



Sept 10, '95

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

IN THE MATTER OF:) Docket No. V-W- '95-C-309
)
The Boerke Site) ADMINISTRATIVE ORDER BY
Oak Creek, Wisconsin) CONSENT PURSUANT TO
) SECTION 106 OF THE
) COMPREHENSIVE
) ENVIRONMENTAL RESPONSE,
Respondent:) COMPENSATION, AND
E.I. du Pont de Nemours and) LIABILITY ACT OF 1980,
Company) as amended, 42 U.S.C.
) § 9606(a)
)

I. JURISDICTION AND GENERAL PROVISIONS

This Administrative Order on Consent ("the Order") is entered into voluntarily by the United States Environmental Protection Agency ("U.S. EPA") and the Respondent. The Order is issued pursuant to the authority vested in the President of the United States by Sections 104, 106(a), 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. §§ 9604, 9606(a), 9607 and 9622. This authority has been delegated to the Administrator of the U.S. EPA by Executive Order No. 12580, January 23, 1987, 52 Federal Register 2923, and further delegated to the Regional Administrators by U.S. EPA Delegation Nos. 14-14-A, 14-14-C and 14-14-D, and to the Director, Waste Management Division, Region 5, by Regional Delegation Nos. 14-14-A, 14-14-C and 14-14-D.

This Order requires the Respondent to conduct an Engineering Evaluation and Cost Analysis ("EE/CA") Report of alternative response actions pursuant to 40 CFR Part 300.415(b)(4)(i), and the Superfund Accelerated Cleanup Model ("SACM") guidance, to address the environmental concerns in connection with property located at Ryan Road, South Milwaukee, Wisconsin (the "Boerke Site" or the "Site").

A copy of this Order will also be provided to the State of Wisconsin, which has been notified of the issuance of this Order pursuant to Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

Respondent's participation in this Order shall not constitute nor be construed as an admission of liability or of U.S. EPA's findings or determinations contained in this Order except in a proceeding to enforce the terms of this Order. Respondent agrees to comply with and be bound by the terms of this Order. Respondent further agrees that it will not contest the basis or validity of this Order or its terms.

II. PARTIES BOUND

This Order applies to and is binding upon U.S. EPA, and upon Respondent and Respondent's receivers, trustees, successors and assigns. Any change in ownership or corporate status of Respondent including, but not limited to, any transfer of assets or real or personal property shall not alter such Respondent's responsibilities under this Order.

Respondent shall ensure that its contractors, subcontractors, and representatives receive a copy of this Order, and comply with this Order. Respondent shall be responsible for any noncompliance with this Order.

III. U.S. EPA'S FINDINGS OF FACT

Based on available information, including the Administrative Record in this matter, U.S. EPA hereby finds that the factual statutory prerequisites under CERCLA necessary for issuance of this Order have been met. U.S. EPA's findings include the following:

1. The Boerke Site (Site) is an abandoned, unlined, industrial landfill that may have received arsenic wastes from a dye manufacturing plant that operated from approximately 1915 until 1939 next to the property. The Site includes an adjacent wetland area that receives runoff from the landfill and an intermittent stream that carries drainage from the wetland to Lake Michigan, approximately 1/8 of a mile northeast of the Site. The landfill covers approximately 30,000 square feet with an average depth of 2.5 feet. The surface is black in color and sparsely vegetated; some areas are covered with black globules resembling coal tar. Naphthalene, which is indicative of coal tar, and total mercury were detected in samples taken from the landfill, wetland, and stream.

2. The actual date of disposal activities is poorly documented but appears to have taken place concurrently with the production activities of the adjacent Carrolville Dye Plant (the Plant). The Plant was located on property currently owned by the Allis Chalmers Trust. Auxiliary facilities, including the landfill and lagoons were located on adjacent property currently owned by the Boerke Family Trust. The Plant was owned and operated by the Newport Company from 1915 until 1930, as a manufacturer of phenols and later of intermediates and dyes. Arsenic wastes, a by-product of the dye manufacturing process, were disposed of at the landfill located on property currently owned by the Boerke Family Trust. At that time, from 1915-1930, the property currently owned by the Boerke Family Trust was owned by the Newport Company. From 1930-1931 the plant, and the processes used therein and the property, including the Site, was owned and operated by Newport Chemical Corporation, the successor of the Newport Company. In August of

1931, E.I. du Pont de Nemours & Company ("DuPont") acquired the Newport Chemical Corporation. DuPont owned the Plant until 1939. The Site is currently owned by the Boerke Family Trust.

3. A preliminary assessment (PA) of the Site was completed in 1987 by the Wisconsin Department of Natural Resources (WDNR). Sampling conducted at that time indicated that high levels of arsenic were present in the landfill area, the adjacent wetland, and the stream. In 1989, E.I. du Pont de Nemours & Company contracted with OH Materials Company to investigate the Site in conjunction with a site investigation on an adjacent property. The investigation included collection of surface and subsurface soil samples, deep soil borings, and test pits. Arsenic levels as high as 35,000 milligram per kilogram (mg/kg) were found in the landfill and levels as high as 380 mg/kg were found in the stream sediment at a point 1,050 feet downgradient of the landfill. Arsenic was also detected in a water sample from the wetland at levels exceeding federal standards. No arsenic was detected in a sample from a residential well located approximately 0.1 mile southeast of the landfill.

4. In August of 1994, WDNR requested that the U.S. EPA perform a site investigation (SI). On October 18, 1994, On-Scene Coordinator (OSC) Betty Lavis and Site Assessment Manager (SAM) Rey Rivera, of the U.S. EPA Office of Superfund Emergency and Enforcement Response Branch, met WDNR officials Robert Amerson (Central Office) and John Krahling (District Office) at the Site to conduct a walk through of the Site. It was decided the Site warranted further investigation and an integrated Site Assessment was scheduled for early December.

5. On December 7, 1994, the Region V Technical Assistance Team (TAT), the OSC, the SAM, and Amy Parkinson of WDNR met at the Site to collect samples and document Site conditions. Observation of Site conditions was somewhat obstructed by seven inches of snow which had fallen the previous night. Six soil and sediment samples (0-12 inches) were collected; locations were selected with the intent of confirming the results of previous sampling events. Samples were analyzed for semi-volatile organic compounds and 13 priority pollutant metals plus copper and zinc.

6. The Boerke Site is located in a rural area south of the City of South Milwaukee, on Ryan Road (latitude 42° 52.252" N; longitude 82° 50.907" W) in the City of Oak Creek, County of Milwaukee, State of Wisconsin. The Site is bordered to the south by Ryan Road, to the east by Lake Michigan, and to the north and west by industrial properties. The area of the landfill itself covers approximately 30,000 square feet with an average depth of 2.5 feet. A fence with a locked gate separates the Site from Ryan Road but does not surround the entire property.

7. The landfill area is in a low-lying marshy area. The area immediately adjacent to the landfill is a wetland; the wetland is

drained by an intermittent stream that flows directly into Lake Michigan 1/8 of a mile away. During the walk through in October of 1994, the team observed many bird species, both indigenous and migratory, using the area around the Site. Animal tracks were also observed in several places on Site. The property around the Site is heavily wooded, particularly the area around the stream.

8. Approximately 17,000 people live in and around Oak Creek, 30 within one mile of the Site; the nearest residence is located .2 miles west of the Site. Sampling from this well showed no arsenic contamination. Bender Park, a large wooded public park with a network of multi-use access trails, lies directly south of the Site and borders Lake Michigan.

9. The analytical results for soil and sediment samples collected during the 12/7/94 Site assessment (SA) confirms that elevated levels of arsenic are present in the area of the landfill and have been released to the wetland and stream. Total arsenic levels as high as 42,000 mg/kg were found in the landfill area; the wetland area had total arsenic levels as high as 4,900 mg/kg. Arsenic levels in the lower part of the stream as it discharges to Lake Michigan were also elevated at 3400 mg/kg. Toxic Characteristic Leaching Procedure (TCLP) was performed on all samples. Samples collected from the landfill and wetland contained TCLP arsenic levels of 108 milligrams per liter (mg/L) and 23 mg/L respectively. As described in 40 CFR Ch.1, Section 261.243, the Regulatory Level for arsenic in soils is 5.0 mg/L. Approximately 10,000 cubic yards of soil and sediment are contaminated with high levels of arsenic.

IV. U.S. EPA'S CONCLUSIONS OF LAW AND DETERMINATIONS

Based on the Findings of Fact set forth above, and the Administrative Record in this matter, U.S. EPA has determined that:

1. The Boerke Site is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).
2. Arsenic is a "hazardous substance" as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).
3. Respondent is a "person" as defined by Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).
4. Respondent E.I. du Pont de Nemours & Company is a person who at the time when hazardous substances may have been disposed of owned and/or operated the Boerke Site. Respondent therefore may be liable under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).
5. The conditions described in the Findings of Fact above constitute an actual or threatened "release" of a hazardous

substance from the facility into the "environment" as defined by Sections 101(8) and (22) of CERCLA, 42 U.S.C. §§ 9601(8) and (22).

6. The conditions present at the Site constitute a threat to public health, welfare, or the environment based upon the factors set forth in Section 300.415(b)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan, as amended ("NCP"), 40 CFR § 300.415(b)(2). These factors include, but are not limited to, the following:

a. actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, pollutants or contaminants; this factor is present at the Site due to the existence of arsenic. Analysis of soil and sediment collected from the Boerke Site indicates the presence of TCLP arsenic in concentrations ranging from 23 to 108 mg/L. Access to the Boerke Site is only partially restricted. The nearest residence is within .2 miles of the Site. A public park with a trail system borders the Site to the south. The Allis Chalmers Chemical plant operates a chemical manufacturing plant on property adjacent to the northwest border of the Site. The potential exists for trespassers such as neighborhood children, hikers, and hunters, to come in contact with high levels of arsenic.

During the October 1994 Site walk through, animal tracks were observed in the arsenic contaminated waste in the landfill/marsh area. The area around and adjacent to the landfill area, which is mostly non-vegetated with a few stressed plants, is heavily vegetated and supports a wide variety of wildlife, including waterfowl, small mammals, large mammals such as deer, and reptiles. Arsenic is a known carcinogen and, in addition, has toxic effects on humans and some mammals. Long term ingestion of low levels of arsenic have been associated with skin cancers and may increase the risk of internal cancers. It can also result in anemia, leukopenia, nerve damage, damage to arteries and dermal lesions. Ingestion of water contaminated with levels of inorganic arsenic at 100 mg/L can cause death.

Arsenic has long been used in the production of herbicides and insecticides, as it has a detrimental effect on many plants and animals. The effect of arsenic on non-human species, according to the U.S. Fish and Wildlife Service Biological Report 85, January 1988, tends to be primarily acute and subacute rather than chronic and/or carcinogenic. The report also states that single oral doses of arsenicals fatal to 50% of sensitive species tested ranged from 17 to 48 milligram/kilogram (mg/kg) body weight (BW) in birds and from 2.5 to 33 mg/kg BW in mammals. Sensitive species of mammals (including many varieties of birds, small mammals and deer) were adversely affected at doses of 1 to 10 mg of arsenic per

kilogram BW. Sensitive aquatic species were damaged at water concentrations of 19 to 48 micrograms of arsenic per liter. Arsenic is also a known teratogen in several classes of vertebrates. Arsenic bioaccumulates in sensitive species but does not appear to biomagnify.

The primary route of exposure for both humans and animals is through ingestion of food (such as plants that accumulate arsenic), or water containing arsenic, or through inhalation of fine particles (dust) containing arsenic. Arsenic could enter the food chain through direct contact with the contaminated water and sediment and/or ingestion of plants. The potential for waterfowl to come in contact with arsenic-contaminated sediment or water is high. Continued human and animal exposure is likely until the contaminants at the Site are removed.

b. actual or potential contamination of drinking water supplies or sensitive ecosystems; this factor is present at the Site due to the presence of arsenic in the wetland and stream. The landfill is situated in an environmentally sensitive area adjacent to a wetland and heavily wooded public park.

c. high levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate; this factor is present at the Site due to the existence of arsenic. Sampling at the Site shows that contaminants from the open, unlined landfill have already migrated to the wetland and into the stream, resulting in levels of total arsenic as high as 4,900 mg/kg in sediment samples taken from the wetland and as high as 3400 mg/kg in sediment samples taken from the stream. The stream flows into Lake Michigan 1/8 of a mile northeast of the Site.

d. weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released; this factor is present at the Site due to the existence of arsenic. The landfill at the Boerke Site is currently unlined and uncovered. Rain water and snow melt can accumulate and flow off the landfill. This results in a release to the wetland area (where high levels of arsenic are now found). As levels of contaminated water continue to rise in the wetland area, the excess overflows into the creek and eventually exits into nearby Lake Michigan. Flood events can also cause the contaminated soil and sediment to migrate into the wetland and stream.

e. the unavailability of other appropriate federal or state response mechanisms to respond to the release; this factor supports the actions required by this Order at the Site

because the WDNR does not have adequate funding to conduct a removal action at the Boerke Site.

7. The actual or threatened release of hazardous substances from the Site may present an imminent and substantial endangerment to the public health, welfare, or the environment within the meaning of Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

8. The actions required by this Order, if properly performed, are consistent with the NCP, 40 CFR Part 300, as amended, and with CERCLA, and are reasonable and necessary to protect the public health, welfare, and the environment.

V. ORDER

Based upon the foregoing Findings of Fact, Conclusions of Law and Determinations, and the Administrative Record for this Site, it is hereby ordered and agreed that Respondent shall comply with the following provisions, including but not limited to all attachments to this Order and all documents incorporated by reference into this Order, and perform the following actions:

1. Designation of Contractor, Project Coordinator, or On-Scene Coordinator

Respondent shall perform the actions required by this Order itself or retain (a) contractor(s) to undertake and complete the requirements of this Order. Respondent shall notify U.S. EPA, in writing, of Respondent's qualifications or the name and qualifications of such contractor, whichever is applicable, within 10 business days of the effective date of this Order. Respondent shall also notify U.S. EPA of the name and qualifications of any other contractors or subcontractors retained to perform work under this Order at least 5 business days prior to commencement of such work. U.S. EPA retains the right to disapprove of the Respondent or any of the contractors and/or subcontractors retained by the Respondent. If U.S. EPA disapproves a selected contractor, Respondent shall retain a different contractor within 10 business days following U.S. EPA's disapproval, and shall notify U.S. EPA of that contractor's name and qualifications within 10 business days of U.S. EPA's disapproval.

Within 5 business days after the effective date of this Order, the Respondent shall designate a Project Coordinator who shall be responsible for administration of all the Respondent's actions required by the Order. Respondent shall submit the designated coordinator's name, address, telephone number, and qualifications to U.S. EPA. U.S. EPA retains the right to disapprove of any Project Coordinator named by the Respondent. If U.S. EPA disapproves a selected Project Coordinator, Respondent shall retain a different Project Coordinator within 5 business days following

U.S. EPA's disapproval and shall notify U.S. EPA of that person's name and qualifications within 5 business days of U.S. EPA's disapproval. Receipt by Respondent's Project Coordinator of any notice or communication from U.S. EPA relating to this Order shall constitute receipt by Respondent.

The U.S. EPA has designated Betty Lavis of the Emergency and Enforcement Response Branch, Region 5, as its On-Scene Coordinator ("OSC"). Respondent shall direct all submissions required by this Order to the OSC at 77 West Jackson Boulevard, (HSE-5J), Chicago, Illinois 60604-3590, by certified or express mail. Respondent shall also send a copy of all submissions to Thomas Nash, Assistant Regional Counsel, Mailcode CS-29A, 77 West Jackson Boulevard, Chicago, Illinois, 60604-3590. Respondent is encouraged to make its submissions to U.S. EPA on recycled paper (which includes significant postconsumer waste paper content where possible) and using two-sided copies.

U.S. EPA and Respondent shall have the right, subject to the immediately preceding paragraph, to change its designated OSC or Project Coordinator. U.S. EPA shall notify the Respondent, and Respondent shall notify U.S. EPA, as early as possible before such a change is made, but in no case less than 24 hours before such a change. The initial notification may be made orally but it shall be promptly followed by a written notice within three business days of oral notification.

2. Work to Be Performed

Respondent shall develop and submit to U.S. EPA an EE/CA Report in accordance with the attached Scope of Work ("SOW"). This SOW is incorporated into and made an enforceable part of this Order.

The EE/CA Report shall be consistent with, at a minimum, U.S. EPA guidance entitled, "Guidance on Conducting Non-Time Critical Removal Actions Under CERCLA", EPA/540-R-93-057, Publication 9360.32, PB 93-963402, dated August 1993.

2.1 EE/CA Report

Within 90 calendar days after U.S. EPA's approval of the Work Plan, the Respondent shall submit to U.S. EPA for approval a draft EE/CA Report that is consistent with this Order and the SOW.

U.S. EPA may approve, disapprove, require revisions to, or modify the draft EE/CA Report and shall notify Respondent in writing of such, and specify any deficiencies and required modifications to the draft EE/CA. . If U.S. EPA requires revisions, Respondent shall submit a revised EE/CA Report which responds to U.S. EPA's comments and incorporates all of U.S. EPA's required modifications within 10 business days of receipt of U.S. EPA's written notification.

In the event of U.S. EPA disapproval of the revised EE/CA Report, Respondent may be deemed in violation of this Order; however, approval shall not be unreasonably withheld by U.S. EPA. In such event, U.S. EPA retains the right to terminate this Order, conduct a complete EE/CA, and obtain reimbursement for costs incurred in conducting the EE/CA from the Respondent.

The revised report shall also include the following certification signed by a person who supervised or directed the preparation of that report:

Under penalty of law, I certify that, to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of this EE/CA Report, the information submitted is true, accurate, and complete.

Respondent shall not commence or undertake any removal actions at the Site without prior U.S. EPA approval.

2.2 Health and Safety Plan

Within 30 calendar days after the effective date of this Order, the Respondent shall submit for EPA review and comment a plan that ensures the protection of the public health and safety during performance of on-site work under this Order. This plan shall comply with applicable Occupational Safety and Health Administration ("OSHA") regulations found at 29 CFR Part 1910. If EPA determines it is appropriate, the plan shall also include contingency planning. Respondent shall incorporate all changes to the plan recommended by EPA, and implement the plan during the pendency of the removal action.

2.3 Quality Assurance and Sampling

All sampling and analyses performed pursuant to this Order shall conform to U.S. EPA direction, approval, and guidance regarding sampling, quality assurance/quality control ("QA/QC"), data validation, and chain of custody procedures. Respondent shall ensure that the laboratory used to perform the analyses participates in a QA/QC program that complies with U.S. EPA guidance.

Upon written request by U.S. EPA, Respondent shall have such a laboratory analyze samples submitted by U.S. EPA for quality assurance monitoring. Respondent shall provide to U.S. EPA the quality assurance/quality control procedures followed by all sampling teams and laboratories performing data collection and/or analysis. Respondent shall also ensure provision of analytical tracking information consistent with, at a minimum, OSWER Directive No. 9240.0-2B, "Extending the Tracking of Analytical Services to PRP-Lead Superfund Sites."

Upon request by U.S. EPA, Respondent shall allow U.S. EPA or its authorized representatives to take split and/or duplicate samples of any samples collected by Respondent or its contractors or agents while performing work under this Order. Respondent shall notify U.S. EPA not less than 5 business days in advance of any sample collection activity. U.S. EPA shall have the right to take any additional samples that it deems necessary.

2.4 Reporting

Respondent shall submit a monthly written progress report to U.S. EPA concerning actions undertaken pursuant to this Order, beginning 30 calendar days after the effective date of this Order, until termination of this Order, unless otherwise directed in writing by the OSC. These reports shall describe all significant developments during the preceding period, including the work performed and any problems encountered, analytical data received during the reporting period, and developments anticipated during the next reporting period, including a schedule of work to be performed, anticipated problems, and planned resolutions of past or anticipated problems.

Any Respondent that owns any portion of the Site shall, at least 30 days prior to the conveyance of any interest in real property at the Site, give written notice of this Order to the transferee and written notice of the proposed conveyance to U.S. EPA and the State. The notice to U.S. EPA and the State shall include the name and address of the transferee. The party conveying such an interest shall require that the transferee will provide access as described in Section V.3 (Access to Property and Information).

2.5 Additional Work

In the event that the U.S. EPA or the Respondent determines that additional work, including EE/CA support sampling and/or an engineering evaluation, is necessary to accomplish the objectives of the EE/CA Report, notification of such additional work shall be provided in writing. Any additional work which Respondent determines to be necessary shall be subject to U.S. EPA's written approval prior to commencement of the additional work. Respondent shall complete, in accordance with standards, specifications, and schedules U.S. EPA has approved, any additional work Respondent has proposed, and which U.S. EPA has approved in writing or that U.S. EPA has determined to be necessary, and has required of the Respondent in writing pursuant to this paragraph.

3. Access to Property and Information

Respondent shall provide or obtain access to the Site and off-site areas to which access is necessary to implement this Order, and shall provide access to all records and documentation related to the conditions at the Site and the actions conducted pursuant to

this Order. Such access shall be provided to U.S. EPA employees, contractors, agents, consultants, designees, representatives, and State of Wisconsin representatives. These individuals shall be permitted to move freely at the Site and appropriate off-site areas to which Respondent has access in order to conduct actions which U.S. EPA determines to be necessary. All persons with access to the Site pursuant to this Order, including representatives of U.S. EPA, shall comply with the health and safety plan for the Site. Respondent shall submit to U.S. EPA, upon request/receipt, the results of all sampling or tests and all other data generated by Respondent or its contractor(s), or on the Respondent's behalf during implementation of this Order.

Where work/action under this Order is to be performed in areas owned by or in possession of someone other than Respondent, Respondent shall use its best efforts to obtain all necessary access agreements within 14 calendar days after the effective date of this Order, or as otherwise specified in writing by the OSC. Respondent shall immediately notify U.S. EPA if, after using its best efforts, it is unable to obtain such agreements. Respondent shall describe in writing its efforts to obtain access. U.S. EPA may, in its discretion, then assist Respondent in gaining access, to the extent necessary to effectuate the actions described herein, using such means as U.S. EPA deems appropriate. Respondent shall reimburse U.S. EPA for all costs and attorneys fees incurred by the U.S. EPA in obtaining such access.

4. Record Retention, Documentation, Availability of Information

Respondent shall preserve all documents and information in its possession relating to work performed under this Order, or relating to the hazardous substances found on or released from the Site, for six years following completion of the actions required by this Order. At the end of this six-year period and at least 60 days before any document or information is destroyed, Respondent shall notify U.S. EPA that such documents and information are available to U.S. EPA for inspection, and upon request, shall provide the originals or copies of such documents and information to U.S. EPA. In addition, Respondent shall provide copies of any such non-privileged documents and information retained under this Section at any time before expiration of the six-year period at the written request of U.S. EPA.

Respondent may assert business confidentiality claims covering part or all of the documents or information submitted to U.S. EPA under this Order to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Documents or information determined to be confidential by U.S. EPA will be afforded the protection specified in 40 C.F.R. Part 2; Subpart B. If no claim of confidentiality accompanies documents or information when they are submitted to EPA, or if U.S. EPA has notified Settling Defendants that the documents or

information are not confidential under the standards of Section 104(e)(7) of CERCLA, the public may be given access to such documents or information without further notice to Settling Defendants.

If Respondent asserts a privilege in lieu of providing documents, they shall provide U.S. EPA with the following: (1) the title of the document, record, or information; (2) the date of the document, record, or information; (3) the name and title of the author of the document, record, or information; (4) the name and title of each addressee and recipient; (5) a description of the contents of the document, record, or information; and (6) the privilege asserted by Respondent. However, no documents, reports, or other information created or generated pursuant to the requirements of this Order shall be withheld on the grounds that they are privileged.

5. Off-Site Shipments

All hazardous substances, pollutants or contaminants removed off-site pursuant to this Order for treatment, storage or disposal shall be treated, stored, or disposed of at a facility in compliance, as determined by U.S. EPA, with the U.S. EPA Revised Off-Site Rule, 40 CFR § 300.440, 58 Federal Register 49215 (Sept. 22, 1993).

6. Compliance With Other Laws

Respondent shall perform all activities required pursuant to this Order in accordance with all the requirements of all federal and state laws and regulations. U.S. EPA has determined that the activities contemplated by this Order are consistent with the National Contingency Plan ("NCP").

Except as provided in Section 121(e) of CERCLA and the NCP, no permit shall be required for any portion of the activities conducted entirely on-site. Where any portion of the activities requires a federal or state permit or approval, the Respondent shall submit timely applications and take all other actions necessary to obtain and to comply with all such permits or approvals.

This Order is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

7. Emergency Response and Notification of Releases

If any incident, or change in Site conditions, during the activities conducted pursuant to this Order causes or threatens to cause an additional release of hazardous substances from the Site or an endangerment to the public health, welfare, or the environment, the Respondent shall immediately take all appropriate action to prevent, abate or minimize such release or endangerment

caused or threatened by the release. Respondent shall also immediately notify the OSC or, in the event of her unavailability, shall notify the Regional Duty Officer, Emergency Response Branch, Region 5 at (312) 353-2318, of the incident or Site conditions. If Respondent fails to respond, U.S. EPA may respond to the release or endangerment and reserve the right to recover costs associated with that response.

Respondent shall submit a written report to U.S. EPA within 7 business days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. Respondent shall also comply with any other notification requirements, including those in CERCLA Section 103, 42 U.S.C. § 9603, and Section 304 of the Emergency Planning and Community Right-To-Know Act, 42 U.S.C. § 11004.

VI. AUTHORITY OF THE U.S. EPA ON-SCENE COORDINATOR

The OSC shall be responsible for overseeing the implementation of this Order. The OSC shall have the authority vested in an OSC by the NCP, including the authority to halt, conduct, or direct any activities required by this Order, or to direct any other response action undertaken by U.S. EPA or Respondent at the Site. Absence of the OSC from the Site shall not be cause for stoppage of work unless specifically directed by the OSC.

The U.S. EPA OSC shall have the authority to extend deadlines in this Order or attachments thereto, or in schedules submitted by Respondent and approved by U.S. EPA, in accordance with the provisions of Section XVI of this Order.

VII. REIMBURSEMENT OF COSTS

Respondent shall pay all past response costs and oversight costs of the U.S. EPA related to the Site that are not inconsistent with the NCP. As soon as practicable after the effective date of this Order, U.S. EPA will send Respondent a bill for "past response costs" at the Site. U.S. EPA's bill will include an Itemized Cost Summary. "Past response costs" are all costs, including, but not limited to, direct and indirect costs and interest, that the U. S. EPA, its employees, agents, contractors, consultants, and other authorized representatives incurred and paid with regard to the Site prior to the date through which the Itemized Cost Summary runs.

In addition, U.S. EPA will send Respondent a bill and an Itemized Cost Summary for "oversight costs" on an annual basis. "Oversight costs" are all costs, including, but not limited to, direct and indirect costs, that the U. S. EPA incurs in reviewing or

developing plans, reports and other items pursuant to this AOC. "Oversight costs" shall also include all costs, including direct and indirect costs, paid by the U. S. EPA in connection with the Site between the date through which the U.S. EPA's Itemized Cost Summary for "past response costs" ran and the effective date of this AOC.

Respondent shall, within 30 calendar days of receipt of a bill and Itemized Cost Summary, remit a cashier's or certified check for the amount of the bill made payable to the "Hazardous Substance Superfund," to the following address:

U.S. Environmental Protection Agency
Superfund Accounting
P.O. Box 70753
Chicago, Illinois 60673

Respondent shall simultaneously transmit a copy of the check to the Director, Waste Management Division, U.S. EPA Region 5, 77 West Jackson Blvd., Chicago, Illinois, 60604-3590. Payments shall be designated as "Response Costs - Boerke Site" and shall reference the payor's name and address, the U.S. EPA site identification number (QO), and the docket number of this Order.

In the event that any payment is not made within the deadlines described above, Respondent shall pay interest on the unpaid balance. Interest is established at the rate specified in Section 107(a) of CERCLA, 42 U.S.C. § 9607(a). The interest shall begin to accrue on the date of the Respondent's receipt of the bill (or for past response costs, on the effective date of this Order). Interest shall accrue at the rate specified through the date of the payment. Payments of interest made under this paragraph shall be in addition to such other remedies or sanctions available to the U.S. EPA by virtue of Respondent's failure to make timely payments under this Section.

Respondent may dispute all or part of a bill for Future Response Costs submitted under this Order, if Respondent alleges that U.S. EPA has made an accounting error, or if Respondent alleges that a cost item is inconsistent with the NCP.

If any dispute over costs is resolved before payment is due, the amount due will be adjusted as necessary. If the dispute is not resolved before payment is due, Respondent shall pay the full amount of the uncontested costs into the Hazardous Substance Fund as specified above on or before the due date. Within the same time period, Respondent shall pay the full amount of the contested costs into an interest-bearing escrow account. Respondent shall simultaneously transmit a copy of both checks to the OSC. Respondent shall ensure that the prevailing party or parties in the dispute shall receive the amount upon which they prevailed from the

escrow funds plus interest within 30 calendar days after the dispute is resolved.

VIII. DISPUTE RESOLUTION

The parties to this Order shall attempt to resolve, expeditiously and informally, any disagreements concerning this Order.

If the Respondent objects to any U.S. EPA action taken pursuant to this Order, including billings for response costs, the Respondent shall notify U.S. EPA in writing of its objection(s) within 10 calendar days of such action, unless the objection(s) has (have) been informally resolved. This written notice shall include a statement of the issues in dispute, the relevant facts upon which the dispute is based, all factual data, analysis or opinion supporting Respondent's position, and all supporting documentation on which the Respondent relies. EPA shall submit its Statement of Position, including supporting documentation, no later than 10 calendar days after receipt of the written notice of dispute. In the event that these 10-day time periods for exchange of written documents may cause a delay in the work, they shall be shortened upon, and in accordance with, notice by EPA. The time periods for exchange of written documents relating to disputes over billings for response costs may be extended at the sole discretion of EPA.

U.S. EPA and Respondent shall, within 15 calendar days of U.S. EPA's receipt of the Respondent's Statement of Position, attempt to resolve the dispute through formal negotiations (Negotiation Period). The Negotiation Period may be extended at the sole discretion of U.S. EPA. U.S. EPA's decision regarding an extension of the Negotiation Period shall not constitute a U.S. EPA action subject to dispute resolution or a final Agency action giving rise to judicial review.

An administrative record of any dispute under this Section shall be maintained by U.S. EPA. The record shall include the written notification of such dispute, and the Statement of Position served pursuant to the preceding paragraph.

Any agreement reached by the parties pursuant to this Section shall be in writing, signed by all parties, and shall upon the signature by the parties be incorporated into and become an enforceable element of this Order. If the parties are unable to reach an agreement within the Negotiation Period, U.S. EPA will issue a written decision on the dispute to the Respondents. The decision of U.S. EPA shall be incorporated into and become an enforceable element of this Order upon Respondent's receipt of the U.S. EPA decision regarding the dispute.

Respondent's obligations under this Order shall not be tolled by submission of any objection for dispute resolution under this Section. Following resolution of the dispute, as provided by this

Section, Respondent(s) shall fulfill the requirement that was the subject of the dispute in accordance with the agreement reached or with U.S. EPA's decision, whichever occurs. No U.S. EPA decision made pursuant to this Section shall constitute a final Agency action giving rise to judicial review.

IX. FORCE MAJEURE

Respondent agrees to perform all requirements under this Order within the time limits established under this Order, unless the performance is delayed by a force majeure. For purposes of this Order, a force majeure is defined as any event arising from causes beyond the control of Respondent or of any entity controlled by Respondent, including but not limited to its contractors and subcontractors, that delays or prevents performance of any obligation under this Order despite Respondent's best efforts to fulfill the obligation. Force majeure does not include financial inability to complete the work or increased cost of performance.

Respondent shall notify U.S. EPA orally within 24 hours after Respondent becomes aware of any event that Respondent contends constitutes a force majeure, and in writing within 7 calendar days after the event. Such notice shall: identify the event causing the delay or anticipated delay; estimate the anticipated length of delay, including necessary demobilization and re-mobilization; state the measures taken or to be taken to minimize the delay; and estimate the timetable for implementation of the measures. Respondent shall take all reasonable measures to avoid and minimize delays. Failure to comply with the notice provision of this Section shall be grounds for U.S. EPA to deny Respondent an extension of time for performance/waive any claim of force majeure by the Respondent. Respondent shall have the burden of demonstrating by a preponderance of the evidence that the event is a force majeure, that the delay is warranted under the circumstances, and that best efforts were exercised to avoid and mitigate the effects of the delay.

If U.S. EPA determines a delay in performance of a requirement under this Order is or was attributable to a force majeure, the time period for performance of that requirement shall be extended in writing as deemed necessary by U.S. EPA. Such an extension shall not alter Respondent's obligation to perform or complete other tasks required by the Order which are not directly affected by the force majeure.

X. STIPULATED AND STATUTORY PENALTIES

For each calendar day, or portion thereof, that Respondent fails to fully perform any requirement of this Order in accordance with the

schedule established pursuant to this Order, Respondent shall be liable as follows:

<u>Deliverable/Activity</u>	<u>Penalty For Days 1-7</u>	<u>Penalty For > 7 Days</u>
Failure to Submit a Draft EE/CA Report	\$1,000/Day	\$2,500/Day
Failure to Submit a Revised EE/CA Report	\$1,000/Day	\$2,500/Day
Late Submittal of Progress Reports or Other Miscellaneous Reports/Submittals	\$ 250/Day	\$ 500/Day
Failure to Meet any Scheduled Deadline in the Order	\$ 250/Day	\$ 500/Day

Stipulated penalties shall begin to accrue the day after performance is due. Such penalties shall be forgiven if a final approvable EE/CA is delivered according to the schedule.

Upon receipt of written demand by U.S. EPA, Respondent shall make payment to U.S. EPA within 20 calendar days and interest shall accrue on late payments in accordance with Section VII of this Order (Reimbursement of Costs).

Even if violations are simultaneous, separate penalties shall accrue for separate violations of this Order. Penalties accrue and are assessed per violation per day. Penalties shall accrue regardless of whether U.S. EPA has notified Respondent of a violation or act of noncompliance. The payment of penalties shall not alter in any way Respondent's obligation to complete the performance of the work required under this Order. Stipulated penalties shall accrue, but need not be paid, during any dispute resolution period concerning the particular penalties at issue. If Respondent prevails upon resolution, Respondent shall pay only such penalties as the resolution requires. In its unreviewable discretion, U.S. EPA may waive its rights to demand all or a portion of the stipulated penalties due under this Section.

The stipulated penalties set forth above shall not be the sole or exclusive remedy for violations of this Order. Violation of any provision of this Order may subject Respondent to civil penalties of up to twenty-five thousand dollars (\$25,000) per violation per

day, as provided in Section 106(b)(1) of CERCLA, 42 U.S.C. § 9606(b)(1). Respondent may also be subject to punitive damages in an amount up to three times the amount of any cost incurred by the U.S. EPA as a result of such violation, as provided in Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3). Should Respondent violate this Order or any portion hereof, U.S. EPA may carry out the required actions unilaterally, pursuant to Section 104 of CERCLA, 42 U.S.C. § 9604, and/or may seek judicial enforcement of this Order pursuant to Section 106 of CERCLA, 42 U.S.C. § 9606.

XI. RESERVATION OF RIGHTS

Except as specifically provided in this Order, nothing herein shall limit the power and authority of U.S. EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants or contaminants, or hazardous or solid waste on, at, or from the Site. Further, nothing herein shall prevent U.S. EPA from seeking legal or equitable relief to enforce the terms of this Order. U.S. EPA also reserves the right to take any other legal or equitable action as it deems appropriate and necessary, or to require the Respondent in the future to perform additional activities pursuant to CERCLA or any other applicable law, except that, upon written notice of completion as provided in Section XVII of this Order, Respondent will have no further obligations under this Order other than record preservation under Section V and reimbursement of costs under Section VII.

Respondent expressly reserves all rights, claims, demands and causes of action, including the right to seek contribution, indemnity and/or any other available remedy against any person not a party to this Order found to be responsible or liable for contribution, indemnity, or otherwise for any amounts which have been or will be expended by the Respondent under this Order.

In any proceedings other than those to enforce the terms of this Order, nothing contained herein shall be construed as an admission of liability by any party hereto, either of law or fact, nor an admission that any finding of fact or conclusion of law is true, accurate or correct. This Order shall not be used as evidence in any proceeding other than a proceeding to enforce the terms of this Order.

XII. OTHER CLAIMS

By issuance of this Order, the United States and U.S. EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondent. The United States or U.S. EPA shall not be a party or be held out as a party to any

contract entered into by the Respondent or its directors, officers, employees, agents, successors, representatives, assigns, contractors, or consultants in carrying out activities pursuant to this Order.

Except as expressly provided in Section XIII (Covenant Not To Sue), nothing in this Order constitutes a satisfaction of or release from any claim or cause of action against the Respondent or any person not a party to this Order, for any liability such person may have under CERCLA, other statutes, or the common law, including but not limited to any claims of the United States for costs, damages and interest under Sections 106(a) or 107(a) of CERCLA, 42 U.S.C. §§ 9606(a), 9607(a).

This Order does not constitute a preauthorization of funds under Section 111(a)(2) of CERCLA, 42 U.S.C. § 9611(a)(2). The Respondent waives any claim to payment under Sections 106(b), 111, and 112 of CERCLA, 42 U.S.C. §§ 9606(b), 9611, and 9612, against the United States or the Hazardous Substance Superfund arising out of any action performed under this Order.

No action or decision by U.S. EPA pursuant to this Order shall give rise to any right to judicial review except as set forth in Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

XIII. COVENANT NOT TO SUE

Except as otherwise specifically provided in this Order, upon issuance of the U.S. EPA notice referred to in Section XVII (Notice of Completion), U.S. EPA covenants not to sue Respondent for judicial imposition of damages or civil penalties or to take administrative action against Respondent for any failure to perform actions agreed to in this Order except as otherwise reserved herein.

Except as otherwise specifically provided in this Order, in consideration and upon Respondent's payment of the response costs specified in Section VIII of this Order, U.S. EPA covenants not to sue or to take administrative action against Respondent under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), for recovery of past response costs incurred by the U.S. EPA in connection with this action or this Order. This covenant not to sue shall take effect upon the receipt by U.S. EPA of the payments required by Section VIII (Reimbursement of Costs).

These covenants not to sue are conditioned upon the complete and satisfactory performance by Respondent of its obligations under this Order. These covenants not to sue extend only to the Respondent and do not extend to any other person.

XIV. CONTRIBUTION PROTECTION

With regard to claims for contribution against Respondent for matters addressed in this Order, the Parties hereto agree that the Respondent is entitled to protection from contribution actions or claims to the extent provided by Section 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4). "Matters addressed" in this Order shall mean only those actions which are specifically required by this Order.

Nothing in this Order precludes Parties from asserting any claims, causes of action or demands against any persons not parties to this Order for indemnification, contribution, or cost recovery.

XV. INDEMNIFICATION

Respondent agrees to indemnify, save and hold harmless the United States, its officials, agents, contractors, subcontractors, employees and representatives from any and all claims or causes of action: (A) arising from, or on account of, acts or omissions of Respondent and Respondent's officers, directors, employees, agents, contractors, subcontractors, receivers, trustees, successors or assigns, in carrying out actions pursuant to this Order; and (B) for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between (any one or more of) Respondent, and any persons for performance of work on or relating to the Site, including claims on account of construction delays. Nothing in this Order, however, requires indemnification by Respondent for any claim or cause of action against the United States based on negligent action taken solely and directly by U.S. EPA (not including oversight or approval of plans or activities of the Respondent).

XVI. MODIFICATIONS

Except as otherwise specified in Sections V.2. and V.2.1 (Work To Be Performed and EE/CA Report), if any party believes modifications to any plan or schedule are necessary during the course of this project, they shall conduct informal discussions regarding such modifications with the other parties. Any agreed-upon modifications to any plan or schedule shall be memorialized in writing within 7 business days; however, the effective date of the modification shall be the date of the OSC's oral direction. Any other requirements of this Order may be modified in writing by mutual agreement of the parties. Any modification to this Order shall be incorporated into and made an enforceable part of this Order.

If Respondent seeks permission to deviate from any approved plan or schedule, Respondent's Project Coordinator shall submit a written request to U.S. EPA for approval outlining the proposed modification and its basis.

No informal advice, guidance, suggestion, or comment by U.S. EPA regarding reports, plans, specifications, schedules, or any other writing submitted by the Respondent shall relieve Respondent of its obligations to obtain such formal approval as may be required by this Order, and to comply with all requirements of this Order unless it is formally modified.

XVII. NOTICE OF COMPLETION

When U.S. EPA determines, after U.S. EPA's review of the revised report, that all work has been fully performed in accordance with this Order, except for certain continuing obligations required by this Order (e.g., record retention, payment of costs), U.S. EPA will provide written notice to the Respondent and provisions of the Order shall be deemed satisfied upon receipt of such written notice by Respondent. If U.S. EPA determines that any activities have not been completed in accordance with this Order, U.S. EPA will notify the Respondent, provide a list of the deficiencies, and require that Respondent modify the revised EE/CA Report if appropriate to correct such deficiencies. The Respondent shall implement the modified and approved revised EE/CA Report and shall submit a modified final report in accordance with the U.S. EPA notice. Failure to implement the approved modified revised EE/CA Report shall be a violation of this Order.

XVIII. SUBMITTALS/CORRESPONDENCE

Any notices, documents, information, reports, plans, approvals, disapprovals, or other correspondence required to be submitted from one party to another under this Order, shall be deemed submitted either when hand-delivered or as of the date of receipt by certified mail/return receipt requested, express mail, or facsimile.

Submissions to Respondent shall be addressed to:

William Murphy
DuPont Environmental Remediation Services
Barley Mill Plaza 27/1230
P.O. Box 80027
Wilmington, DE 19880

With copies to:

Patricia McGee, Esq.
E. I. du Pont de Nemours and Company
P. O. Box 80027
Wilmington, DE 19880

Submissions to U.S. EPA shall be addressed to:

Betty Lavis
U.S. EPA - Region 5
77 West Jackson Boulevard, (HSE-5J)
Chicago, Illinois 60604-3590

With copies to:

Thomas Nash
Assistant Regional Counsel
U.S. EPA - Region 5
200 West Adams Street, CS-29A
Chicago, Illinois 60606

XIX. SEVERABILITY

If a court issues an order that invalidates any provision of this Order or finds that Respondent has sufficient cause not to comply with one or more provisions of this Order, Respondent shall remain bound to comply with all provisions of this Order not invalidated by the court's order.

XX. EFFECTIVE DATE

This Order shall be effective upon signature by the Director, Waste Management Division, U.S. EPA Region 5.

IN THE MATTER OF:

THE BOERKE SITE
OAK CREEK, WISCONSIN

SIGNATORIES

Each undersigned representative of a signatory to this Administrative Order on Consent certifies that he or she is fully authorized to enter into the terms and conditions of this Order and to bind such signatory, its directors, officers, employees, agents, successors and assigns, to this document.

Agreed this 9/21 day of Sept, 1995.

By W. J. Lawrence

IT IS SO ORDERED AND AGREED

BY: W. E. Muno

William E. Muno, Acting Director
Waste Management Division
United States Environmental Protection Agency
Region 5

DATE: 9/28/95

RECEIVED

SCOPE OF WORK FOR ENGINEERING EVALUATION/COST ANALYSIS
AT THE
BOERKE SITE
OAK CREEK, WISCONSIN

PURPOSE:

The purpose of this Scope of Work (SOW) is to set forth requirements for the preparation of an Engineering Evaluation/Cost Analysis (EE/CA) which shall evaluate alternatives for conducting a time-critical removal action at the Boerke Site. The Engineering Evaluation/Cost Analysis (EE/CA) shall be conducted, at a minimum, consistent with USEPA guidance entitled, "Guidance on Conducting Non-Time critical Removal Actions Under CERCLA," EPA/540-R-93-057, Publication 9360.32, PB 93-963402, dated August 1993 (Guidance). Respondents shall furnish all personnel, materials, and services necessary for, or incidental to, performing the EE/CA at the Boerke Site, except as otherwise specified herein.

SCOPE:

The tasks to be completed as part of this EE/CA are:

- Task 1. EE/CA Support Sampling Plan
- Task 2. EE/CA Support Sampling
- Task 3. Data Report
- Task 4. EE/CA

TASK 1: EE/CA SUPPORT SAMPLING PLAN

Within 30 calendar days of the effective date of the Administrative Order, Respondents shall submit a Sampling Plan that addresses all data acquisition activities. The objective of this EE/CA support sampling is to further determine the extent of contamination at the Site beyond that already identified by the Site Investigation data. The sampling locations shall include the landfill, the wetland area, and the intermittent stream. Sampling in the stream shall include the entire length of the stream and the point of entry into Lake Michigan. Samples taken from the stream will include both sediment and surface water. The plan shall contain a description of equipment specifications, required analyses, sample types, and sample locations and frequency. The plan shall address specific hydrologic, hydrogeologic, and air transport characterization methods including, but not limited to, geologic mapping, geophysics, field screening, drilling and well installation, flow determination, and soil/water/sediment/sludge sampling to determine extent of contamination.

Respondents shall identify the data requirements of specific remedial technologies that may be necessary to evaluate removal activities in the EE/CA. Respondents shall provide a schedule stating when events will take place and when deliverables will be submitted.

The EE/CA Support Sampling Plan shall include the following information:

A. Site Background

A brief summary of the Site location, including the general Site physiography, hydrology and geology shall be included. A description of the data already available shall be included which will highlight the areas of known contamination and the levels detected. Tables shall be included to display the minimum and maximum levels of detected contaminants across the Site.

B. Data Gap Description

Respondents shall make an analysis of the currently available data to determine the areas of the Site which require additional data in order to define the extent of contamination for purposes of defining the extent of releases or threat of releases of hazardous substances, pollutants or contaminants from the Site. The sampling shall include a minimum of four ground water samples, including an upgradient sample. A description of the number, types, and locations of additional samples to be collected shall be included in this section of the Support Sampling Plan.

Descriptions of the following activities shall also be included:

i. Waste Characterization

Respondents shall include a program for further characterizing the waste materials at the Site. This shall include an analysis of current information/data on past disposal practices at the Site.

ii. Hydrogeologic Investigation

The plan shall include the degree of hazard, the mobility of pollutants, discharges/recharge areas, regional and local flow direction and quality, and local uses of groundwater. The plan shall also develop a strategy for determining horizontal and vertical distribution of contaminants. Upgradient samples shall be included in the plan. [Note - The intent of this plan is to determine if the groundwater has been contaminated by pollutants from the Site. If no contaminants in excess of State or Federal standards are detected by using such techniques as a hydropunch, no further investigation will be required.

iii. Soils and Sediments Investigation

Respondents shall include a sampling and analysis program to determine the extent of contamination of surface and subsurface soils at the Site. The plan shall also determine the extent, including depth, of contamination of sediments in the wetland and stream on the Site.

iv. Surface Water Investigation

Respondents shall include a sampling and analysis program for the characterization and evaluation of potential surface water contamination in wetland and stream.

C. Sampling Procedures

Respondents shall include a description of the depths of sampling, parameters to be analyzed, equipment to be used, decontamination procedures to be followed, sample quality assurance, data quality objectives and sample management procedures to be utilized in the field.

D. Health and Safety Plan

Respondents shall prepare a Site safety plan which is designed to protect on-site personnel, area residents and nearby workers from physical, chemical and all other hazards posed by this sampling event. The safety plan shall develop the performance levels and criteria necessary to address the following areas:

- General requirements
- Personnel
- Levels of protection
- Safe work practices and safe guards
- Medical surveillance
- Personal and environmental air monitoring
- Personal hygiene
- Decontamination - personal and equipment
- Site work zones
- Contaminant control
- Contingency and emergency planning
- Logs, reports and record keeping

The safety plan shall, at a minimum, follow U.S. EPA guidance document Standard Operating Safety Guides (Publication 9285.1-03, PB92-963414, June 1992), and all OSHA requirements as outlined in 29 CFR 1910.

E. Schedule

Respondents shall include a schedule which identifies timing for initiation and completion of all tasks to be completed as part of this EE/CA Support Sampling Plan. The schedule shall reflect USEPA's concern that all field activities be completed in the 1995 calendar year.

TASK 2: EE/CA SUPPORT SAMPLING

Respondents shall conduct the EE/CA Support Sampling activity according to the approved Sampling Plan and schedule. Respondents shall coordinate activities with U.S. EPA's On-Scene Coordinator (OSC). Respondents shall provide the OSC with all validated laboratory data.

TASK 3: DATA REPORT

According to the U.S. EPA-approved schedule in the EE/CA Support Sampling Plan, a report, in table-form, shall be provided by Respondents to U.S. EPA. This report shall summarize the sampling results from both the EE/CA Support Sampling and from previous sampling events. If requested, copies of all raw data shall be provided by Respondents to U.S. EPA for a validation check.

TASK 4: ENGINEERING EVALUATION/COST ANALYSIS REPORT (EE/CA)

The EE/CA shall include the following sections in the EE/CA and following the guidelines described in each section:

- 1 Executive Summary
- 2 Site Characterization
 - 2.1 Site Description and Background
 - 2.1.1 Site Location and Physical Setting
 - 2.1.2 Geology/Hydrology/Hydraulics
 - 2.1.3 Surrounding Land Use and Populations
 - 2.1.4 Sensitive Ecosystems
 - 2.1.5 Meteorology
 - 2.2 Previous Removal Actions
 - 2.3 Source, Nature, and Extent of Contamination
 - 2.4 Analytical Data
 - 2.5 Streamlined Risk Evaluation
- 3 Identification of Removal Action Objectives
 - 3.1 Determination of Removal Scope
 - 3.2 Determination of Removal Schedule
 - 3.3 Identification of and Compliance with ARARs
 - 3.4 Planned Remedial Activities
- 4 Identification and Analysis of Removal Action Alternatives

- 5 Detailed Analysis of Alternatives
 - 5.1 Effectiveness
 - 5.1.1 Overall Protection of Public Health and the Environment
 - 5.1.2 Compliance with ARARs and Other Criteria, Advisories, and Guidance
 - 5.1.3 Long-Term Effectiveness and Permanence
 - 5.1.4 Reduction of Toxicity, Mobility, or Volume Through Treatment
 - 5.1.5 Short-Term Effectiveness
 - 5.2 Implementability
 - 5.2.1 Technical Feasibility
 - 5.2.2 Administrative Feasibility
 - 5.2.3 Availability of Services and Materials
 - 5.2.4 State and Community Acceptance
 - 5.3 Cost
 - 5.3.1 Direct Capital Costs
 - 5.3.2 Indirect Capital Costs
 - 5.3.3 Long-Term Operation and Maintenance

6 Comparative Analysis of Removal Action Alternatives

7 Schedule for EE/CA Submission

1 Executive Summary

The Executive Summary shall provide a general overview of the contents of the EE/CA. It shall contain a brief discussion of the site and the current and/or potential threat posed by conditions at the site. It shall also identify the scope and objectives of the removal action and the alternatives.

2 Site Characterization

The EE/CA shall summarize available data on the physical, demographic, and other characteristics of the Site and the surrounding areas. Specific topics which shall be addressed in the site characterization are detailed below. The site characterization shall concentrate on those characteristics necessary to evaluate and select an appropriate remedy.

2.1 Site Description and Background

The site description includes current and historical information. The following types of information shall be included, where available and as appropriate, to the site-specific conditions and the scope of the removal action.

- 2.1.1 Site Location and Physical Setting
- 2.1.2 Present and Past Facility Operations
- 2.1.3 Geology/Hydrology/Hydraulics
- 2.1.4 Surrounding Land Use and Populations
- 2.1.5 Sensitive Ecosystems
- 2.1.6 Meteorology

2.2 Previous Removal Actions

The site characterization section shall also describe any previous removal actions at the site. Previous information, if relevant, shall be organized as follows:

- * The scope and objectives of the previous removal action
- * The amount of time spent on the previous removal action
- * The nature and extent of hazardous substances, pollutants, or contaminants treated or controlled during the previous removal action
- * The technologies used and/or treatment levels used for the previous removal action.

2.3 Source, Nature and Extent of Contamination

This section shall summarize the available site characterization data for the Boerke site, including the location(s) of the hazardous substance(s), pollutant(s), or contaminant(s); the quantity, volume, size or magnitude of the contamination; and the physical and chemical attributes of the hazardous pollutant(s) or contaminant(s).

2.4 Analytical Data

This section shall present the available data, historical and current.

2.5 Streamlined Risk Evaluation

The Streamlined Risk Evaluation (SRE) shall focus on the contamination identified within the Work Plan. It will evaluate how and to what extent human and/or environmental receptors might be exposed to these contaminants, and assess the health effects associated with these contaminants. The SRE shall project the potential risk of health problems occurring if no removal action is taken at the site. The SRE shall be conducted in accordance with U.S. EPA guidance including, at a minimum: Risk Assessment Guidance for Superfund (RAGS) (EPA/540/1-89/002, December

1989, "Supplemental Guidance to RAFs: Calculating the concentration Term" (May 1992), "Supplemental guidance to RAGS: Standard Default Exposure Factors" March 1991. A qualitative ecological risk evaluation shall also be conducted in accordance with U.S. EPA guidance including, at a minimum: Risk Assessment Guidance for Superfund Volume II Environmental Evaluation Manual, (EPA/540/1-89/001, March 1989).

3 Identification of Removal Action Objectives

The EE/CA shall develop removal action objectives, taking into consideration the following factors:

- * Prevention or abatement of actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, pollutants, or contaminants;
- * Prevention or abatement of actual or potential contamination of drinking water supplies or sensitive ecosystems;
- * Stabilization or elimination of hazardous substances in drums, barrels, tanks, or other bulk storage containers (if found) that may pose a threat of release;
- * Treatment or elimination of high levels of hazardous substances, pollutants, or contaminants in soils or sediments largely at or near the surface that may migrate;
- * Mitigation or abatement of other situations or factors that may pose threats to public health, welfare, or the environment.

3.1 Determination of Removal Scope

The EE/CA shall define the broad scope and specific objectives of the removal action and address the protectiveness of the removal action. The EE/CA shall discuss how the goals of the removal action are consistent with any potential long-term remediation.

3.2 Determination of Removal Schedule

The general schedule for removal activities shall be developed, including both the start and completion time for the removal action.

4 Identification and Analysis of Removal Action Alternatives

Based on the analysis of the nature and extent of contamination and on the removal objectives developed in the previous section, a limited number of alternatives appropriate for addressing the removal action objectives shall be identified and assessed. Whenever practicable, the alternatives shall also consider the CERCLA preference for treatment over conventional containment or land disposal approaches, as well as the mitigation of exposure, future land use considerations, and reasonableness of cost.

Based on the available information, only the most qualified technologies that apply to the media or source of contamination shall be discussed in the EE/CA. The use of presumptive remedy guidance may also provide an immediate focus to the identification and analysis of alternatives. Presumptive remedies involve the use of remedial technologies that have been consistently selected at similar sites or for similar contamination.

A limited number of alternatives, including any identified presumptive remedies, shall be selected for detailed analysis. Each of the alternatives shall be described with enough detail so that the entire treatment process can be understood. Technologies that may apply to the media or source of contamination shall be listed into the EE/CA. In some cases, it may be more appropriate to consider only a category of technologies. For example, on-site incineration would be considered a technology category that may include rotary kiln, fluidized bed, etc.

The preliminary list of alternatives to address the Boerke site shall consist of one or more alternatives from each of the following generic removal alternative categories:

1. Off-site disposal
2. Off-site disposal with treatment/stabilization
3. On-site containment with treatment/stabilization
4. On-site containment

5 Detailed Analysis of Alternatives

Defined alternatives are evaluated against the short- and long-term aspects of three broad criteria: effectiveness, implementability, and cost.

5.1 Effectiveness

The effectiveness of an alternative refers to its ability to meet the objective regarding the scope of the removal action. The "Effectiveness" discussion for each alternative shall evaluate the degree to which the technology would mitigate threats to public health and the environment. Criteria to be considered include:

5.1.1 Overall Protection of Public Health and the Environment

How well each alternative protects public health and the environment shall be discussed in a consistent manner. Assessments conducted under other evaluation criteria, including long-term effectiveness and permanence, short-term effectiveness, and compliance with ARARs shall be included in the discussion. Any unacceptable short-term impacts shall be identified. The discussion shall focus on how each alternative achieves adequate protection and describe how the alternative will reduce, control, or eliminate risks at the site through the use of treatment, engineering, or institutional controls.

5.1.2 Compliance with ARARs and Other Criteria, Advisories, and Guidance

The detailed analysis shall summarize which federal and state requirements are applicable or relevant and appropriate to an alternative and describe how the alternative meets those requirements. A summary table may be employed to list potential ARARs. In addition to ARARs, U.S. EPA may identify other Federal or State advisories, criteria, or guidance to be considered (TBC) for a particular release. TBCs are not required by the NCP; rather, TBCs are meant to complement the use of ARARs.

5.1.3 Long-Term Effectiveness and Permanence

This evaluation assesses the extent and effectiveness of the controls that may be required to manage risk posed by treatment residuals and/or untreated wastes at the site. The following components shall be considered for each alternative:

- a) **Magnitude of Residual Risk:** This factor evaluates the effectiveness of the alternative, and assess the risk from waste and residuals remaining at the conclusion of site activities:
- b) **Adequacy and Reliability of Controls:** Response activities which are necessary to sustain the integrity of a remedial action following its conclusion.

5.1.4 Reduction of Toxicity, Mobility, or Volume Through Treatment

U.S. EPA's policy of preference for treatment (i.e. for technologies that will permanently and significantly reduce toxicity, mobility or volume of hazardous substances as the principle element) requires evaluation based upon the following subfactors for a particular alternative:

- * The treatment process(es) employed and the material(s) it will treat
- * The amount of the hazardous materials to be destroyed or treated
- * The degree of reduction expected in toxicity, mobility, or volume
- * The degree to which treatment will be irreversible
- * The type and quantity of residuals that will remain after treatment
- * Whether the alternative will satisfy the preference for treatment

5.1.5 Short-Term Effectiveness

The short-term effectiveness criterion addresses the effects of the alternative during implementation until the removal objectives have been met. Each alternative shall also be evaluated with respect to its effect on human health and the environment following the implementation. The following factors shall be addressed as appropriate for each alternative:

- a) Protection of the Community: any risks to the community that results from implementation of the proposed action, whether from air quality impacts, fugitive dust, transportation of hazardous materials, or other sources;
- b) Protection of the Worker: threats that may be posed to site workers and the effectiveness of protective measures that would be taken;
- c) Environmental Impacts: potential adverse environmental impacts for the implementation of each alternative; and
- d) Time Until Response Objectives are Achieved: estimate of the time needed to achieve protection of the site or for individual elements or threats associated with the site.

5.2 Implementability

This section is an assessment of the implementability of each alternative in terms of the technical and administrative feasibility and the availability of the goods and services necessary for each alternative's full execution. The following factors shall be considered under this criterion.

5.2.1 Technical Feasibility

The degree of difficulty in constructing and operating the technology; the reliability of the technology, the availability of necessary services and materials; the scheduling aspects of implementing the alternatives during and after implementation; the potential impacts on the local community during construction operation; and the environmental conditions with respect to set-up and construction and operation shall be described. Potential future remedial

actions shall also be discussed. The ability to monitor the effectiveness of the alternatives may also be described.

5.2.2 Administrative Feasibility

The administrative feasibility factor evaluates those activities needed to coordinate with other offices and agencies. The administrative feasibility of each alternative shall be evaluated, including the need for off-site permits, adherence to applicable non-environmental laws, and concerns of other regulatory agencies. Factors that shall be considered include, but are not limited to, the following: statutory limits, permits and waivers.

5.2.3 Availability of Services and Materials

The EE/CA must determine if off-site treatment, storage, and disposal capacity, equipment, personnel, services and materials, and other resources necessary to implement an alternative shall be available in time to maintain the removal schedule.

5.2.4 State and Community Acceptance

U.S. EPA shall consider and address State and community acceptance of an alternative when making a recommendation and in the final selection of the alternative in the Action Memorandum.

5.3 Cost

Each alternative shall be evaluated to determine its projected costs. The evaluation should compare each alternative's capital and operation and maintenance costs. The present worth cost of alternatives should also be calculated.

5.3.1 Direct Capital Costs

Costs for construction equipment, materials, land, transportation, disposal, analysis of samples, treatment and contingency allowances shall be presented.

5.3.2 Indirect Capital Costs

Cost for engineering and design, legal fees, permit costs and start-up and shakedown costs shall be presented.

5.3.3 Long-Term Operation and Maintenance Costs

Costs for maintenance and long-term monitoring shall be presented.

6 Comparative Analysis of Removal Action Alternatives

Once removal action alternatives have been described and individually assessed against the evaluation criteria described in Section 5, above, a comparative analysis shall be conducted to evaluate the relative performance of each alternative in relation to each of the criteria. The purpose of the analysis shall be to identify advantages and disadvantages of each alternative relative to one another so that key trade offs that would affect the remedy selection can be identified.

7 Schedule for EE/CA Submission

Within 30 calendar days of the effective date of the Administrative Order, Respondent shall submit an EE/CA Work Plan/Sampling Support Plan (Work Plan) that includes the Health and Safety Plan and the Quality Assurance/Quality Control Plan described in Task 1 of the SOW. Within 15 calendar days of receipt of validated data, the PRPs shall present at a meeting or during a telephone conference call the alternatives to undergo a more detailed analysis. A draft EE/CA shall be submitted to U. S. EPA within 90 calendar days of U.S. EPA's approval of the Work Plan. The amended EE/CA shall be submitted to U. S. EPA within 15 business days of the receipt of U.S. EPA's comments on the draft EE/CA.