 require useage of biologically activated sludge in the facility's waste water treatment plant, which is a closed system, thereby assuring that no transfer of contaminants from the recovered

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groundwater will be transferred to the air or that groundwater contaminants will be transferred to surface water via the VPDES permitted outfall, i.e., the activated sludge provides a medium in which the VOCs of concern are metabolized into carbon dioxide and water.

5. Long-term Reliability and Effectiveness: CMAs 2, 3, 4 and 5 would reduce the inherent hazards posed by the VOCs of concern in the groundwater. The ongoing pump and treat activity at Cooper has served to significantly reduce groundwater contamination and effectively control the spread of contaminants within the aquifer system beneath the Cooper facility. The addition of a new recovery well in the center of the onsite contaminant plume as specified in CMAs #3 and #5 would provide a more effective and efficient means of remediating contaminated groundwater at the Facility and serve to more effectively control contaminant migration beyond the Facility boundary. This new recovery well will be located in that portion of the aquifer most impacted, i.e., immediately downgradient of the east drain pit. The focus on remediating higher concentration groundwater source areas is expected to reduce the duration of the Corrective Measure program. However, the effect can not be quantified due to the complexity of contaminant distribution and recovery in the fractured bedrock aquifer beneath the Cooper facility.

Useage of the facility's waste water treatment plant which consists, in part, of a biologically activated sludge, is a tried and proven technology for remediating groundwater contaminated with VOCs. EPA has designated useage of a biologically activated sludge as a superior treatment technology for removal of VOCs from groundwater and this technology has a proven record at the Cooper facility. This reliability has been demonstrated not only at the Cooper facility but also at numerous other facilities, i.e., the literature is replete with examples of the successful useage of biologically activated sludge for the remediation of not only industrial waste water but also remediation of VOC contaminated groundwater. Finally, this waste water treatment plant is located at a viable and operating facility and, along with the required periodic treatment plant monitoring program, assures that if the treatment plant system fails that such nonoperation would be of minimal duration. It should be noted that the treatment plant does not contain any complex technologies that require intensive oversight or frequent maintainence.

Operation of the onsite remediation program (groundwater recovery and treatment with activated sludge) will result in the reduction of any adverse impacts on the environment resulting from the existing groundwater contamination. The overall level of groundwater contamination and the size or volume of the contaminated areas will be significantly reduced. This reduction serves as a benefit to current and future users of the

groundwater resources within the immediate area.

6.Reduction of Toxicity, Mobility, or Volume of Wastes:

Alternatives 2, 3, 4 and 5 provide treatment of groundwater with biologically activated sludge in the facility's waste water treatment plant, thereby assuring complete transformation of the VOCs of concern into carbon dioxide and water.

The hydraulic control resulting from pumping of the designated recovery wells as well as the proposed new recovery well near the downgradient boundary of the east drain pit as specified in CMAs 3 and 5 will serve to contain the contamination and thereby reduce its mobility by inhibiting migration.

7.Short-term Effectiveness: Alternatives 2, 3, 4 and 5 require the continuation of the ongoing groundwater pump and treat program. Alternatives 3 and 5 require the addition of a new recovery well in the center of the onsite contaminant plume in addition to the ongoing groundwater recovery program. The short-term effect of the ongoing pump and treat program has been to prevent the offsite migration of groundwater contaminants as well as reduce the overall extent or volume of the onsite groundwater contaminant plume. In effect, Cooper has already demonstrated to EPA's satisfaction the short-term effectiveness of its ongoing groundwater pump and treat program. Finally, none of these CMAs are expected to have short-term effects upon the nearby community and/or Facility personnel.

8.Implementability: Alternatives 2, 3, 4 and 5 have already been proven to be highly implementable as Cooper has been pumping and treating contaminated groundwater since 1988. Since the inception of the pump and treat program Cooper has successfully demonstrated to EPA that the ongoing pump and treat program is effectively remediating groundwater contaminants as well as controlling the migration of those contaminants beyond the facility boundary. Furthermore, the treatment of recovered groundwater in the facility's waste water treatment plant has been successful in that the VOCs of concern are metabolized into carbon dioxide and water, thereby assuring no transfer of groundwater contaminants to the air or surface water via the VPDES permitted outfall.

9.Costs: The total estimated capital as well as operation and maintenance (O&M) costs associated with Alternative 2 are estimated to be \$1,200,000 and \$105,000/year, respectively by Cooper. Capital as well as operation and maintenance costs associated with Alternative 3 are estimated to be \$1,200,000 plus an additional capital cost of \$35,000 to install and bring the proposed additional recovery wells on line while the O&M costs would be \$115,000/year. Capital as well as operation and maintenance costs associated with Alternative #4 are estimated to be \$1,200,000 and 80,000, respectively. Finally, capital as

well as O&M costs associated with Alternative #5 are estimated to be \$1,200,000 plus \$15,000 for the new recovery well and \$80,000, respectively. Operating and maintenance costs for Alternative 2, 3, 4 and 5 include labor, utilities, and monitoring of treated effluent from the waste water treatment plant as well as continued monitoring of groundwater quality.

10. Summary: Alternative #5 has been proposed by EPA as the Corrective Measure of choice to address VOC groundwater contamination at the Cooper Facility. Alternative #5 not only involves pumping of an additional recovery well, relative to CMA #2 and #4, but also provides for bringing on line the production well (WS 3) which is contaminant free, thereby eliminating useage of the production wells WS 2 and WS 4 for the Facility's potable water supply. Alternative #5 focuses more directly on recovery of groundwater from wells in close proximity to the principal source of groundwater contamination and, therefore, will result in the more rapid remediation of the groundwater contaminant plume, relative to CMAs 2 or 4. Alternative #5 is the CMA which provides the best onsite hydraulic control thereby preventing the offsite migration of the groundwater contaminant plume and, relative to CMA #3, costs less without sacrificing effectiveness. Finally, CMA #5 clearly meets the four general standards regarding the selection of a Corrective Measure, i.e., the standards of overall protection, attainment of clean-up standards, source control and compliance.

IX. PUBLIC PARTICIPATION

EPA is requesting comments from the public on the Corrective Measure Alternatives and on EPA's preliminary identification of Alternative #5 as the preferred Corrective Measure Alternative to remediate the onsite contamination from the Cooper facility. The public comment period will last thirty (30) calendar days from the date that this matter is publicly noticed in a local newspaper. Comments on the Corrective Measures Study and/or EPA's preliminary identification of a preferred Corrective Measure Alternative should be in writing. Written comments may be submitted to:

Thomas J. Buntin
U.S. EPA, Region III
841 Chestnut Building
Philadelphia, PA 19107

Attn: 3HW64

Additionally, EPA is also providing the public with the opportunity to attend a public meeting to discuss this matter in more detail. Persons interested in such a meeting should contact Mr. Buntin at (215) 597-2745. EPA will notify the public of the date, time and location of the public meeting through a second

display advertisement.

The administrative record is available for review at the following locations:

U.S. Environmental Protection Agency, Region III
841 Chestnut Building - Corner of 9th and Chestnut Streets
7th Floor File Room
Philadelphia, Pennsylvania 19107
Telephone: (215) 597-2381

By Appointment 9 a.m.- 4 p.m., Monday through Friday

or

Earlsville Post Office
Earlsville, Virginia 22936-9998
Telephone: (804) 973-5214

Monday through Friday from 8:00 a.m. - 5:00 p.m., and
Saturday from 10 a.m. - noon

Following the thirty (30) calendar day public comment period, EPA will prepare a Final Decision and Response to Comments which identifies the selected Corrective Measure and addresses all written comments and/or any substantive comments generated at the public meeting. This Response to Comments will be made available to the public. If, on the basis of such comments or other relevant information, significant changes are made in the Corrective Measure Alternative identified by EPA, i.e., Alternative #5, EPA will seek public comments on the revised Corrective Measure Alternative.

Upon consideration of public comment and after the Response to Comments has been publicly noticed, EPA will select a final Corrective Measure Alternative for the Cooper Facility. Thereafter, EPA will seek implementation of this CMA by Cooper via the legal mechanism described in Section 3008(h) of RCRA.

FINAL DECISION AND
RESPONSE TO COMMENTS

COOPER INDUSTRIES, INC.
EARLYSVILLE, VIRGINIA

INTRODUCTION

This Response to Comments (RTC) is being presented by the U. S. Environmental Protection Agency (EPA). The purpose of the RTC is to present concerns and issues raised during the public comment period including concerns and issues raised at the public meeting which was held on September 13, 1991, and to provide EPA's response to those concerns and issues. All of the comments received were carefully reviewed during the final selection of the Corrective Measure, and have been responded to in this RTC. No additional alternatives were raised that were not considered in the Corrective Measures Study (CMS) and the proposed Corrective Measure was not altered as a result of public comments or the public meeting.

SELECTED CORRECTIVE MEASURE

The selected Corrective Measure for the contaminated onsite groundwater at this facility is continuation of the ongoing groundwater pump and treat program. No offsite pumping of groundwater is required as the groundwater contaminant plume has not migrated beyond the facility boundary as demonstrated in the EPA approved RCRA Facility Investigation (RFI) which is part of the Administrative Record and is located at the following address: Earlysville Post Office, Earlysville, Virginia. The selected Corrective Measure also requires Cooper to install an additional groundwater recovery well in the center of the onsite groundwater plume (immediately downgradient of the east drain pit). The installation of this additional recovery well will expedite the rate at which the groundwater will be remediated. Finally, the selected Corrective Measure requires Cooper to discontinue useage of potable water supply wells WS-2 and WS-4. These wells are currently treated with granular activated carbon (GAC) units prior to consumption or useage of the water by facility personnel. In order to eliminate the need for GAC units, Cooper will provide potable water from water supply well #3 (WS-3) as this is a production well which is free of contamination, i.e., this well lies beyond the outermost edge of the onsite groundwater plume. Therefore, potable water at the facility will not require treatment with GAC units and the possibility of facility personnel being exposed to contaminants will be eliminated.

All of the proposed Corrective Measures initially screened in the CMS, with the exception of the "no action" alternative (Corrective Measure #1), would provide adequate protection of

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human health and the environment by eliminating, reducing or controlling risk through treatment, engineering controls or institutional controls. However, Corrective Measure #5 has been chosen by EPA as the Corrective Measure to be implemented by Cooper in order to address groundwater contamination. Corrective Measure #5, compared to Corrective Measures #2 and #4, not only requires pumping of an additional recovery well but also provides for bringing on line the production well (WS-3) which is contaminant free, thereby eliminating useage of the production wells WS-2 and WS-4 for the facility's potable water supply. Corrective Measure #5, compared to Corrective Measures #2 and #4, focuses more directly on recovery of groundwater from wells in close proximity to the principal source of groundwater contamination and, therefore, will result in the more rapid remediation of the groundwater contaminant plume. Corrective Measure #5 also provides the best onsite hydraulic control thereby preventing the offsite migration of the groundwater contaminant plume and, relative to Corrective Measure #3, costs less without sacrificing effectiveness. Finally, Corrective Measure #5 provides the best balance among the various proposed Corrective Measures with respect to the evaluation criteria, including: 1) long-term reliability and effectiveness; 2) reduction of toxicity, mobility or volume of waste; 3) short-term effectiveness; 4) implementability; and 5) cost.

CONCERNS RAISED PRIOR TO THE PUBLIC COMMENT PERIOD

No concerns were raised prior to the public comment period.

PUBLIC PARTICIPATION ACTIVITIES

A public comment period was set from August 14, 1991, through September 13, 1991. A public meeting was held on September 13, 1991, at 7 p.m. at the Earlysville Fire House, Route 660, Earlysville, Virginia. The meeting was attended by approximately twenty-five (25) people, including representatives of EPA and concerned citizens. A number of concerns were raised and EPA will addresses these concerns under two separate headings. These headings are termed 1) substantive comments and 2) procedural comments.

CONCERNS RAISED DURING THE PUBLIC COMMENT PERIOD AND THE AGENCY'S RESPONSE

I. Substantive Comments

Concern:

Concern was expressed regarding any potential impact to the Greymont Subdivision during implementation of CMA #5 by Cooper. The concern was twofold: 1) could groundwater contaminants

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migrate from Cooper's property to the Greymont Subdivision, and 2) could the aquifer beneath the Greymont Subdivision be dewatered or significantly reduced in its capacity?

Response:

The first point (migration of contamination) was rigorously addressed in Section III. C. of the Statement of Basis (SOB). The RFI clearly demonstrated (in Section "Eight") that the Greymont subdivision has not been impacted in any respect at present nor is it expected to be impacted in the future as a result of the implementation of Corrective Measure Alternative (CMA) #5. The four principal reasons why the Greymont Subdivision would not be impacted are: 1) Cooper's ongoing groundwater pump and treat program is hydraulically controlling any further migration of the groundwater contaminant plume both toward Camp Faith Creek and the Greymont Subdivision; 2) the entire onsite groundwater contaminant plume lies within the capture zones of the facility's recovery wells, and, therefore, is precluded from migrating to Camp Faith Creek and beyond; 3) the RFI clearly demonstrated that in the absence of groundwater pumping at Cooper's facility that groundwater from Cooper would discharge to Camp Faith Creek and that groundwater would not flow beneath Camp Faith Creek to the Greymont Subdivision. This finding is verified by several 200 feet deep monitoring wells located at the property boundary of Cooper and Greymont in which no contamination is found; and 4) a significant number of private wells in the Greymont Subdivision have been tested by the private owners for the contaminants known to exist in groundwater beneath the Cooper facility. This privately generated data shows that no contamination of groundwater beneath the Greymont Subdivision has occurred.

In summary, the evidence collected to date shows that groundwater contamination will not migrate from Cooper's property to the Greymont Subdivision during the implementation of CMA #5.

Regarding the second point (dewatering of the aquifer or reduction of the aquifer's water-bearing capacity beneath the Greymont Subdivision), the RFI clearly demonstrated (in Appendices E and F) through water level contour maps and pump tests, respectively, that the aquifer beneath Greymont will not be dewatered and, furthermore, that the aquifer will not be reduced in terms of its water-bearing capacity. Other evidence which supports this conclusion is the fact that Cooper has not only had an ongoing groundwater pump and treat operation in effect since 1988 but also has been pumping several water supply wells in the same time period to meet facility manufacturing and potable demands. If dewatering or reduction of the aquifer's capacity were going to occur, it would already have occurred in the aquifer beneath Greymont Subdivision due to the extensive pumping conducted by Cooper over the last four years.

Another reason why the aquifer beneath the Greymont Subdivision will not be impacted, in terms of reduced water bearing capacity, is the fact that Cooper is now withdrawing less water from the aquifer than it was prior to 1990. Cooper is able to do this as a result of its 1990 upgrading of the waste water treatment plant (WWTP). Prior to 1990 and the installation of reverse osmosis treatment technology at the WWTP, Cooper had to obtain water from outside of the facility in order to have an adequate amount of process water. However, due to the aforementioned upgrading of the WWTP, Cooper no longer needs to obtain water from outside of the facility and it is not expected to need to obtain water from outside of the facility in the future. The water treated via the reverse osmosis process is then recycled and reused in Cooper's current manufacturing activities.

Accordingly, because less groundwater is being withdrawn from the aquifer today, as compared to time prior to 1990, coupled with the fact that the wells at Greymont are high yielding wells, EPA believes that it is unlikely that the implementation of CMA #5 by Cooper will have any effect on the water bearing capacity of the aquifer beneath Greymont Subdivision.

In summary, the water-bearing capacity of the aquifer beneath Greymont Subdivision will not be reduced by the implementation of CMA #5 by Cooper.

Concern:

Concern was raised regarding the impact to Camp Faith Creek from Cooper's waste water treatment plant effluent.

Response:

Cooper has a National Pollutant Discharge Elimination System (NPDES) permit issued by the State of Virginia. The purpose of this permit is to assure that the discharge from Cooper's WWTP does not degrade Camp Faith Creek. The permit uses water quality criteria as well as the volume of flow in Camp Faith Creek in order to set discharge limits. There is no evidence of Cooper's having exceeded the limits specified in the NPDES permit for hazardous waste constituents. The effluent is tested on a monthly basis by Cooper and unscheduled sampling events of the effluent are, on occasion, conducted by the State of Virginia. The RFI demonstrated that there has been no impact to the water of Camp Faith Creek or the sediments of Camp Faith Creek stemming from the effluent of the waste water treatment plant. These data are available in the RFI Report which is part of the Administrative Record.

Comment:

000038

How long will it take to clean up groundwater at Cooper once CMA #5 has been implemented?

Response:

Although it is very difficult to predict exactly when groundwater contaminants will be remediated to the clean up goals specified in Section VII of the SOB, it is probable that at least 10 to 15 years of groundwater pump and treat operations will be necessary in order to remediate the onsite contaminated groundwater. This issue is further addressed in Section VII of the SOB.

Comment:

How will EPA monitor the progress of the groundwater clean-up program as delineated in CMA #5?

Response:

The groundwater monitoring program which runs concurrently with the implementation of CMA #5 is addressed in Section VII of the SOB. In particular, twenty (20) sampling points consisting of monitoring wells, groundwater recovery wells and facility production wells will be monitored on either a semi-annual or annual basis until groundwater has been remediated to the clean-up goals as delineated in Section VII of the SOB. These wells are: 1D, 1A, 2A, 2D, 3A, 3D, 12A, 13D, 19A, 20D, 21D, 23D, 26D, WS1, WS2, WS3, WS4, WS5, the Drum Heller private well immediately north of the facility and the new proposed groundwater recovery well which will be located near the eastern drain pit and will be installed as part of the implementation of CMA #5. These wells, taken as a whole, will assure a groundwater monitoring program that is readily capable of determining the lateral and vertical extent of groundwater contamination, and therefore, monitoring of the spatial relationship of the onsite plume relative to the Greymont subdivision, i.e., any additional movement of the plume toward Greymont would be quickly detected.

As discussed in Section VII of the SOB, EPA will review these monitoring data (which are collected both semi-annually and annually) every five years in order to evaluate the effectiveness of CMA #5. If EPA determines that CMA #5 is either not effective or the rate of groundwater remediation is too slow, i.e., only slight decreases in the levels of groundwater contaminants takes place over a 5 year period, then EPA may reevaluate the continued implementation of CMA #5. Any decision by EPA to modify CMA #5 will be made in accordance with all applicable public participation requirements in EPA's regulations and guidance.

Comment:

000039

Are there any sources of contamination at Cooper that EPA might have missed during the RFI and what is the potential for future contamination emanating from the Cooper facility?

Response:

The principal contaminants found at Cooper's facility are chlorinated solvents such as tetrachloroethylene (PCE) and trichloroethylene (TCE). However, as of 1990, useage of all chlorinated solvents has been discontinued by Cooper. Therefore, based on available information, it appears that there is no potential for future contamination of any media (air, surface water, soil or groundwater) with chlorinated solvents.

The RFI for Cooper required many different methods for determining potential areas of contamination including, but not limited to, soil gas surveys, soil borings, geophysical surveys and historical data regarding useage of hazardous wastes. One of the major components of the Cooper RFI included the analysis of soil and/or groundwater for Appendix IX constituents as provided in 40 C.F.R. Part 141. Appendix IX is a comprehensive list of over 200 compounds which could possibly be found not only at Cooper but also any given facility. Regarding Cooper, Appendix IX analysis of groundwater was used to determine if any area of contamination had been missed or overlooked within soils, i.e., any contaminants in the soil would, in part, migrate to groundwater and these contaminants would be detected via the Appendix IX analysis of groundwater. Therefore, if contaminants that are found in groundwater are not also found in the soil, then it may be concluded that all source areas within the soil have not been found.

EPA knew from Cooper's and its own historical records as well as Cooper's Part A application that not only were chlorinated solvents used at the facility but also the areas in which these chlorinated solvents were discarded, i.e., all solid waste management units (SWMUs) were known prior to the the RFI and no new SWMUs were discovered during the RFI. The Appendix IX analysis of groundwater confirmed the presence of chlorinated solvents only. Therefore, EPA can confidently state that there are no unknown source area(s) of contamination and that the facility has been thoroughly investigated for all known contaminants.

In summary, the only contaminants found in soil and/or groundwater were those already known to exist from past manufacturing activities. The Appendix IX data for soil and/or groundwater is located in Table 15 of the RFI.

II. Procedural Comments

Comment:

000040

Would EPA test private wells in the vicinity of Cooper?

Response:

Based upon the EPA-approved RFI for Cooper, EPA determined which private wells had the potential to be impacted by the contamination at the Cooper facility. As previously discussed in the first comment in the substantive section, above, many of the private wells in the Greymont subdivision were independently tested by the private owners for chlorinated solvents, e.g., PCE, TCE, etc. No chlorinated solvents were found in the Greymont wells tested. Additionally, based on the reasons set forth in the first comment in the substantive section, above, EPA does not intend to sample private wells in the Greymont subdivision in the future. Specifically, the contaminant plume has not and is not expected to migrate any further toward any of the existing Greymont wells. Accordingly, other private wells in the Greymont Subdivision are not expected to be impacted.

The private well that has the potential to be impacted by Cooper's contamination is the Drum Heller well located immediately north of the facility. However, it is unlikely that the contaminant found in the Drum Heller well is from the Cooper facility. The circumstances surrounding this particular private well is discussed in Section II of the SOB. EPA is requiring Cooper to sample this well on a semi-annual basis during the time in which implementation of CMA #5 is occurring.

Other private wells in the area will not be sampled by EPA and/or Cooper as the EPA-approved RFI clearly demonstrated that no other private wells could be impacted. However, EPA suggested that this particular private well be tested for those contaminants known to exist within the Cooper facility. Since this was considered too expensive of an alternative, EPA suggested that the well be tested for what is known as "total organic halogens". This test, which costs between \$20 and \$30, will determine if chlorinated organics exist in a given sample, i.e., this is not a compound-specific analysis. If this well is privately tested for total organic halogens, and if this well tests positive for total organic halogens, EPA will test this well for the chlorinated solvents found at Cooper.

Comment:

The participants at the public meeting objected to the timing of the public meeting at the end of the public comment period. The participants stated that they would have preferred to have the benefit of the information provided at the public meeting prior to the time the public could make written comments so that the written comments provided to EPA could have been more focused.

000041

Response:

EPA agrees that information provided at public meetings is beneficial and that this information would have been helpful to the public in the preparation of written comments. EPA is reviewing the timing of public meetings for purposes of future public participation activities involving the Cooper facility.

The public has not requested that a Corrective Measure other than the proposed Corrective Measure be implemented at the Cooper facility. No modifications or changes to the selected Corrective Measure were made as a result of the public comments.

FUTURE ACTIONS

To determine whether specific community concerns arise during the Corrective Measure Implementation process, information will be provided to the public through press releases or other appropriate means, such as additional public meetings.

DECLARATIONS

Based on the Administrative Record compiled for this corrective action, I have determined that the selected Corrective Measure to be ordered at this site is appropriate and will be protective of human health and the environment.



----- Edwin B. Erickson
for Regional Administrator
Region III

9-30-91

----- Date

000042

Attachments
A through H

000043

ATTACHMENT A



EXPLANATION:

- 24 -DEEP WELL
- 16 -SHALLOW WELL
- WELL 2 -WATER SUPPLY WELL
- PROPERTY BOUNDARY
- UNDERGROUND CONCRETE TANKS
- 40-4 -DRAIN PITS
- 80-8

NOTES:

1. BASE MAP FROM COOPER INDUSTRIES.
2. TOPOGRAPHY FOR PLANT BUILDINGS MAY NOT BE ACCURATE.
3. TOPOGRAPHIC CONTOUR INTERVAL - 5 feet

ALL LAND BASED SOLID WASTE MANAGEMENT UNITS HAVE BEEN REMOVED AND/OR CLOSED IN ACCORDANCE WITH EPA AND/OR VDMA REGULATIONS AND APPROVALS



FIGURE 2

Westinghouse Environmental Services		PROJECT NO. _____ DRAWING NO. _____ SHEET NO. _____	
PROJECT NAME _____		PROJECT LOCATION _____	
PROJECT DESCRIPTION _____		PROJECT STATUS _____	
PROJECT OWNER _____		PROJECT MANAGER _____	
PROJECT ENGINEER _____		PROJECT CHECKER _____	
PROJECT APPROVER _____		PROJECT REVIEWER _____	
PROJECT DATE _____		PROJECT REVISION _____	

FACILITY LAYOUT AND LOCATION OF SOLID WASTE MANAGEMENT UNITS

000044

ATTACHMENT B



EXPLANATION:

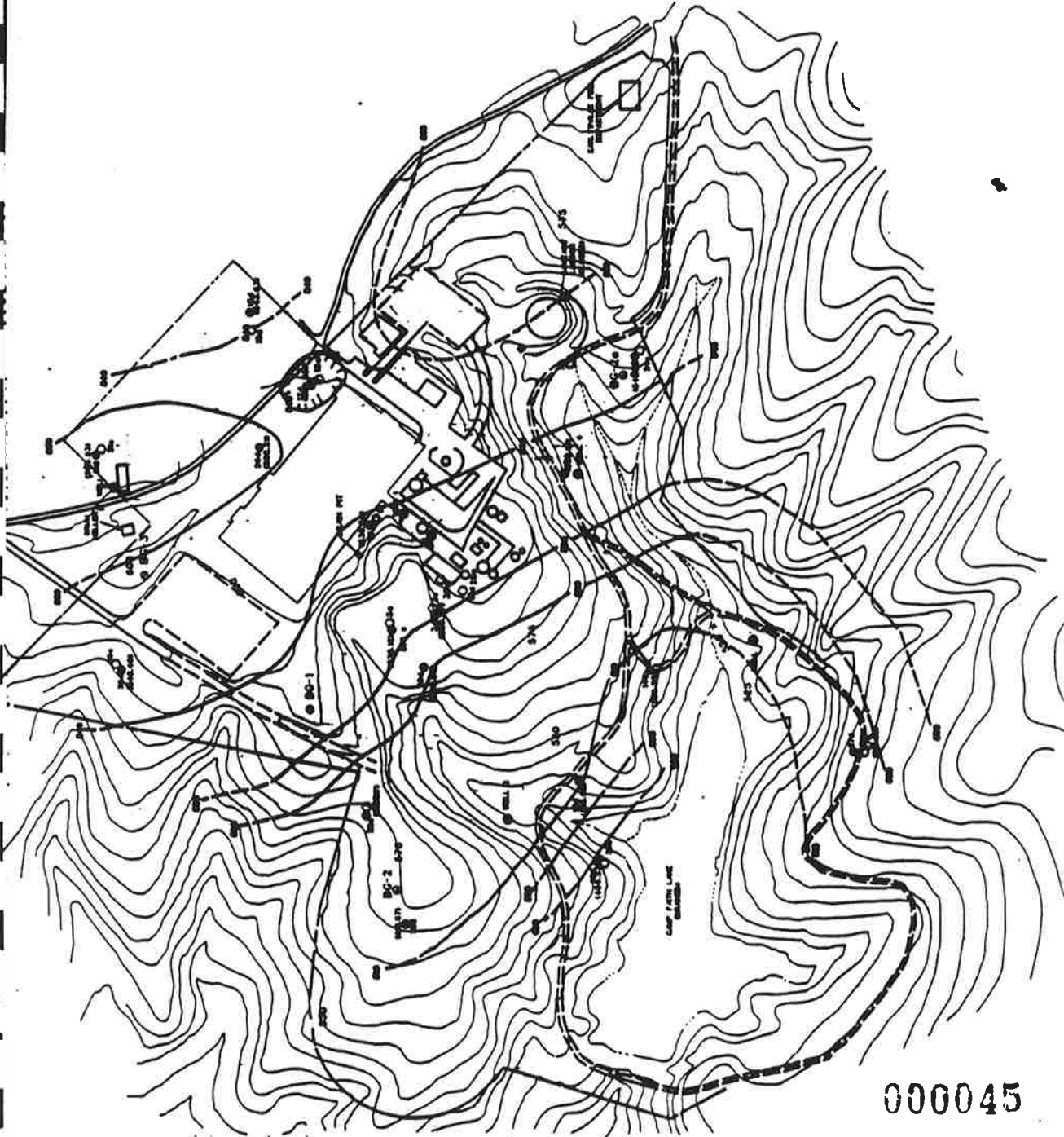
- 24 - DEEP PEZOMETER
- 16 - SHALLOW PEZOMETER
- WELL 2 - WATER SUPPLY WELL
- DP-1 - DRAIN PIT
- BG-1 - BACKGROUND SOIL SAMPLING LOCATIONS
- - - - - CONTOUR LINE ON TOP OF BEDROCK (FT MSL)
- - - - - DASHED WHERE INFERRED; CONTOUR MATCHED FOR CLOSED DEPRESSION CONTOUR INTERVAL - 10'
- (538.12) - BEDROCK ELEVATION (FT MSL)

NOTES:

1. BASE MAP FROM COOPER INDUSTRIES.
2. TOPOGRAPHY NEAR PLANT BUILDINGS MAY NOT BE ACCURATE.
3. TOPOGRAPHIC CONTOUR INTERVAL - 5 feet



000341



000045

FIG. 3

Westinghouse Environmental Services

CONTOUR MAP OF
TOP OF BEDROCK

ATTACHMENT C

EXPLANATION

- 24 - DEEP WELL
- 16 - SHALLOW WELL
- WELL 2 - WATER SUPPLY WELL
- 564.17 - POTENTIOMETRIC ELEVATION (FT. MSL.)
- 560 - POTENTIOMETRIC CONTOUR (FT. MSL.) DASHED WHERE INFERRED. CONTOUR INTERVAL = 10 FEET.
- - GROUND-WATER FLOW DIRECTION

NOTES

1. BASE MAP FROM COOPER INDUSTRIES.
2. TOPOGRAPHY NEAR PLANT BUILDINGS MAY NOT BE ACCURATE.
3. TOPOGRAPHIC CONTOUR INTERVAL - 5 feet
4. DATA FROM 12/5/90 - 12/15/90.



Westinghouse Environmental
and Geotechnical Services, Inc.
RICHMOND, VIRGINIA

PROJECT:

COOPER DED

FIGURE NO.

1079-89-102

DRAWN BY:

K.L.F.

CHECKED BY:

J.S.P.

SCALE:

1" = 300'

DATE:

3/6/91

TITLE:

SHALLOW
GROUND-WATER FLOW

FIGURE NO.

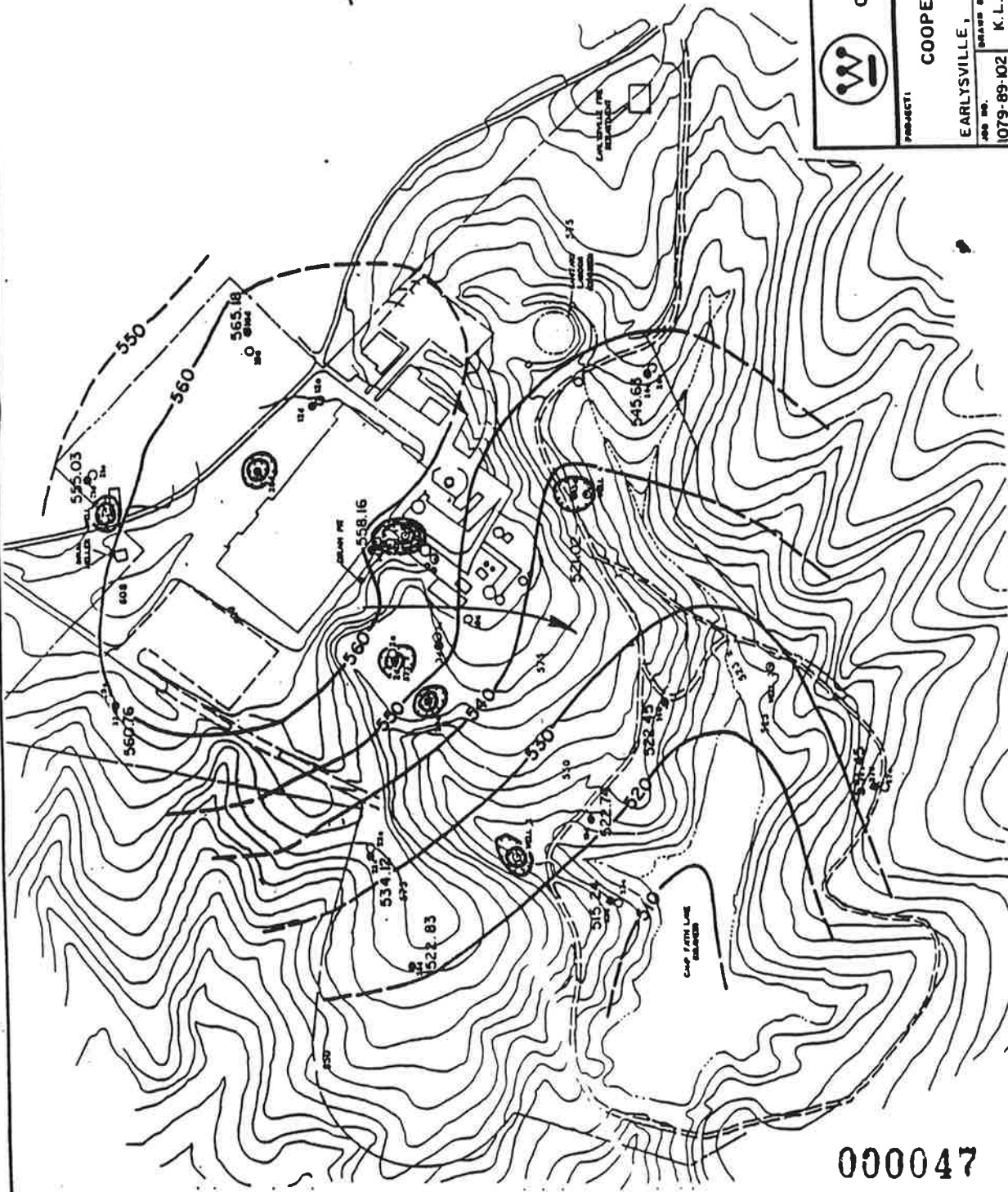
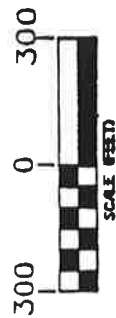
3

000046

24
 16
 2
 565.18
 —560—

- DEEP WELL
- SHALLOW WELL
- WATER SUPPLY WELL
- POTENTIOMETRIC ELEVATION (FT. MSL)
- POTENTIOMETRIC CONTOUR (FT. MSL)
DASHED WHERE INFERRED.
CONTOUR INTERVAL = 10 FEET.
- GROUND-WATER FLOW DIRECTION

1. BASE MAP FROM COOPER INDUSTRIES.
2. TOPOGRAPHY NEAR PLANT BUILDINGS MAY NOT BE ACCURATE.
3. TOPOGRAPHIC CONTOUR INTERVAL-5 feet
4. DATA FROM 12/5/90 - 12/15/90.
5. DATA FROM 3d & 12d NOT USED.
6. MAP REFLECTS PUMPING AT W.S. 1, 2, 3, 4, 5, 2d, 20d, AND 26d.



**Westinghouse Environmental
and Geotechnical Services, Inc.**
RICHMOND, VIRGINIA

PROJECT:

TITLE:

COOPER DED

DEEP
GROUND-WATER

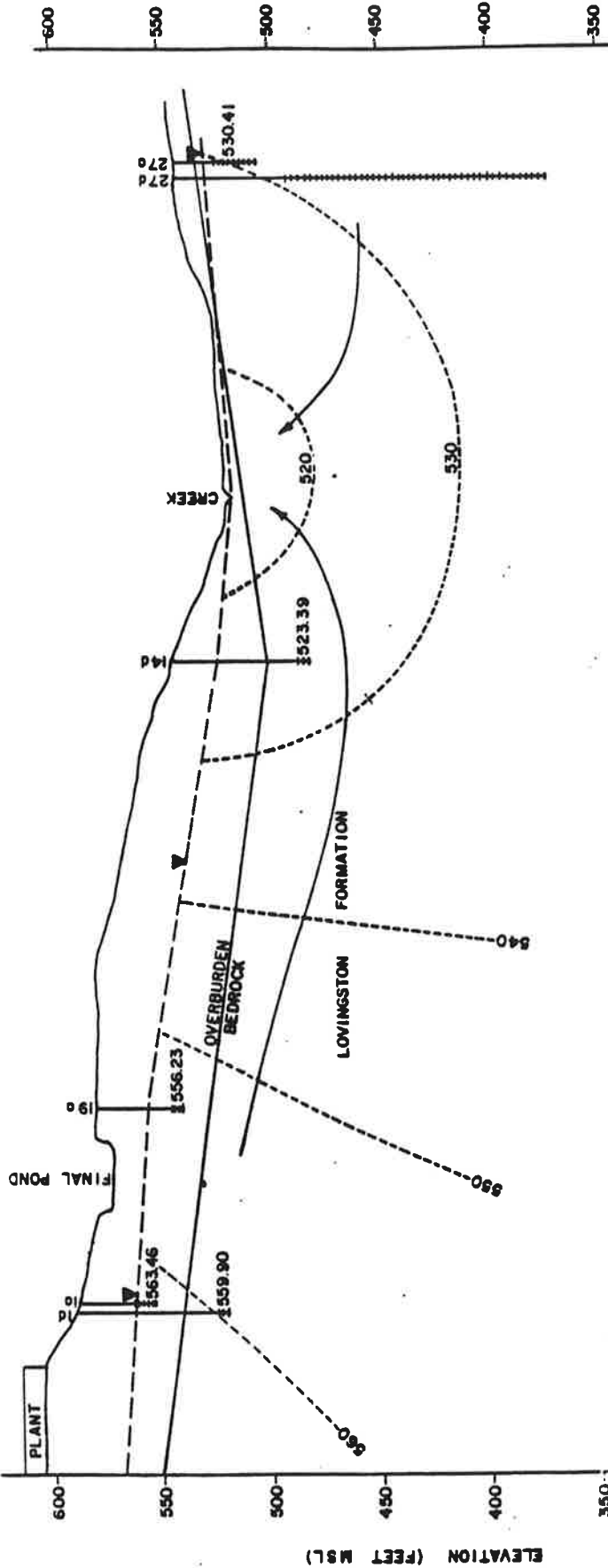
EARLYSVILLE,	GRADES BY:
JOE MO.	K.L.F.
1079-89-102	

VIRGINIA
CHECKED BY:
J. S. P.

SCALE:	1" = 300'	DATE:	3/
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6 / 9	FIGURE NO. 4
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000047



SCALE: VERTICAL 1" = 50'
HORIZONTAL 1" = 150'
VERTICAL EXAGGERATION = 3x

NOTES:
- SEE TABLE I FOR PIEZOMETER COMPLETION DATA
- SEE DRAWING I FOR CROSS SECTION LOCATIONS
- POTENTIOMETRIC DATA FROM 10/17/88.

EXPLANATION:

- PIEZOMETER DESIGNATION
- POTENTIOMETRIC ELEVATION (FL. MSL)
- COMPLETION INTERVAL
- POTENTIOMETRIC CONTOUR LINE (FL. MSL)
- GROUND-WATER FLOW DIRECTION
- OVERBURDEN BEDROCK CONTACT
- WATER TABLE

HYDROGEOLOGIC CROSS SECTION C-C'

Westinghouse Environmental Services	
PROJECT NO. 1079-89-102	CONTRACT NO.
DATE 11/89	FIGURE 6
COOPER EDP EARLYSVILLE, VA.	
SCALE AS SHOWN	

000042

Table 1

Chronological Listing of Previous Site Reports

Westinghouse, 1988, Preliminary Site Evaluation, Cooper Industries, Westinghouse Environmental Services, September 8, 1988.

Westinghouse, 1989a, Concrete Tank Removal, Cooper Electrical Distribution Products, Westinghouse Environmental Services, January 10, 1989.

Westinghouse, 1989b, Site Investigation and Response Activities, Cooper Industries, Westinghouse Environmental Services, February 3, 1989.

Westinghouse, 1989c, Evaluation of Ground-Water Monitoring Requirements for Final Pond, Cooper EDP Facility, Earlysville, Virginia, June, 1989.

Westinghouse, 1989d, Sampling and Analysis Plan for Final Pond Ground-Water Quality Assessment Program, Cooper Electrical Distribution Products, Westinghouse Environmental and Geotechnical Services, Inc., August, 1989.

Westinghouse, 1989e, Final Pond Ground-Water Monitoring Program, Cooper Electrical Distribution Product, Westinghouse Environmental and Geotechnical Services, Inc., August, 1989.

Westinghouse, 1989f, Site Investigation, Response Action and Planned Additional Site Activities, Cooper Industries, Westinghouse Environmental and Geotechnical Services, Inc., October, 1989.

Westinghouse, 1989g, Final Pond Closure Plan, Revision III, Cooper Electrical Distribution Products, Westinghouse Environmental and Geotechnical Services, Inc., December, 1989.

Westinghouse, 1990a, Facility Investigation and Response Action Study, Cooper Electrical Distribution Products, Westinghouse Environmental and Geotechnical Services, Inc., January, 1990.

Westinghouse, 1990b, Final Pond Risk Assessment, Cooper Electrical Distribution Products, Westinghouse Environmental and Geotechnical Services, Inc., April, 1990.

Westinghouse, 1990c, Closure Plan for East Drain Pit, Cooper Distribution Equipment Division, Westinghouse Environmental and Geotechnical Services, Inc., June, 1990.

Westinghouse, 1990d, East Drain Pit Closure Documentation, Cooper Distribution Equipment Division, Westinghouse Environmental and Geotechnical Services, Inc., July, 1990.

Westinghouse, 1990e, Final Pond Closure Documentation, Cooper Distribution Equipment Division, Westinghouse Environmental and Geotechnical Services, Inc., July, 1990.

Westinghouse, 1990f, Quality Assurance Project Plan for Ground-Water Monitoring Program at Cooper Distribution Equipment Division, Westinghouse Environmental and Geotechnical Services, Inc., September, 1990.

Westinghouse, 1991a, RCRA Facility Investigation, Cooper Distribution Equipment Division, Westinghouse Environmental and Geotechnical Services, Inc., Revised March, 1990.

000049



EXPLANATION :

- 2d - DEEP PEZOMETER
- 16 - SHALLOW PEZOMETER
- WELL 2 - WATER SUPPLY WELL
- DP-1 - DRAIN PIT

CONTOUR OF TOTAL VOLATILE
ORGANICS CONCENTRATION (mg./L.)
CONTOUR INTERVAL = ORDER OF
MAGNITUDE.

NOTE : CONTOURS DRAWN USING
HIGHEST VALUE AT WELL
WEST. ALL DATA IN MG./L.

NOTES

1. BASE MAP FROM COOPER INDUSTRIES.
2. TOPOGRAPHY NEAR PLANT BUILDINGS MAY NOT BE ACCURATE.
3. TOPOGRAPHIC CONTOUR INTERVAL-5 feet

	Westinghouse Environmental and Geotechnical Services, Inc. RICHMOND, VIRGINIA		TITLE: HORIZONTAL EXTENT OF POTENTIAL IMPACTS	SCALE: 1"=300'	CHECKED BY: 	DRAWN BY: D.A.B.	JOB NO. RAW A 137	DATE: 3/28/91	FIGURE NO. 5
	PROJECT: 								

000050

APPROXIMATE EXTENT
OF GROUND-WATER IMPACTS

APPROXIMATE EXTENT
OF COMBINED CAPTURE ZONES

EXPLANATION:

- 24 - DEEP WELL
- 16 - SHALLOW WELL
- WELL 2 - WATER SUPPLY WELL

- POTENTIAL WATER TABLE (FT MSL)
DA - 10 WHERE INFERRED
CONTOUR INTERVAL - 10 FEET
- GROUND-WATER FLOW DIRECTION

560



- CAPTURE ZONES FOR WELLS
WS-1 WS-2 WS-4 WS-5, 204 & 264

- CAPTURE ZONE FOR WELL 24

ATTACHMENT H

NOTES:

1. BASE MAP FROM COOPER INDUSTRIES
2. TOPOGRAPHY NEAR PLANT BUILDINGS
MAY NOT BE ACCURATE
3. TOPOGRAPHIC CONTOUR INTERVAL - 5 feet
4. DATA FROM 12/5/90 - 12/15/90
5. DATA FROM 34 & 124 NOT USED
6. MAP REFLECTS PUMPING AT
WS-1, 2, 3, 4, 5, 24, 204, AND 264



Westinghouse Environmental
and Geotechnical Services, Inc.
RICHMOND, VIRGINIA

PROJECT:

COOPER DED

TITLE:

PROJECTED CAPTURE ZONES FOR
THE EXISTING GROUND-WATER
RECOVERY SYSTEM

JOB NO.

RIMW A 137

DRAWN BY:

D.A.B.

CHECKED BY:

J.S.P.

SCALE:

1"=300'

DATE:

7/19/91

FIGURE NO.

20

000051

ATTACHMENT E
SCOPE OF WORK FOR INTERIM MEASURES

Attachment E

Scope of Work for Interim Measures

PURPOSE

This Statement of Work ("SOW") sets forth the requirements for implementation of Interim Measures pursuant to the Final Administrative Order on Consent ("Order") to which this SOW is attached. The purpose of Interim Measures are to identify and correct any actual or potential releases of hazardous waste or constituents from regulated units, solid waste management units, and other sources or areas at the facility which may present an endangerment to human health or the environment.

SCOPE

Task I. INTERIM MEASURES WORKPLAN

- A. Interim Measures Project Management Plan
- B. Data Collection Quality Assurance Plan
- C. Data Management Plan

Task II. INTERIM MEASURES DESIGN

- A. Design Plans and Specifications
- B. Operations and Maintenance Plan
- C. Project Schedule
- D. Final Design Documents

Task III. INTERIM MEASURES CONSTRUCTION

- A. Construction Quality Assurance Plan
- B. Construction Implementation
- C. Inspection Activities

Task IV. REPORTS

- A. Progress
- B. Interim Measures Workplan
- C. Revisions to QAPP
- D. Interim Measures Design Documents
- E. Interim Measures Operation & Maintenance Plan
- F. Interim Measures Report

TASK I: INTERIM MEASURES WORKPLAN

Respondent shall prepare an Interim Measures Workplan. The Workplan shall specify the objectives of the interim measures, demonstrate how the interim measures will abate releases and threatened releases, and, to the extent possible, be consistent and integrated with any long term solution at the facility. The Workplan shall include the development of the following plans which shall be prepared concurrently.

A. Interim Measures Project Management Plan

The Interim Measures Project Management Plan will include a discussion of the technical approach, engineering design, engineering plans, schedules, budget, and personnel. Respondent shall specifically identify dates for completion of the project and major interim milestones which are enforceable terms of this order. The Interim Measures Project Management Plan also will include a description of qualifications of personnel performing or directing the interim measures, including contractor personnel. Finally, this plan shall document the overall management approach to the interim measures.

B. Data Collection Quality Assurance Plan

The Respondent shall prepare and Interim Measures Data Collection quality Assurance Plan as part of the Quality Assurance Plan (QAPP) to be submitted pursuant to Attachment B of this Order to document all monitoring procedures including sampling, field measurements and sample analysis performed during the investigation to characterize the source and contamination. The Interim Measures Data Collection Quality Assurance Plan shall ensure that all information, data and resulting decisions regarding Interim Measures are technically sound, statistically valid, and properly documented.

1. Data Collection Strategy

The strategy section of the Interim Measures Data Collection Quality Assurance Plan shall include, but not be limited to, the following:

- a. Description of the intended uses for the data collected as part of Interim Measures, and the necessary level of precision and accuracy for these intended uses;

- b. Description of methods and procedures to be used as part of Interim Measures to assess the precision, accuracy and completeness of the measurement data;
- c. Description of the rationale used to assure that the data used as part of Interim Measures accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition or an environmental condition. Examples of factors which shall be considered and discussed include:
 - i) Environmental conditions at the time of sampling;
 - ii) Number of sampling points;
 - iii) Representativeness of selected media; and
 - iv) Representativeness of selected analytical parameters.
- d. Description of the measures to be taken as part of Interim Measures to assure that the following data sets can be compared to each other:
 - i) Data generated by the Respondent over some time period;
 - ii) Data generated by an outside laboratory or consultant versus data generated by the Respondent;
 - iii) Data generated by separate consultants or laboratories; and
 - iv) Data generated by an outside consultant or laboratory over some time period.
- e. Details relating to the Interim Measures schedule outlined in the Interim Measures Project Management Plan and information to be provided in quality assurance reports. The reports should include, but not be limited to the following, as related to Interim Measures:
 - i) Periodic assessment of measurement data

accuracy, precision, and completeness;

- ii) Results of performance audits;
- iii) Results of system audits;
- iv) Significant quality assurance problems and recommended solutions; and
- v) Resolutions of previously stated problems.

2. Sampling and Field Measurements

The Sampling and Field Measurements section of the Interim Measures Data Collection Quality Assurance Plan shall discuss the following as related to Interim Measures:

- a. Selecting appropriate sampling and field measurement locations, depths, etc.;
- b. Providing a statistically sufficient number of sampling and field measurement sites;
- c. Measuring all necessary ancillary data;
- d. Determining which media are to be sampled (e.g., ground water, soil, sediment, etc.);
- e. Determining which parameters are to be measured and where;
- f. Frequency of sampling and field measurement and length of sampling period;
- g. Types of sample (e.g., composites vs. grabs) and number of samples to be collected;
- h. Documenting field sampling and field measurement operations and procedures, including:
 - i) Documentation of procedures for preparation of reagents or supplies which become an integral part of the sample (e.g., filters, and adsorbing reagents);
 - ii) Procedures and forms for recording the exact location and specific considerations associated with sample and field measurement data acquisition;

- iii) Documentation of specific sample preservation method;
 - iv) Calibration of field devices;
 - v) Collection of replicate samples;
 - vi) Submission of field-biased blanks, where appropriate;
 - vii) Potential interferences present at the facility;
 - viii) Construction materials and techniques, associated with monitoring wells and piezometers;
 - ix) Field equipment listing and sample containers;
 - x) Sampling and field measurement order; and
 - xi) Decontamination procedures.
 - i. Selecting appropriate sample containers;
 - j. Sample preservation; and
 - k. Chain-of-custody, including:
 - i) Standardized field tracking reporting forms to establish sample custody in the field prior to shipment; and
 - ii) Pre-prepared sample labels containing all information necessary for effective sample tracking.
3. Sample Analysis

The Sample Analysis section of the Interim Measures Data Collection Quality Assurance Plan shall specify the following as related to Interim Measures:

- a. Chain-of-custody procedures, including:

- i) Identification of a responsible party to act as sample custodian at the laboratory facility authorized to sign for incoming field samples, obtain documents of shipment, and verify the data entered onto the sample custody records;
 - ii) Provision for a laboratory sample custody log consisting of serially numbered standard lab-tracking report sheets; and
 - iii) Specification of laboratory sample custody procedures for sample handling, storage, and dispersement for analysis.
- b. Sample storage and holding times;
- c. Sample preparation methods;
- d. Analytical procedures, including:
 - i) Scope and application of the procedure;
 - ii) Sample matrix;
 - iii) Potential interferences;
 - iv) Precision and accuracy of the methodology; and
 - v) Method detection limits.
- e. Calibration procedures and frequency;
- f. Data reduction, validation and reporting;
- g. Internal quality control checks, laboratory performance and systems audits and frequency, including:
 - i) Method blank(s);
 - ii) Laboratory control sample(s);
 - iii) Calibration check sample(s);
 - iv) Replicate sample(s);
 - v) Matrix-spiked sample(s);
 - vi) "Blind" quality control sample(s);

- vii) Control charts;
- viii) Surrogate samples;
- ix) Zero and span gases; and
- x) Reagent quality control checks.
- h. Preventive maintenance procedures and schedules;
- i. Corrective action (for laboratory problems); and
- j. Turnaround time.

A performance audit may be conducted by EPA on the laboratories selected by the Respondent.

C. Interim Measures Data Management Plan

The Respondent shall develop and initiate an Interim Measures Data Management Plan as part of the Data Management Plan described in Attachment B to this Order to document and track investigation data and results. This plan shall identify data documentation materials and procedures, project file requirements, and project-related progress reporting procedures and documents. The plan shall also provide the format to be used to present the raw data and conclusions related to Interim Measures in the Interim Measures Design Documents and Interim Measures Report.

1. Data Record

The data record shall include the following:

- a. Unique sample or field measurement code;
- b. Sampling or field measurement location and sample or measurement type;
- c. Sampling or field measurement raw data;
- d. Laboratory analysis ID number;
- e. Property or component measured; and
- f. Result of analysis (e.g., concentration).

2. Tabular Displays

The following data shall be available to EPA on a disc compatible with EPA's personal computers and presented in tabular displays:

- a. Unsorted (raw) data;
- b. Results for each medium, or for each constituent monitored;
- c. Data reduction for numerical analysis;
- d. Sorting of data by potential stratification factors (e.g., location, soil layer, topography); and
- e. Summary data.

3. Graphical Displays

The following data shall be presented in graphical formats (e.g., bar graphs, line graphs, area or plan maps, isopleth plots, cross-sectional plots or transects, three dimensional graphs, etc.):

- a. Sampling location and sampling grid;
- b. Boundaries of sampling area, and areas where more data are required;
- c. Levels of contamination at each sampling location;
- d. Geographical extent of contamination;
- e. Contamination levels, averages, and maxima;
- f. Changes in concentration in relation to distance from the source, time, depth or other parameters; and
- g. Features affecting intramedia transport and potential receptors.

TASK II: INTERIM MEASURES DESIGN

A. Design Plans and Specifications

Respondent shall develop clear and comprehensive design plans and specifications which include but are not limited to the following:

1. Discussion of the design strategy and the design basis, including:
 - a. Compliance with all applicable or relevant environmental and public health standards; and
 - b. Minimization of environmental and public impacts.
 - c. Use of currently accepted environmental control measures and technology;
 - d. The constructability of the design; and
 - e. Use of currently acceptable construction practices and techniques.
2. Description of assumptions made and detailed justification of these assumptions.
3. Discussion of the possible sources of error and references to possible operation and maintenance problems.
4. Detailed drawings of the proposed design including;
 - a. Qualitative flow sheets;
 - b. Quantitative flow sheets;
 - c. Facility Layouts;
 - d. Utility Locations.
5. Tables listing materials, equipment, and specifications.
6. Tables giving material balances.
7. Appendices including:
 - a. Sample calculations (one example presented and explained clearly for a significant or unique design calculations);
 - b. Derivation of equations essential to understanding the report; and

c. Results of laboratory or field tests.

Before submitting the project specifications, Respondent shall coordinate and cross-check the specifications and drawings and complete the proofing of the edited specifications to ensure that drawings and specifications are correlated.

B. Interim Measures Operation and Maintenance Plan

Respondent shall prepare an Interim Measures Operation and Maintenance Plan to cover both implementation and long-term maintenance of the interim measure(s). The plan shall be composed of the following elements:

1. Equipment start-up and operator training.
Respondent shall prepare, and include in the technical specifications governing treatment systems, contractor requirements for providing: appropriate service visits by experience personnel to supervise the installation, adjustment, start-up and operation of the treatment systems, and training covering appropriate operational procedures once the start up has been successfully accomplished.
2. Description of normal operation and maintenance (O&M):
 - a. Description of tasks for operation;
 - b. Description of tasks for maintenance;
 - c. Description of prescribed treatment or operation conditions; and
 - d. Schedule showing frequency of each O&M task;
 - e. Common and/or anticipated remedies.
3. Description of routine monitoring and laboratory testing:
 - a. Description of monitoring tasks;
 - b. Description of required laboratory tests and their interpretation;
 - c. Required QA/QC; and
 - d. Schedule of monitoring frequency and date, if appropriate, when monitoring may cease.

4. Description of equipment:

- a. Equipment identification;
- b. Installation of monitoring components;
- c. Maintenance of site equipment; and
- d. Replacement schedule for equipment and installed components.

5. Records and reporting mechanisms required.

- a. Daily operating logs;
- b. Laboratory records;
- c. Mechanism for reporting emergencies;
- d. Personnel and maintenance records; and
- e. Monthly/annual reports to Federal/State agencies.

The Interim Measures Operation and Maintenance Plan shall be submitted with the Final Interim Measures Design Documents.

C. Project Schedule

Respondent shall revise the detailed Project Schedule in the Interim Measures Project Management Plan to address construction and implementation of the interim measure(s). A revised Project Schedule shall be submitted simultaneously with the Final Design Documents.

D. Interim Measure Final Design Documents

The Final Design Documents shall consist of the Final Design Plans and Specifications (100% complete), the Final Draft Operation and Maintenance Plan, and project schedule revision in the Interim Measures Project Management Plan. Respondent shall submit the final documents with reproducible drawings and reproducible drawings and specifications. The quality of the design documents shall be such that Respondent would be able to include them in a bid package and invite contractors to submit bids for the construction project.

TASK III: INTERIM MEASURE CONSTRUCTION

A. Interim Measure Construction Quality Assurance Plan

Respondent shall revise the QAPP, to be submitted pursuant to Attachment B of this Order, to identify and document the objectives and framework for the development of an interim measures construction quality assurance program. The Interim Measure Construction of the QAPP ("IMCQA Plan") shall include, but not be limited to, the following: personnel qualifications; inspection activities; sampling requirements; documentation; responsibility and authority of all organizations (i.e., technical consultants, construction firms, etc.) and key personnel involved in the construction of the interim measure. Reporting requirements for CQA activities shall be described in detail in CQA plan. This plan shall include such items as daily summary reports, inspection data sheets, problem identification and interim measures reports, design acceptance reports, and final documentation. Provisions for the final storage of all records shall be presented in the CQA plan. The QAPP shall identify a CQA officer and the necessary supporting inspection staff.

B. Construction Implementation

Following EPA approval of the Interim Measure Final Design Documents and IMCQA Plan, the Respondent shall implement construction in accordance with procedures, specifications, and schedules in the EPA-approved Interim Measures Design Documents Interim Measures Project Management Plan, and Construction Quality Assurance (CQA) Plan

C. Inspection Activities

The observations and tests that will be used to monitor the construction and/or installation of the components of the interim measure(s) shall be summarized in the IMCQA Plan. The IMCQA Plan shall include the scope and frequency of each type of inspection. Inspections shall verify compliance with all environmental requirements and include, but not be limited to air quality and emissions monitoring records, waste disposal records (e.g., RCRA transportation manifests), etc. The inspection should also ensure compliance with all health and safety procedures. In addition to oversight inspections, Respondent shall conduct the following activities:

1. Preconstruction inspection and meeting
Respondent shall conduct a preconstruction inspection and meeting to:

- a. Review methods for documenting and reporting

inspection data;

- b. Review methods for distributing and storing documents and reports;
- c. Review work area security and safety protocol;
- d. Discuss any appropriate modifications of the construction quality assurance plan to ensure that site-specific considerations are addressed; and
- e. Conduct a site walk-around to verify that the design criteria, plans, and specifications are understood and to review material and equipment storage locations.

The preconstruction inspection and meeting shall be documented by a designated person and minutes should be transmitted to all parties.

- 2. Respondent will conduct inspections to monitor the constructions and/or installation of components of the corrective measure. Inspections shall verify compliance with all environmental requirements and include, but not be limited to, review of air quality and emissions monitoring records, waster disposal records (e.g., RCRA transportation manifests), etc. Inspections will also ensure compliance with all health and safety procedures. Treatment equipment will be operationally tested by the Respondent. The Respondent will certify that the equipment has performed to meet the purpose and intent of the specifications. Retesting will be completed where deficiencies are revealed.

TASK IV: REPORTS

A. Progress

Respondent shall provide the EPA with signed, bimonthly progress reports containing:

- 1. A description and estimate of the percentage of the interim measures completed;
- 2. Summaries of all findings;
- 3. Summaries of all changes made in the interim

measures during the reporting period;

4. Summaries of all contacts with representative of the local community, public interest groups, or State government during the reporting period;
5. Summaries of all problems or potential problems encountered during the reporting period;
6. Actions being taken to rectify problems;
7. Changes in personnel during the reporting period;
8. Projected work for the next reporting period; and
9. Copies of daily reports, inspection reports, laboratory/monitoring data, etc.

B. Interim Measures Workplan

Respondent shall submit an Interim Measures Workplan as described in this Attachment. Respondent shall submit revisions to the Interim Measures Project Management Plan to depict changes in the Project Schedule.

C. Revisions to QAPP

Respondent shall submit revisions to the QAPP, described in Attachment B to the Order, as described in this Attachment.

D. Interim Measure Design Documents

Respondent shall submit the Design Documents as described in this Attachment.

E. Interim Measures Operation and Maintenance Plan

Respondent shall submit an Interim Measures Operation and Maintenance Plan as described in this Attachment.

F. Interim Measures Report

At the completion of the construction of the project (except for long term operation, maintenance, and monitoring), Respondent shall submit a draft Interim Measures Implementation Report to EPA. The Report shall document that the project is consistent with the design specifications, and that the interim measures are performing adequately. The Report shall include, but not be limited to the following elements:

1. Synopsis of the interim measures and certification of the design and construction;

2. Explanation of any modifications to the plans and why these were necessary for the project;
3. Listing of the criteria, established before the interim measures were initiated, for judging the functioning of the interim measures and also explaining any modification to these criteria;
4. Results of facility monitoring, indicating that the interim measures will meet or exceed the performance criteria; and
5. Explanation of the operation and maintenance (including monitoring) to be undertaken at the facility.

This report shall include of the inspection summary reports, inspection data sheets, problem identification and corrective reporting data sheets, design engineers' acceptance reports, deviations from design and material specifications (with justifying documentation) and as-built drawings.

Respondent shall finalize the Interim Measures Work Plan and the Interim Measures Implementation Report incorporating comments received on draft submissions.