

US EPA ARCHIVE DOCUMENT



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

MAR 30 10:10

LU-91

CERTIFIED MAIL...#70010320 0006 0192 6043
RETURN RECEIPT REQUESTED

Nancy Lake Martin
BASF Catalysts
100 Campus Drive
Florham Park, NJ 07932

RE: RCRA 3008(h) Administrative Order
BASF Catalysts f. k. a. Engelhard
Cleveland, Ohio
EPA ID:OHD 000 804 682

Dear Ms. Martin:

Enclosed is an Administrative Order (Order) for corrective action, which the United States Environmental Protection Agency hereby issues to BASF Corporation under the authority of Section 3008(h) of the Resource Conservation and Recovery Act (RCRA).

This Order has been drafted to address documented releases of hazardous wastes and/or hazardous constituents at the referenced facility. U.S. EPA has determined that corrective action is necessary at the facility in order to protect human health and the environment.

The Order includes a set of Attachments: the Scope of Work for Interim Measures (as Attachment **n**), the Scope of Work for a RCRA Facility Investigation (as Attachment **m**), the Scope of Work for a Corrective Measures Study (as Attachment **III**), the Scope of Work for Corrective Measures Implementation (as Attachment **IV**), Reference List (as Attachment **V**), the Region 5 RCRA Quality Assurance Project Plan (QAPP) Instructions, (as Attachment **VI**). In accordance with 40 CFR • 24.05, this Order shall become final unless BASF files a response and a request for a public hearing in writing no later than thirty (30) days after receipt of the Order. The response and request for hearing must be filed with:

Regional Hearing Clerk (R-19J)
U.S. EPA Region 5
77 W. Jackson Boulevard
Chicago, Illinois 60604-3590

Handwritten text, possibly a signature or name, in yellow ink.

Three horizontal lines of text, likely bleed-through from the reverse side of the page.

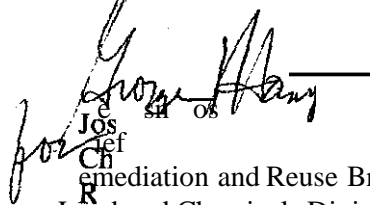
A copy of the written response and request for hearing and copies of all subsequent documents filed in this action must be sent to:

Jeffery Trevino C-14J
Associate Regional Counsel
U.S. EPA Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604

Additional information is provided in applicable regulations 40 CFR Part 24 and Section XXIV of the Order.

If you have any questions about this letter, please contact Mr. Trevino of the Office of Regional Counsel at (312) 886-7163.

Sincerely,



Joseph R. Singerly

Chief
Mediation and Reuse Branch
Land and Chemicals Division

Enclosures

Cc: Jeffery Trevino ORC C-14J

UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY REGIONS

IN THE MATTER OF:
BASF Corporation

Cleveland, OH

EPA ID No. OHD 000 804 682
Respondent

ADMINISTRATIVE ORDER

U.S. EPA Docket No. **RCRA-OS-2010-0013**

Proceeding under Section 3008(h) of the
Resource Conservation and Recovery Act, as
amended, 42 U. S. C § 6928(h).

I. JURISDICTION

- A. This ADMINISTRATIVE ORDER (Order) is issued pursuant to the authority vested in the Administrator of the United States Environmental Protection Agency (U.S. EPA) by Section 3008(h) of the Solid Waste Disposal Act, commonly referred to as the Resource Conservation and Recovery Act of 1976 (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984, 42 U.S.C. § 6928(h). The authority vested in the Administrator has been delegated to the Director of the Land and Chemicals Division, RegionS.
- B. This Order is issued to BASF CORPORATION (Respondent), the owner of a facility at 1000 Harvard Avenue, Cleveland, Ohio.

II. DEFINITIONS

Unless otherwise expressly provided herein, terms used in this Order which are defined in RCRA or in regulations promulgated under RCRA shall have the definitions given to them in RCRA or in such regulations.

Acceptable, in the phrase "In a manner acceptable to U.S. EPA..." shall mean that submittals or completed work meet the terms and conditions of this Order, attachments, scopes of work, approved workplans and/or U.S. EPA's written comments and guidance documents.

Additional Work shall mean any activity or requirement that is not expressly covered by this Order or its attachments but is determined by U.S. EPA to be necessary to fulfill the purposes of this Order as presented in Section **iii**: Statement of Purpose.

Administrative Record shall mean the record compiled and maintained by U.S. EPA supporting this Order.

Area of Concern shall mean any area of the Facility under the control or ownership of the owner or operator where a release to the environment of hazardous waste(s) or hazardous constituents has occurred, is suspected to have occurred, or may occur, regardless of the frequency or duration of the release.

ABBREVIATIONS/ACRONYMS

| | |
|---------------|---|
| AOC | Area of Concern |
| CAP | Corrective Action Plan |
| CERCLA | Comprehensive Environmental Response, Compensation, and liability Act |
| CFR | Code of Federal Regulations |
| CMI | Corrective Measure Implementation |
| CMS | Corrective Measure Study |
| DOCC | Description of Current Conditions |
| DQO | Data Quality Objective |
| EPA | United States Environmental Protection Agency |
| HWMU | Hazardous Waste Management Unit |
| IM | Interim Measures |
| MCL | Maximum Contaminant Level |
| mg/kg | milligram per kilogram |
| mg/l | milligram per liter |
| NPDES | National Pollution Discharge Elimination System |
| PA | Preliminary Assessment |
| ppm | parts per million |
| ppb | parts per billion |
| QAPP | Quality Assurance Project Plan |
| QA/QC | Quality Assurance/Quality Control |
| RA | Release Assessment |
| RCRA | Resource Conservation and Recovery Act |
| RFA | RCRA Facility Assessment |
| RFI | RCRA Facility Investigation |
| SOW | Scope of Work |
| SWMU(s) | Solid Waste Management Unit(s) |
| µg/kg | micrograms per kilogram |
| µg/l | micrograms per liter |
| U.S.C. | United States Code |
| U.S. EPA | United States Environmental Protection Agency |
| VSI | Visual Site Inspection |

U.S. Environmental Protection Agency
RCRA 3008(h) Administrative Order

for

BASF Corporation
U.S. EPA I.D No. OHD 000 804 682

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UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY REGIONS

IN THE MATTER OF:
BASF Corporation

Cleveland, OH

EPA ID No. OHD 000 804 682
Respondent

ADMINISTRATIVE ORDER

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- B. This Order is issued to BASF CORPORATION (Respondent), the owner of a facility at 1000 Harvard Avenue, Cleveland, Ohio.

II. DEFINITIONS

Unless otherwise expressly provided herein, terms used in this Order which are defined in RCRA or in regulations promulgated under RCRA shall have the definitions given to them in RCRA or in such regulations.

Acceptable, in the phrase "In a manner acceptable to U.S. EPA..." shall mean that submittals or completed work meet the terms and conditions of this Order, attachments, scopes of work, approved workplans and/or U.S. EPA's written comments and guidance documents.

Additional Work shall mean any activity or requirement that is not expressly covered by this Order or its attachments but is determined by U.S. EPA to be necessary to fulfill the purposes of this Order as presented in Section III: Statement of Purpose.

Administrative Record shall mean the record compiled and maintained by U.S. EPA supporting this Order.

Area of Concern shall mean any area of the Facility under the control or ownership of the owner or operator where a release to the environment of hazardous waste(s) or hazardous constituents has occurred, is suspected to have occurred, or may occur, regardless of the frequency or duration of the release.

CERCLA shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601, et seq.

Comply or compliance may be used interchangeably and shall mean the performance of work required by this Order of a quality approvable by U.S. EPA and in the manner and time specified in this Order or any modification thereof, its attachments or any modification thereof, or written U.S. EPA directives. Respondent must meet both the quality and timeliness components of a particular requirement to be considered in compliance with the terms and conditions of this Order.

Contractor shall include any contractor, subcontractor, consultant or laboratory retained to conduct or monitor any portion of the work performed pursuant to this Order.

Corrective measures shall mean those measures or actions necessary to control, prevent, or mitigate the release or potential release of hazardous waste or hazardous constituents into the environment.

Corrective Measures Implementation or CMI shall mean those activities necessary to initiate, complete, monitor, and maintain the remedies U.S. EPA has selected or may select to protect human health and/or the environment from the release or potential release of hazardous wastes, or hazardous constituents, into the environment from the facility. The CMI requirements are detailed in the CMI Scope of Work included as Attachment IV.

Corrective Measures Study or CMS shall mean the investigation and evaluation of potential remedies which will protect human health and/or the environment from the release or potential release of hazardous wastes, or hazardous constituents, into the environment from the Facility. The CMS requirements are detailed in the CMS Scope of Work included as Attachment III.

Data Quality Objectives shall mean the qualitative or quantitative statements expressing acceptable levels of uncertainty. The Data Quality Objective process is designed to collect data that are scientifically valid, defensible, and of known precision and accuracy relative to the use for which the data are obtained.

Day shall mean a calendar day unless expressly stated to be a business day. Business day shall mean a day other than a Saturday, Sunday, or Federal Holiday. In computing any period of time under this Order, where the last day would fall on a Saturday, Sunday, or Federal Holiday, the period shall run until the end of the next business day.

EPA or U.S. EPA shall mean the United States Environmental Protection Agency, and any successor Departments or Agencies of the United States.

Facility shall mean all contiguous property under the control of the owner and/or operator.

Hazardous Constituents shall mean those constituents listed in Appendix VID to 40 C.F.R. Part 261 or any constituent identified in Appendix IX to 40 C.F.R. Part 264.

Hazardous Waste shall mean hazardous waste as defined in §1004(5) of RCRA or 40 C.F.R. § 260.10. This term includes hazardous constituents as defined above.

Hazardous Waste Management Unit or HWMU shall mean a contiguous area of land on or in which hazardous waste is placed, or the largest area in which there is significant likelihood of mixing hazardous waste constituents in the same area. Examples of hazardous waste

management units include a surface impoundment, a waste pile, a land treatment area, a landfill cell, an incinerator, a tank and its associated piping and underlying containment system, and a container storage area. A container alone does not constitute a hazardous waste management unit; the unit includes containers and the land or pad upon which they are placed.

Innovative Treatment Technologies shall mean those technologies for treatment of soil, sediment, sludge, and debris other than incineration or solidification - stabilization and those technologies for treatment of groundwater contamination that are alternatives to pumping with conventional treatments like air stripping and ultraviolet light oxidation.

Interim Measures or IM shall mean those actions, which can be initiated in advance of implementation of the final corrective action for a facility, to achieve the goal of stabilization. Interim Measures initiate cleanup at a facility and control or eliminate the release or potential release of hazardous wastes at or from the Facility. The IM requirements are detailed in the IM Scope of Work included as Attachment I.

RCRA Facility Investigation or RFI shall mean the investigation and characterization of the source(s) of contamination and the nature, extent, direction, rate, movement, and concentration of the source(s) of contamination and releases of hazardous waste, including hazardous constituents that have been or are likely to be released into the environment from the Facility. The activities required for the RFI are detailed in the RFI Scope of Work included as Attachment II.

Receptors shall mean those humans, animals, or plants and their habitats which are or may be affected by releases of hazardous waste from or at the Facility.

Release shall mean any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing of hazardous wastes or hazardous constituents into the environment.

Scope of Work or SOW shall mean the outline of work Respondent must use to develop all workplans and reports required by this Order as set forth in this Order and its Attachments: I, Interim Measures Scope of Work; II, RCRA Facility Investigation Scope of Work; III, Corrective Measures Study Scope of Work; and IV, Corrective Measures Implementation Scope of Work. All SOW Attachments and modifications or amendments thereto, are incorporated into this Order and are an enforceable part of this Order.

Solid Waste Management Unit or SWMU shall mean any discernible unit at which solid wastes have been placed at any time irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a Facility where solid wastes have been routinely and systematically released.

Stabilization shall mean controlling or abating immediate threats to human health and/or the environment from releases and/or preventing or minimizing the spread of contaminants while long-term corrective measures alternatives are being evaluated.

Submittal shall include any workplan, report, progress report, or any other written document Respondent is required by this Order to send to U.S. EPA.

Violations of this Order shall mean those actions or omissions, failures or refusals to act by Respondent that result in a failure to meet the terms and conditions of this Order or its attachments.

Work or Obligation shall mean any activity Respondent must perform to comply with the requirements of this Order and its attachments.

Workplan shall mean the detailed plans prepared by Respondent to satisfy the requirements of the corresponding Scope of Work. The requirements for each workplan are presented in Section VIII: Work to be Performed and/or the Attachments I-IV.

III. STATEMENT OF PURPOSE

In entering into this Order, the objectives of U.S. EPA include the following, which shall be consistent with the principles set forth in Section VIII:

- A. To perform Interim Measures (IM), if necessary, at the Facility to relieve threats to human health and/or the environment;
- B. To perform a RCRA Facility Investigation (RFI) to determine fully the nature and extent of any release of hazardous waste at or from the Facility;
- C. To perform a Corrective Measures Study (CMS) to identify and evaluate alternatives for the corrective measures necessary to prevent, mitigate, and/or remediate any releases of hazardous wastes at or from the Facility;
- D. To implement the corrective measure or measures selected by U.S. EPA at the Facility; and;
- E. To perform any other activities necessary to correct or evaluate actual or potential threats to human health and/or the environment resulting from the release or potential release of hazardous waste at or from the Facility.

IV. PARTIES BOUND

- A. This Order shall apply to and be binding upon U.S. EPA, Respondent and its officers, directors, employees, agents, successors and assigns, trustees, receivers, and upon all persons, including but not limited to contractors, acting on behalf of Respondent.
- B. No change in ownership or corporate or partnership status relating to the Facility will in any way alter Respondent's responsibility under this Order. Any conveyance of title, easement, or other interest in the Facility, or a portion of the Facility, shall not affect Respondent's obligations under this Order. Respondent will be responsible for and liable for any failure to carry out all activities required of Respondent by the terms and conditions of the Order, regardless of Respondent's use of employees, agents, or contractors to perform any such tasks.

- C. Respondent shall provide a copy of this Order to all contractors and laboratories retained by Respondent to conduct or monitor any portion of the work performed pursuant to this Order within fourteen (14) days of the issuance of this Order or the retention of such person(s), whichever occurs later, and shall condition all such contracts on compliance with the terms of this Order.
- D. Respondent shall give written notice of this Order to any successor in interest prior to transfer of ownership or operation of the Facility or a portion thereof and shall notify U.S. EPA in writing within thirty (30) days, whenever practicable, prior to such transfer..

V. FINDINGS OF FACT

U.S. EPA makes the findings of fact set forth below.

- A. Respondent is a company doing business in the State of Ohio and is a person as defined in Section 1004(15) of RCRA, 42 U.S.C. § 6903(15) and 40 CFR § 260.10.
- B. Respondent's predecessor(s) owned and/or operated the Facility as a hazardous waste management facility on or after November 19, 1980, the applicable date which renders facilities subject to interim status requirements or the requirement to have a permit under § 3004 and § 3005 of RCRA.
- C. Pursuant to § 3010 of RCRA, Respondent's predecessor notified U.S. EPA of its hazardous waste activity. In its notification dated August 1980, Respondent's predecessor identified itself as an owner/operator of a treatment, storage, and/or disposal facility for hazardous waste.
- D. In its Part A Permit Application dated September 29, 1981, Respondent's predecessor identified itself as handling at the Facility certain hazardous wastes identified at 40 C.F.R. §§ 261.31, 261.32, 261.33(e) and 261.33(f).
- E. Respondent's Facility (see Figure 1):
 - 1. The Facility subject to this Order is owned by Respondent and located at 1000 Harvard Avenue, Cleveland, Ohio. It consists of approximately 20 acres bordered to the southeast by the Cuyahoga River and to the southwest by Big Creek. Harvard Avenue divides the Facility into the north section and south section. Excluded from the Facility is a structure referred to as Building G-1 (and the property occupied by Building G-1) which is owned by a party unrelated to Respondent. (See Figure 1.)
 - 2. The Facility, as well as additional but unrelated land, were formerly owned and operated by the Harshaw Chemical Company. Operations began some time prior to 1920, with various products being made over its history including nickel salts, fluoride salts, hydrofluoric acid and cobalt salts. Manufacturing activities ceased by 1996. Respondent currently uses a portion of the Facility for warehousing.
- F. A Preliminary Assessment/Visual Site Inspection (PA/VSI), performed on June 1990, identified 37 Solid Waste Management Units (SWMUs) and 7 Areas of Concern (AOCs) at the Harshaw Site (see Attachment 8).

1. Two of the SWMUs originally identified as part of the June 1990 PNVSI (SWMU 1 and SWMU 25) are located on property never owned or operated by Respondent. Accordingly, SWMU 1 and SWMU 25 are not part of the Facility and are not included within the scope of this Order.
 2. All other SWMUs and AOCs identified in the June 1990 PNVSI are (or were) located within the Facility. Some of those SWMUs underwent RCRA closure subsequent to the June 1990 PNVSI (SWMU 2, SWMU 3, and a portion of SWMU 4) and, thus, SWMUs 2 and 3 and that portion of SWMU 4 can be excluded from the scope of this Order after proper documentation is obtained from BASF.
 3. AOC H, identified on Attachment 8, has been added to the list of SWMUs/AOCs because it was not separately identified as such in the PNVSI.
- H.** Hazardous wastes have been released from the Facility into surface water, groundwater, and soil as set forth in the 1990 PNVSI.
- I.** The hazardous wastes identified in the PNVSI may pose a threat to human health or the environment. Petroleum hydrocarbons, nickel, copper, lead, antimony, certain forms of chromium, and hydrogen fluoride can be harmful to humans and other life forms if present above risk-based levels.
- J.** Releases from the Facility may have migrated toward the Cuyahoga River and Big Creek. The Cuyahoga River is used for recreational purposes.

VI. CONCLUSIONS OF LAW AND DETERMINATIONS

Based on the Findings of Fact set forth above and after consideration of the Administrative Record, the Chief of the Remediation and Reuse Branch, Land and Chemicals Division, Region 5, U.S. EPA has made the following conclusions of law and determinations.

- A. Respondent is a "person" within the meaning of Section § 1004(15) of RCRA, 42 U.S.C. § 6903(15).
- B. Respondent is the current owner of a facility that has operated, is operating, should be, or should have been operating under interim status subject to § 3005(e) of RCRA, 42 U.S.C. § 6925(e).
- C. Certain wastes found at the Facility are hazardous wastes pursuant to §§ 1004(5) and 3001 of RCRA; 42 U.S.C. §§ 6903(5) and 6921; 40 CFR Part 261; and Subpart S, § 264.501, 55 Federal Register 30874, July 27, 1990.
- D. There is or has been a release of hazardous waste(s) into the environment from the Facility.
- E. The actions required by this Order are necessary to protect human health and/or the environment.

VII. PROJECT COORDINATOR

- A. Within fifteen (15) days of the effective date of this Order, U.S. EPA and Respondent shall each designate a Project Coordinator. Respondent shall notify U.S. EPA in writing of the Project Coordinator it has selected. Each Project Coordinator shall be responsible for overseeing the implementation of this Order and for designating a person to act in their absence. U.S. EPA Project Coordinator will be U.S. EPA's designated representative for the Facility. To the maximum extent practicable, all communications between Respondent and U.S. EPA, and all documents, reports, approvals, and other correspondence concerning the activities performed pursuant to this Order shall be directed through the Project Coordinators.
- B. Respondent may change its Project Coordinator but shall provide at least fourteen (14) days written notice prior to changing a Project Coordinator. Respondent shall notify U.S. EPA within five (5) days of any unanticipated change in its Project Coordinator.
- C. The absence of the U.S. EPA Project Coordinator from the Facility shall not be cause for the stoppage of work.

VIII. WORK TO BE PERFORMED

- A. Pursuant to § 3008(h) of RCRA, Respondent is hereby ordered to perform the acts specified in this section. All work undertaken pursuant to this Order shall be performed in a manner consistent with, at a minimum: the attached Scopes of Work; all U.S. EPA-approved workplans; RCRA and other applicable Federal laws and their implementing regulations; and applicable U.S. EPA guidance documents. Guidance may include, but is not limited to, documents listed in Attachment VI: References. In addition, all work undertaken or required pursuant to this Order as set forth in Paragraphs B, C, D, E and F below shall be consistent with and implemented pursuant to the following principles.
- B. Interim Measures
 - 1. Respondent shall evaluate currently available data and assess the need for interim measures. Interim measures (IM) shall be used whenever possible to achieve the initial goal of stabilization.

2. **If** Respondent identifies an immediate or potential threat to human health and/or the environment, Respondent shall notify the U.S. EPA Project Coordinator orally within 24 hours of discovery for an immediate threat, within two (2) days of discovery for a potential threat, including proposed remedies and schedules. Respondent shall also notify U.S. EPA in writing within seven (7) days of such discoveries summarizing the immediacy and magnitude of the immediate or potential threat(s) to human health and/or the environment, including proposed remedies and schedules. **If** Respondent discovers new releases of hazardous wastes, or discovers new Solid Waste Management Units or Areas of Concern not previously identified, Respondent shall notify U.S. EPA in writing within fourteen (14) days of such discovery.
3. **If** U.S. EPA determines that immediate action is required, U.S. EPA's Project Coordinator may orally require Respondent to act immediately, and prior to:
 - a. Respondent's receipt of U.S. EPA's written notification;
 - b. U.S. EPA's receipt of the IM Workplan; or
 - c. U.S. EPA's approval of the IM Workplan.
4. **If** U.S. EPA identifies independently an immediate or potential threat to human health and/or the environment; discovers new releases of hazardous wastes; or discovers new Solid Waste Management Units, Hazardous Waste Management Units, or Areas of Concern not previously identified; U.S. EPA will notify Respondent in writing.
5. Within thirty (30) days of receiving the U.S. EPA's written notification or request, Respondent shall submit to the U.S. EPA an IM Workplan in accordance with the IM Scope of Work contained in Attachment I.

C. RCRA Facility Investigation

1. Respondent shall submit to U.S. EPA a Description of Current Conditions (DOCC) Report within sixty (60) days of the effective date of this Order. The DOCC Report shall be developed in a manner consistent with Paragraph Vill.A above and the RCRA Facility Investigation Scope of Work contained in Attachment IT, except as may be agreed to by U.S. EPA's Project Coordinator in writing.
2. Respondent shall submit to U.S. EPA a Workplan for a RCRA Facility Investigation (RFI) within ninety (90) days of receipt of U.S. EPA's comments on the DOCC.
3. The RFI Workplan shall be developed in a manner consistent with Paragraph Vill.A above, the RFI Scope of Work contained in Attachment IT and the following additional Facility-specific guidelines:

- a. RFI data collection shall include constituents of potential interest based on those hazardous constituents known or suspected to be associated with past or present operations at the Facility based upon the PNVSI,
 - b. The RFI may be conducted in a phased manner, such that the sampling results from the first phase can be used to develop the need for and extent of any subsequent sampling phase(s);
 - c. The RFI may be designed in a manner that groups together individual SWMUs or AOCs as appropriate based on the nature of the identified release(s), the media affected or potentially affected, and/or the location and proximity to other SWMUs or AOCs;
 - d. The RFI will be designed to develop data that will support site-specific risk assessments and, **if** necessary, future risk-based remedial decisions;
 - e. The RFI will be designed to enable the assessment of any risk posed by identified releases of hazardous wastes from the Facility as a whole or from significant portions of the Facility;
 - f. The RFI will be conducted using risk-based screening levels to determine whether contaminants of potential interest have been released and warrant further investigation.
4. Subject to Paragraph C.3 above, the RFI Workplan shall detail the methodology Respondent shall use to:
 - a. Gather data needed to make decisions on stabilization during the early phase of the RFI;
 - b. Identify and characterize all sources of contamination;
 - c. Define the degree and extent of contamination;
 - d. Characterize the potential pathways of contaminant migration;
 - e. Identify actual or potential human and/or ecological receptors; and
 - f. Support the development of alternatives from which a corrective measure will be selected by U.S. EPA.
 5. Subject to Paragraphs A and C.4 above, Respondent shall include a specific schedule for implementation of all activities in the RFI Workplan.
 6. Respondent shall submit a RFI Report to U.S. EPA for approval in accordance with the U.S. EPA-approved RFI Workplan schedule.

D. Corrective Measures Study

1. Respondent shall submit to U.S. EPA a Corrective Measures Study (CMS) Report based on the results of the RFI within ninety (90) days of U.S. EPA approval of the RFI Report. The CMS Report shall be developed in a manner consistent with the CMS Scope of Work contained in Attachment **iii**.
2. The CMS shall detail the methodology for developing and evaluating potential corrective measures to remedy contamination that is the subject of this Order that exceeds Media Cleanup Standards^I at or from the Facility and a schedule for implementing each proposed remedy. The CMS shall identify the potential corrective measures, including any possible innovative technologies that may be used for the containment, treatment and/or disposal of contamination.
3. U.S. EPA will provide the public with an opportunity to review and comment on the final draft of the Corrective Measures Study Report (following completion of the submission and approval procedures set forth in Section IX) and a description of U.S. EPA's proposed corrective measure(s), including U.S. EPA's justification for proposing such corrective measure(s) (Statement of Basis) and an opportunity for a public meeting regarding U.S. EPA's proposed cleanup standards and remedy for the Facility.
4. Following the public comment period, U.S. EPA will issue its decision on corrective measure(s) for the protection of human health and/or the environment. U.S. EPA will also issue a Response to Comments received during the public comment period.

E. Corrective Measures Implementation

1. Respondent shall submit to U.S. EPA a Corrective Measures Implementation (CMI) Workplan (or Workplans if appropriate) within 90 days of U.S. EPA's final written decision and Response to Comments on the corrective measure(s).
2. The CMI Workplan(s) shall be designed to facilitate the design, construction, operation, maintenance, and monitoring of corrective measures at the Facility in a manner consistent with the CMI Scope of Work contained in Attachment IV and the objectives of this Order.
3. Respondent shall implement the CMI Workplan within 90 days after receiving EPA's approval of the Workplan.
4. Respondent shall submit CMI reports to U.S. EPA in accordance with the U.S. EPA-approved CMI Workplan schedule.

^IMedia Cleanup Standards are described in Attachment II: RFI Scope of Work, and Attachment **iii**: CMS Scope of Work.

F. Additional Work

1. U.S. EPA may determine or Respondent may propose that certain tasks, including investigatory work, engineering evaluation, or procedure/methodology modifications, are necessary in addition to or in lieu of the tasks included in any U.S. EPA-approved workplan, when such Additional Work is necessary to meet the purposes set forth in Section III: Statement of Purpose.
2. U.S. EPA will notify Respondent in writing and specify the basis for its determination that Additional Work consistent with the objectives of this Order is necessary or, where proposed by Respondent, appropriate.
3. Within thirty (30) days after receipt of such determination, Respondent shall have the opportunity to meet or confer with U.S. EPA to discuss the EPA-requested or Respondent-proposed Additional Work.
4. If required by U.S. EPA, Respondent shall submit for U.S. EPA approval a workplan for the Additional Work. U.S. EPA shall specify the contents of such workplan, consistent with the objectives of this Order. Such workplan shall be submitted within thirty (30) days of receipt of U.S. EPA's determination that Additional Work is necessary (or within thirty (30) days following the meeting or conference referenced in sub-paragraph F.3 above), or according to an alternative schedule established by U.S. EPA.
5. Upon approval of a workplan by U.S. EPA, Respondent shall implement it in accordance with the schedule and provisions contained therein.

IX. AGENCY APPROVALS/PROPOSED CONTRACTOR

A. Agency Approvals

1. U.S. EPA will provide Respondent with its written approval, approval with conditions and/or modifications, disapproval, or disapproval with comments for any workplan, report (except progress reports and the DOCC), specification, or schedule submitted pursuant to or required by this Order. U.S. EPA will provide a statement of reasons for any approval with conditions and/or modifications, disapproval, or disapproval with comments.
2. Unless otherwise agreed to by U.S. EPA's Project Coordinator, within forty-five (45) days of receipt of U.S. EPA's disapproval, or disapproval with comments, Respondent shall revise and submit an approvable workplan, report, specification, or schedule in accordance with U.S. EPA's written comments.
3. Any subsequent disapproval or disapproval with comments of a revised and resubmitted workplan, report, specification, or schedule shall be deemed a violation of this Order and subject Respondent to potential penalties.

4. Upon receipt of U.S.EPA's written approval or approval with conditions and/or modifications, Respondent shall commence work and implement any approved workplan in accordance with the schedule and provisions contained therein.
5. Any U.S.EPA-approved report, workplan, specification, or schedule shall be deemed incorporated into this Order. Prior to U.S. EPA's written approval, no workplan, report, specification, or schedule shall be construed as approved and final. Oral advice, suggestions, or comments given by U.S. EPA representatives will not constitute an official approval, nor shall any oral approval or oral assurance of approval be considered as binding unless later confirmed in writing.

B. Proposed Contractor

1. All work performed pursuant to this Order shall be under the direction and supervision of a professional engineer, hydrologist, geologist, or environmental scientist with expertise in hazardous waste or contaminated soil and groundwater site cleanup. Respondent's contractor shall have the technical expertise sufficient to adequately perform all aspects of the work for which it is responsible.
2. Respondent shall notify U.S. EPA in writing of the name, title, and qualifications of the principal engineer, hydrologist, geologist, or environmental scientist to be used in carrying out the terms of this Order within fourteen (14) days of the effective date of this Order.
3. Respondent shall identify whether any contractor is on the List of Parties Excluded for Federal Procurement or Non-Procurement Programs. U.S. EPA reserves the right to disapprove, on reasonable grounds, Respondent's contractor at any time during the period that the Order is effective.
4. If U.S. EPA disapproves a contractor, then Respondent must, within sixty (60) days of receipt from U.S. EPA of written notice of disapproval, notify U.S. EPA, in writing, of the name, title and qualifications of any replacement.

X. QUALITY ASSURANCE

- A. Respondent shall follow U.S. EPA guidance for sampling and analysis. Workplans shall contain quality assurance/quality control (*QNQC*) and chain of custody procedures for all sampling, monitoring, and analytical activities. Any deviations from the *QNQC* and chain of custody procedures in approved workplans must be approved by U.S. EPA prior to implementation where practicable; must be documented, including reasons for the deviations; and must be reported in the applicable report.
- B. The name(s), addresses, and telephone numbers of the analytical laboratories Respondent proposes to use must be specified in the applicable workplan(s).
- C. All workplans required under this Order shall include data quality objectives for each data collection activity to ensure that data of known and appropriate quality are obtained and that data are sufficient to support their intended use(s).

- D. Respondent shall monitor to ensure that high quality data is obtained by its consultant or contract laboratories. Respondent shall ensure that laboratories it uses perform analyses according to the latest approved edition of "Test Methods for Evaluating Solid Waste, Physicochemical Methods" (SW-846 Third Edition inclusive of Final updates I, II, IIa, IIb, III, and any subsequent updates), or other methods deemed satisfactory to U.S. EPA. If methods other than U.S. EPA methods are to be used, Respondent shall specify all such protocols in the applicable workplan (e.g., RFI).
- E. U.S. EPA may reject any data that does not meet the requirements of the approved workplan or U.S. EPA analytical methods and may require re-sampling and additional analyses.
- F. Respondent shall ensure that laboratories it uses for analyses participate in a QA/QC program equivalent to that which is followed by U.S. EPA.
- G. U.S. EPA may conduct a performance and QA/QC audit of the laboratories chosen by Respondent before, during, or after sample analyses. Upon request by U.S. EPA, Respondent shall have its laboratory perform analyses of samples provided by U.S. EPA to demonstrate laboratory performance. If the audit reveals deficiencies in a laboratory's performance or QA/QC, re-sampling and additional analyses may be required.

XI. SAMPLING AND DATA/DOCUMENT AVAILABILITY

- A. Respondent shall submit to U.S. EPA the results of all sampling and/or tests or other data generated by or on behalf of Respondent pursuant to this Order.
- B. Notwithstanding any other provisions of this Order, the United States retains all of its information gathering and inspection authorities and rights, including the right to bring enforcement actions related thereto, under RCRA, CERCLA, and any other applicable statutes or regulations.
- C. Respondent shall notify U.S. EPA in writing at least seven (7) days prior to beginning each separate phase of field work approved under any workplan required by this Order.
- D. If Respondent believes it must commence emergency field activities without delay, Respondent may seek emergency telephone authorization from the U.S. EPA Project Coordinator or, if the U.S. EPA Project Coordinator is unavailable, his/her Section Chief, to commence such activities immediately.
- E. At the request of U.S. EPA, Respondent shall provide or allow U.S. EPA or its authorized representative to take split or duplicate samples of all samples collected by Respondent pursuant to this Order. In the event U.S. EPA intends to take split or duplicate samples, U.S. EPA shall notify Respondent at least seven (7) days prior to the scheduled sampling activity. Similarly, at the request of Respondent, U.S. EPA shall allow Respondent or its authorized representative(s) to take split or duplicate samples of all samples collected by U.S. EPA under this Order. U.S. EPA will provide fourteen (14) days advance notice to Respondent before conducting any sampling under this Order, and Respondent shall provide seven (7) days notice if Respondent intends to take split or duplicate samples.

- F. Respondent may assert a business confidentiality claim covering all or part of any information submitted to U.S. EPA pursuant to this Order. Any assertion of confidentiality must be accompanied by information that satisfies the items listed in 40 C.P.R. § 2.204(e)(4) or such claim shall be deemed waived. Information determined by U.S. EPA to be confidential shall be disclosed only to the extent permitted by 40 C.P.R. Part 2.
- G. If no such confidentiality claim accompanies the information when it is submitted to U.S. EPA, the information may be made available to the public by U.S. EPA without further notice to Respondent.
- H. Respondent shall not assert any confidentiality claim with regard to any physical or analytical data.
- I. For purposes of this Section any notification or request required to be provided in writing may be made electronically via email.

XII. ACCESS

- A. U.S. EPA, its contractors, employees, and/or any duly designated U.S. EPA representatives are authorized to enter and freely move about the Facility pursuant to this Order, upon the presentation of proper credentials and subject to the Facility's ordinary procedures for safety, for the purpose of monitoring Respondent's compliance with the Order, by, inter alia:
 - 1. interviewing Facility personnel and contractors;
 - 2. inspecting records, operating logs and contracts related to the Facility;
 - 3. Reviewing the progress of Respondent in carrying out the terms of this Order;
 - 4. Conducting such tests, sampling, or monitoring as U.S. EPA deems necessary;
 - 5. Using a camera, sound recording, or other documentary type equipment; and
 - 6. Verifying the reports and data submitted to U.S. EPA by Respondent.
- B. Respondent shall provide U.S. EPA and its representatives access at all reasonable times to the Facility and, subject to paragraph C below, to any other property to which access is required for implementation of this Order. U.S. EPA or its representatives shall contact Respondent's Project Coordinator by telephone or e-mail prior to any visit requiring access to the Facility, and Respondent's Project Coordinator will cooperate in the timely scheduling of such visit. Respondent shall have the right to designate any person to accompany U.S. EPA or its representatives at all times while at the Facility, provided that the designation of such person by Respondent does not unreasonably delay or hinder U.S. EPA's authorized activities.
- C. Respondent shall allow U.S. EPA or its representatives to inspect and copy all records, files, photographs, and documents, including all sampling and monitoring data that pertain to work undertaken pursuant to this Order and that are within the possession or under the control of Respondent or its contractors. If Respondent withholds any

document or portion thereof, otherwise covered by a request to inspect pursuant to this paragraph C, under a claim of privilege, Respondent shall furnish a privilege log identifying the withheld document (author, recipient, date, number of pages, general subject matter) and the nature and basis of the claimed privilege. If the withheld document contains both privileged and non-privileged material, Respondent shall produce the entire document with the privileged material redacted.

- D. To the extent that work being performed pursuant to this Order must be done beyond the Facility property boundary, Respondent shall use its best efforts to obtain access agreements necessary to complete work required by this Order from the present owner(s) of such property within thirty (30) days of the date that the need for access becomes known to Respondent. Best efforts as used in this paragraph shall include, at a minimum, a certified letter from Respondent to the present owner(s) of such property requesting access agreement(s) to permit Respondent and its authorized representatives access to such property, and, if requested by the property owner, may include the payment of reasonable compensation in consideration of granting access. Any such access agreement shall provide for access by U.S. EPA and its representatives. Respondent shall insure that U.S. EPA's Project Coordinator has a copy of any access agreement(s).
- E. In the event that agreements for access are not obtained within thirty (30) days of approval of any workplan for which access is required, or of the date that the need for access became known to Respondent, Respondent shall notify U.S. EPA in writing within fourteen (14) days thereafter of both the efforts undertaken to obtain access and the inability to obtain access agreements.
- F. U.S. EPA may, at its discretion, assist Respondent in obtaining access. In the event U.S. EPA obtains access, Respondent shall undertake U.S. EPA-approved work on such property.
- G. The Respondent shall indemnify the United States as provided in Section XXIII: Indemnification of the United States Government, for any and all claims arising from activities on such property.
- H. Nothing in this section limits or otherwise affects U.S. EPA's right of access and entry pursuant to applicable law, including RCRA and CERCLA.
- L. Nothing in this section shall be construed to limit or otherwise affect Respondent's liability and obligation to perform corrective action including corrective action beyond the Facility boundary, notwithstanding the lack of access.

XIII. RECORD PRESERVATION

- A. Respondent shall retain, during the pendency of this Order and for a minimum of 6 years after its termination, one set of all data, records, and other documents now in its possession or control or which come into its possession or control which relate in any way to this Order or to hazardous waste management and/or disposal at the Facility,. Respondent shall notify U.S. EPA in writing ninety (90) days prior to the destruction of any such records, and shall provide U.S. EPA with the opportunity to take possession of any such records. Such written notification shall reference the effective date, caption, and docket number of this Order and shall be addressed to:

Project Coordinator for BASF Corporation
Remediation and Reuse Branch
Land and Chemicals Division (LU-9J)
U.S. EPA, Region 5
77 West Jackson Blvd.
Chicago, IL 60604

- B. Within thirty (30) days of retaining or employing any agent or contractor for the purpose of carrying out the terms of this Order, Respondent will enter into an agreement with any such agents or contractors whereby such agents or contractors will be required to provide Respondent a copy of all documents produced pursuant to this Order.
- C. All documents pertaining to the Work required pursuant to this Order shall be stored by the Respondent at the Facility.

XIV. REPORTING AND DOCUMENT CERTIFICATION

- A. Beginning with the first full month following the effective date of this Order, and throughout the period that this Order is effective, Respondent shall provide U.S. EPA with monthly progress reports. Progress reports are due by the fifteenth (15th) day of each month and shall report on the previous month's activities), and may be submitted electronically with a hard copy to follow. The progress reports shall conform to requirements in the relevant scope of work contained in the Attachments. U.S. EPA's Project Coordinator may adjust the frequency of progress reports to be consistent with site-specific activities.
- B. One (1) hard copy of all documents submitted pursuant to this Order shall be hand-delivered, sent by certified mail, return receipt requested, or by overnight express mail to the U.S. EPA Project Coordinator designated pursuant to Section VII of this Order. One (1) electronic copy of such documents shall also be submitted to the U.S. EPA Project Coordinator. All hard copy documents submitted pursuant to this Order shall, where practicable, are to be printed on recycled paper and double-sided.
- C. Any report or other document submitted by Respondent pursuant to this Order which makes any representation concerning Respondent's compliance or noncompliance with

any requirement of this Order shall be certified by a responsible corporate officer of Respondent or a duly authorized representative. A responsible corporate officer means: 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.

D. The certification required by paragraph C above, shall be in the following form:

"I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to evaluate the information submitted. I certify that the information contained in or accompanying this submittal is true, accurate, and complete. As to those identified portion(s) of this submittal for which I cannot personally verify the accuracy, I certify that this submittal and all attachments were prepared in accordance with procedures designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those directly responsible for gathering the information, or the immediate supervisor of such person(s), 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 fine and imprisonment for knowing violations."

Signature:-----
Name: _____
Title: _____
Date: _____

XV. FORCE MAJEURE AND EXCUSABLE DELAY

- A. Force majeure, for purposes of this Order, is defined as any event arising from causes not foreseen and beyond the control of Respondent or any person or entity controlled by Respondent, including but not limited to Respondent's contractors, that delays or prevents the timely performance of any obligation under this Order despite Respondent's best efforts to fulfill such obligation. The requirement that Respondent exercise "best efforts to fulfill such obligation" shall include, but not be limited to, best efforts to anticipate any potential force majeure event and address it before, during, and after its occurrence, such that any delay or prevention of performance is minimized to the greatest extent possible.
- B. Force majeure does not include increased costs of work to be performed under this Order, financial inability to complete the work, plant shutdown, work stoppages or other labor disputes.
- C. If any event occurs or has occurred that may delay the timely performance of an obligation under this Order, whether or not caused by a force majeure event, Respondent shall contact by telephone and communicate orally with U.S. EPA's Project Coordinator, or in their absence, his/her supervisor, within two (2) business days of when Respondent first knew or should have known that the event might cause a delay. If Respondent

wishes to claim a force majeure event, then within fourteen (14) days thereafter, Respondent shall provide to U.S. EPA in writing:

1. The anticipated duration of the delay;
 2. All actions taken or to be taken to prevent or minimize the delay;
 3. All other obligations affected by the event, and what measures, if any, taken or to be taken, to minimize the effect of the event on those obligations;
 4. A schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay;
 5. Respondent's rationale for attributing such delay to a force majeure event if it intends to assert such a claim; and
 6. A statement as to whether, in the opinion of Respondent, such event may cause or contribute to endangerment to public health or the environment.
- D. Respondent shall include with any notice all available documentation supporting its claim, if any, that the delay was attributable to a force majeure. Failure to comply with the above requirements shall preclude Respondent from asserting any claim of force majeure for that event. Respondent shall be deemed to have notice of any circumstances of which its contractors had or should have had notice.
- E. If U.S. EPA determines that the delay or anticipated delay is attributable to a force majeure event, the time for performance of such obligation under this Order that is affected by the force majeure event will be extended by U.S. EPA for such time as U.S. EPA determines is necessary to perform such obligation. U.S. EPA will notify Respondent in writing the length of the extension, if any, within thirty (30) days of receiving Respondent's written notice.
- F. An extension of the time for performance of such obligation affected by the force majeure event shall not, of itself, extend the time for performance of any other obligation, unless Respondent can demonstrate that more than one obligation was affected by the force majeure event.
- G. If U.S. EPA disagrees with Respondent's assertion of a force majeure event, U.S. EPA will notify Respondent in writing.

XVI. PENALTIES FOR NONCOMPLIANCE

- A. Unless there has been a written modification by U.S. EPA of a compliance date, an approved workplan condition, or excusable delay as defined in Section XV: Force Majeure and Excusable Delay, if Respondent fails to comply with any term or condition set forth in this Order in the time or manner specified herein, Respondent shall pay penalties as set forth below upon written demand from U.S. EPA:
1. For failure to commence, perform, and/or complete field work pursuant to the terms of this Order: \$2,500 per day for the first fifteen days of such violation,

\$5,000 per day for the sixteenth through thirtieth days of such violation, and \$10,000 per day for each day of such violation thereafter;

2. For failure to complete and submit any workplans or reports (other than progress reports) pursuant to the terms of this Order, or for failure to notify U.S. EPA of immediate or potential threats to human health and/or the environment, new releases of hazardous waste and/or new solid waste management units not previously identified, as required by this Order: \$2,500 per day for the first fifteen days of such violation, \$5,000 per day for the sixteenth through thirtieth days of such violation, and \$10,000 per day for each day of such violation thereafter;
 3. For failure to complete and submit other written submittals not included in paragraph A.2. of this section pursuant to this Order: \$1,000 per day for the first fifteen days of such violation, \$2,500 per day for the sixteenth through thirtieth days of such violation, and \$5,000 per day for each day of such violation thereafter;
 4. For failure to comply with any other provisions of this Order: \$1,000 per day for the first fifteen days of such violation, \$2,500 per day for the sixteenth through thirtieth days of such violation, and \$5,000 per day for each day of such violation thereafter.
- B. Penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the day of correction of the violation. Nothing herein shall prevent the simultaneous accrual of separate stipulated penalties for separate violations of this Order. Penalties shall continue to accrue regardless of whether U.S. EPA has notified the Respondent of a violation.
- C. All penalties owed to the United States under this section shall be due and payable within thirty (30) days of the Respondent's receipt from U.S. EPA of a written demand for payment of the penalties.
- D. Interest shall begin to accrue on any unpaid stipulated penalty balance beginning on the thirty-first (31) day after Respondent's receipt of U.S. EPA's demand letter. Interest shall accrue at the Current Value of Funds Rate established by the Secretary of the Treasury. Pursuant to 31 U.S.C. § 3717, an additional penalty of 6% per annum on any unpaid principal shall be assessed for any stipulated penalty payment which is overdue for 90 or more days.
- E. All penalties shall be made payable by certified or cashier's check to the United States of America and shall be remitted to:
- U.S. EPA
 Fines and Penalties
 Cincinnati Finance Center
 P.O. Box 979077
 St. Louis, MO 63197-9000

- F. All such checks shall reference the name of the Facility, the Respondent's name and address, and the U.S. EPA docket number of this action. Copies of all such checks and letters forwarding the checks shall be sent simultaneously to the U.S. EPA Project Coordinator.
- G. The penalties set forth in this section do not preclude U.S. EPA from pursuing any other remedies or sanctions which may be available to U.S. EPA by reason of Respondent's failure to comply with any of the terms and conditions of this Order.
- H. No payments under this section shall be tax deductible for Federal tax purposes.

XVII. RESERVATION OF RIGHTS

- A. U.S. EPA reserves all of its statutory and regulatory powers, authorities, rights, and remedies, both legal and equitable, which may pertain to Respondent's failure to comply with any of the requirements of this Order, including without limitation the assessment of penalties under § 3008(h)(2) of RCRA, 42 U.S.C. § 6928(h)(2). -This Order shall not be construed as a covenant not to sue, release, waiver, or limitation of any rights, remedies, powers, and/or authorities, civil or criminal, which U.S. EPA has under RCRA, CERCLA, or any other statutory, regulatory, or common law authority of the United States.
- B. U.S. EPA reserves the right to disapprove of work performed by Respondent pursuant to this Order, if such work is not performed in accordance with the requirements set forth in the Order, and to order that Respondent perform additional tasks.
- C. U.S. EPA reserves the right to perform any portion of the work consented to herein or any additional site characterization, feasibility study, and remedial work as it deems necessary to protect human health and/or the environment. U.S. EPA may exercise its authority under CERCLA to undertake response actions at any time. In any event, U.S. EPA reserves its right to seek reimbursement from Respondent for costs incurred by the United States. Notwithstanding compliance with the terms of this Order, Respondent is not released from liability, if any, for the costs of any response actions taken or authorized by U.S. EPA.
- D. If U.S. EPA determines that activities in compliance or noncompliance with this Order have caused or may cause a release of hazardous waste or hazardous constituent(s), or a threat to human health and/or the environment, or that Respondent is not capable of undertaking any of the work ordered, U.S. EPA may order Respondent to stop further implementation of this Order for such period of time as U.S. EPA determines may be needed to abate any such release or threat and/or to undertake any action which U.S. EPA determines is necessary to abate such release or threat, and Respondent reserves all of its rights and defenses with respect thereto.
- E. This Order is not intended to be nor shall it be construed to be a permit. Further, U.S. EPA's approval of a scope of work or any final workplan does not constitute a warranty or representation that the scope of work or workplan will achieve the required cleanup or

performance standards. Compliance by Respondent with the terms of this Order shall not relieve Respondent of its obligations to comply with RCRA or any other applicable local, State, or Federal laws and regulations.

- F. Notwithstanding any other provision of this Order, no action or decision by U.S. EPA pursuant to this Order, including without limitation, decisions of the Regional Administrator, the Director of the Land and Chemicals Division or any authorized representative of U.S. EPA, shall constitute final agency action giving rise to any right of judicial review prior to U.S. EPA's initiation of a judicial action to enforce this Order, including an action for penalties or an action to compel Respondent's compliance with the terms and conditions of this Order.

XV.DI. OTHER CLAIMS

Except as expressly provided herein, nothing in this Order shall constitute or be construed as a lease from any claim, cause of action, demand, or defense in law or equity, against any person, firm, partnership, or corporation 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 or migrating from the Facility.

XIX. OTHER APPLICABLE LAWS

- A. All actions required to be taken pursuant to this Order shall be undertaken in accordance with the requirements of all applicable local, State, and Federal laws and regulations.
- B. Respondent shall obtain or cause its representatives to obtain all permits and approvals necessary under such laws and regulations.

XX. INDEMNIFICATION OF THE UNITED STATES GOVERNMENT

- A. Respondent shall 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 officers, employees, agents, independent contractors, receivers, trustees, and assigns in carrying out activities required by this Order.
- B. 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.

**XXI. COST ESTIMATES AND ASSURANCE OF FINANCIAL RESPONSIBILITY
FOR COMPLETING THE WORK**

A. Estimated Cost of the Work

1. Within 30 days after the Effective Date of this Order, Respondent shall submit to U.S. EPA for approval detailed written estimates, in current dollars, of the estimated cost of all Work to Be Performed under Section VIII of this Order (Cost Estimate). The cost estimate must account for the costs of all investigation, long term care work and all construction work.
2. Respondent shall annually adjust the Cost Estimate for inflation and for changes in the scope of the Work to be performed, within sixty days prior to the anniversary date of the establishment of the financial assurance instrument(s), until the Work required by this Order is completed. Respondent shall submit each annual Cost Estimate to U.S. EPA for review.

B. Assurances of Financial Responsibility for Completing the Work

1. Within 30 days after U.S. EPA approves the Cost Estimate under Paragraph XXI(A), above, Respondent shall establish and maintain financial assurance for the benefit of U.S. EPA in the amount of the approved cost estimate. Respondent may use one or more of the financial assurance forms described in subparagraphs (a) – (f) below. All financial assurance instruments provided pursuant to this Order shall be submitted to U.S. EPA for review in draft form at least 30 days before they are due to be filed and shall be satisfactory in form and substance as determined by U.S. EPA.
 - a. A **trust fund** established for the benefit of U.S. EPA, administered by a trustee;
 - b. A **surety bond** unconditionally guaranteeing performance of the Work in accordance with this Order, or guaranteeing payment at the direction of U.S. EPA into a standby trust fund that meets the requirements of the trust fund in subparagraph a above;
 - c. An irrevocable **letter of credit**, payable at the direction of the Director, Land and Chemicals Division, into a standby trust fund that meets the requirements of the trust fund in subparagraph a above;
 - d. An **insurance policy** that provides U.S. EPA with rights as a beneficiary, issued for a face amount at least equal to the current Cost Estimate, except where costs not covered by the insurance policy are covered by another financial assurance instrument;

- e. A **corporate guarantee**, executed in favor of the U. S. EPA by one or more of the following: (i) a direct or indirect parent company, or (ii) a company that has a "substantial business relationship" with Respondent (as defined in 40 C.F.R. § 264.141(h)), to perform the Work to Be Performed under Section VI of this Order or to establish a trust fund as permitted by subparagraph a above; provided, however, that any company providing such a guarantee shall demonstrate to the satisfaction of the U.S. EPA that it satisfies the financial test requirements of 40 C.F.R. § 264.143(f) with respect to the portion of the Cost Estimate that it proposes to guarantee; or
 - f. A demonstration by Respondent that it meets the **financial test** criteria of 40 C.F.R. § 264.143(f) with respect to the Cost Estimate, provided that all other requirements of 40 C.F.R. § 264.143(f) are satisfied. To the extent Respondent intends to provide financial assurance through this mechanism, it must provide all documentation required under 40 C.F.R. § 264.143(f) prior to the Effective Date.
2. The contents of Respondent's financial assurance documents must be developed and implemented consistent with the standards and procedures described in U.S. EPA's "Model RCRA §3008(h) Order on Consent - Financial Assurance Section" (Feb. 2006).
 3. Respondent shall submit all executed and/or otherwise finalized instruments or other documents to U.S. EPA's Regional Comptroller (MF-IOJ), 77 W. Jackson Blvd., Chicago, IL 60604-3590, within 90 days after the effective date of this Consent Order. Respondent shall also provide copies to:

Project Manager for BASF Corporation
Land and Chemicals Division
U.S. EPA Region 5
77 West Jackson Blvd., DE-9J
Chicago, Illinois 60604
 4. If at any time the Respondent provides financial assurance for completion of the Work by means of a corporate guarantee or financial test, Respondent shall also comply with the other relevant requirements of 40 C.F.R. § 264.143(f), 40 C.F.R. § 264.151(f), and 40 C.F.R. § 264.151(h)(1) relating to these methods, and will promptly provide any additional information requested by U.S. EPA from the Respondent or corporate guarantor at any time.
 5. For purposes of the corporate guarantee or the financial test described above, references in 40 CFR § 264.143(f) to "the sum of current closure and post-closure costs and the current plugging and abandonment cost estimates" shall mean "the sum of all environmental remediation obligations" (including obligations under CERCLA, RCRA, UIC, TSCA and any other state or tribal environmental

obligation) guaranteed by such company or for which such company is otherwise financially obligated in addition to the Cost Estimate.

6. If at any time U.S. EPA determines that a cost estimate or a financial assurance mechanism provided pursuant to this Section is inadequate, U.S. EPA shall notify Respondent in writing. If at any time Respondent becomes aware of information indicating that any cost estimate(s) or financial assurance mechanism(s) provided pursuant to this Section is inadequate, Respondent shall notify U.S. EPA in writing of such information within ten days.
7. Respondent's inability or failure to establish or maintain financial assurance for completion of the Work shall in no way excuse performance of any other requirements of this Order.

C. Modification of Amount and/or Form of Performance Guarantee.

1. Reduction of Amount of Financial Assurance. If Respondent believes that the Cost Estimate has diminished below the amount covered by the existing financial assurance provided under this Order, Respondent may, at the same time that Respondent submits its annual Cost Estimate, submit a written proposal to U.S. EPA for approval to reduce the amount of the financial assurance to equal the revised Cost Estimate.
2. Change of Form of Financial Assurance. If Respondent desires to change the form or terms of financial assurance, Respondent may, at any time, establish an alternative form of financial assurance in the amount of the current Cost Estimate so long as it meets the applicable requirements of 40 C.P.R. §§ 264.143 and 264.151 and paragraph (B) above. If the alternative form of financial assurance is one listed in paragraph (B)(1)(a)-(f), above, Respondent shall submit the required financial instruments in draft form for U.S. EPA review and approval prior to making such instruments legally binding. After receipt of U.S. EPA approval and subsequent execution and/or finalization of all instruments or other documents required in order to make the selected financial assurance legally binding, Respondent shall submit said instruments and documents to the U.S. EPA Comptroller's Office with copies to the Project Manager, as provided in paragraph (B)(3) above.

- D. Release of Financial Assurance. Respondent may submit a written request to the Director, Land and Chemicals Division that U.S. EPA release Respondent from the requirement to maintain financial assurance under this Section once U.S. EPA and Respondent have both executed an "Acknowledgment of Termination and Record Preservation and Reservation of Right" pursuant to Section XVIII (Termination and Satisfaction) of the Order. The Director, Land and Chemicals Division shall notify both the Respondent and the provider(s) of the financial assurance that Respondent is released from all financial assurance obligations under this Order.

XXII. MODIFICATION

- A. This Order may be amended by U.S. EPA to ensure protection of human health and the environment. Such amendments shall be in writing, shall have as their effective date the date on which they are signed by U.S. EPA, and shall be incorporated into this Order.
- B. Any reports, plans, specifications, schedules, and attachments required by this Order are, upon written approval by U.S. EPA, incorporated into this Order. Any noncompliance with such U.S. EPA-approved reports, plans, specifications, schedules, and attachments shall be considered a violation of this Order and shall subject Respondent to the statutory penalty provisions referenced in Section XVI of this Order.
- C. No informal advice, guidance, suggestions, or comments by U.S. EPA regarding reports, plans, specifications, schedules, and any other writing submitted by Respondent will be construed as relieving Respondent of its obligation to obtain written approval, if and when required by this Order.

XXIII. SEVERABILITY

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

XXIV. NOTICE OF OPPORTUNITY TO REQUEST A HEARING

In accordance with Section 3008(b) of RCRA, 42 U.S.C. § 6928(b), this Order shall become final unless Respondent files a response and requests a public hearing in writing no later than (30) days after service of the Order and Notice of Opportunity for Hearing. The response and request for hearing must be filed with:

The Regional Hearing Clerk
United States Environmental Protection Agency
77 W. Jackson Street, E-19J
Chicago, Illinois 60604

A copy of the response and request for hearing and copies of all subsequent documents filed in this action must be sent to:

Jeffery M. Trevino
Office of Regional Counsel (C-14J)
United States Environmental Protection Agency
77 W. Jackson Street
Chicago, Illinois 60604

The response must specify each factual or legal determination or relief provision in the Order that the Respondent disputes and shall specify the basis upon which it disputes such determination or provision. The response should also include any proposals for modification of the Order. Any hearings on the Order will be conducted in accordance with the attached hearing procedures.

If Respondent fails to file a response and request for hearing within thirty (30) days after service of the Order, Respondent will be deemed to have waived its right to a hearing, and the Order will become final.

XXV. SETTLEMENT CONFERENCE

Whether or not Respondent requests a hearing, an informal conference may be requested at any time in order to discuss the facts of this case and to discuss potential settlement. To request an informal conference contact:

Project Manager for BASF Corporation (Cleveland)
Remediation and Reuse Branch
Land and Chemicals Division
U.S. EPA Region 5
77 W. Jackson Boulevard (LU-9J)
Chicago, IL 60604

A request for an informal conference does not extend the thirty (30) day period during which a written response and request for a hearing must be submitted. The informal conference procedure may be pursued simultaneously with the public hearing procedure.

XXVI. SURVIVABILITY/PERMIT INTEGRATION

- A. Except as otherwise expressly provided in this section, this Order shall survive the issuance or denial of a RCRA permit for the Facility, and this Order shall continue in full force and effect after either the issuance or denial of such permit. Accordingly, Respondent shall continue to be liable for the performance of obligations under this Order notwithstanding the issuance or denial of such permit.
- B. **If** the Respondent is issued a RCRA permit for this Facility that expressly incorporates all or a part of the requirements of this Order, or expressly states that its requirements are intended to replace some or all of the requirements of this Order, Respondent may request a modification of this Order and shall, with written U.S. EPA approval, be relieved of liability under this Order for those specific obligations. **In** the event that a RCRA permit is issued that is not in conformance with this Order, Respondent retains any rights it may have to seek review of that permit and/or to seek modification or amendment of this Order.

XXVII. SUBMITTAL SUMMARY

Table 1, as follows, is a summary of the major deadlines required by this Order. To the extent that this section is inconsistent with any other section of this Order, such other section rather than this summary shall prevail.

Table 1
Submittal Summary

| SECTION | ACTION | DUE DATE |
|----------|--|---|
| IV.D | Notify U.S. EPA of transfer of ownership | 30 days prior to such scheduled transfer, whenever practicable |
| VIIA | Designate a Project Coordinator and notify U.S. EPA in writing | Within 15 days of the effective date of the Order |
| VIII.B.4 | Submit IM Workplan | Within 30 days of receipt of U.S. EPA's request/ determination |
| vm.c.1 | Submit DOCC Report | Within 90 days of the effective date of this Order |
| vm.c.2 | Submit RFI Workplan | Within 90 days of receipt of U.S. EPA's comments on the DOCC |
| VIII.C.6 | Submit RFI Report | As scheduled in approved RFI Workplan |
| vm.D.1 | Submit CMS Report | Within 90 days of receipt of U.S. EPA approval of RFI Report |
| vm.E.1 | Submit CMI Workplan | Within 90 days of notification of U.S. EPA's selection of corrective measure(s) |
| VIII.E.3 | Submit CMI Report | As scheduled in approved CMI Workplan |
| VIII.F.4 | Submit workplan for additional work | If necessary, within 30 days of receipt of U.S. EPA determination (or within 30 days following meeting) |
| IX.A.2 | Revise and submit document disapproved or disapproved with comments | Within 45 days of receipt of U.S. EPA's document disapproval or disapproval with comments |
| IX.B.2 | Notify U.S. EPA in writing of proposed contractor(s) | Within 14 days of the effective date of the Order |
| XI.C | Notify U.S. EPA prior to beginning each separate phase of field work | 14 days prior to beginning field activities |

| | | |
|--------|--|---|
| XII.D | Obtain access agreements | If necessary, within 30 days of approval of workplan where access is required |
| XIII.A | Notify U.S. EPA prior to destruction of documents or records that relate to this Order | 90 days prior to destruction |
| XN.A | Submit monthly progress reports | On the fifteenth (15th) day of each month |

XXVIII. TERMINATION AND SATISFACTION

- A. The provisions of this Order shall be deemed satisfied upon Respondent's receipt of written notice from U.S. EPA that Respondent has demonstrated, to the satisfaction of U.S. EPA, that the terms of this Order, including any additional tasks determined by U.S. EPA to be required pursuant to this Order, or any continuing obligation or requirements [e.g., Record Retention, Reservation of Rights] have been satisfactorily completed.

XXIX. EFFECTIVE DATE

The effective date of this Order shall be the date on which it is signed by U.S. EPA.

IT IS HEREBY ORDERED That 10 DAY OF July, 2010.

By: *h*
 Margaret M. G emero, Drrector
 Land and Chemicals Division
 U.S. EPA, Region 5

U.S. EPA J.D. #OHD 000 804 682

ATTACHMENT I

Interim Measures
Scope of Work

ATTACHMENT I
Interim Measures
Scope of Work

Purpose

If deemed necessary by Respondent and/or U.S. EPA, the purpose of Interim Measures (IM) are to control or abate immediate threats to human health, and the environment, and/or prevent minimal release of potential hazardous wastes, or hazardous constituents at or from the Facility while long-term corrective measure alternatives are being evaluated. Respondent shall furnish all personnel, materials and services necessary for, or incidental to, performing the IMs.

Scope

Interim Measures are one possible step in the corrective action program. Interim Measures consist of the following components, which for clarity have been designated as sections.

Section I: Interim Measures Workplan

- A. Interim Measures Objectives
- B. Health and Safety Plan
- C. Public Involvement Plan
- D. Quality Assurance Project Plan
- E. Data Management and Reporting Plan

Section II: Interim Measures Design Program

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

Section III: Interim Measures Construction Quality Assurance Plan

- A. Construction Quality Assurance Objectives
- B. Inspection Activities
- C. Documentation

Section IV: Reports

- A. Progress
- B. Interim Measures Workplan
- C. Final Design Documents
- D. Draft Interim Measures Report
- E. Final Interim Measures Report

Section V: Proposed Schedule

Section I: Interim Measures Workplan

If interim measures are proposed by Respondent and/or determined to be necessary by U.S. EPA, Respondent shall prepare an Interim Measures Workplan. The Workplan shall include the development of several plans which shall be prepared concurrently.

A. Interim Measures Objectives

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 Interim Measures Workplan will include a discussion of the technical approach, engineering design, engineering plans, schedules, budget, and personnel. The Workplan will also include: a description of qualifications of personnel performing or directing the interim measures, including contractor personnel. This plan shall also document the overall management approach to the interim measures, and whether a Quality Assurance Project Plan, and Data Management and Reporting Plan are required for the IM.

B. Health and Safety Plan

Respondent shall submit a Health and Safety Plan to U.S. EPA for review, although it does not require approval by U.S. EPA.

1. Major elements of the Health and Safety Plan may include:
 - Facility description, including availability of resources such as roads, water supplies, electricity and telephone services;
 - Description of the known hazards and evaluation of the risks associated with the incident and with each activity conducted;
 - A list of key personnel and alternates responsible for site safety, response operations, and for protection of human health;
 - Description of the levels of protection to be worn by personnel;
 - Delineation of the work area;
 - Procedures to control site access;
 - Description of decontamination procedures for personnel and equipment;
 - Site emergency procedures;
 - Emergency medical care for injuries and toxicological problems;
 - Description of requirements for an environmental surveillance program;
 - Routine and special training required for response personnel; and
 - Procedures for protecting workers from weather-related problems;
2. The Facility Health and Safety Plan shall be consistent with:
 - NIOSH Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (1985);
 - U.S. EPA Order 1440.1 -Respiratory Protection;
 - U.S. EPA Order 1440.3- Health and Safety Requirements for Employees engaged in Field Activities;
 - Facility Contingency Plan;
 - U.S. EPA Standard Operating Safety Guide (1984);
 - OSHA regulations particularly in 29 CFR 1910 and 1926;
 - State and local regulations; and
 - Other U.S. EPA guidance as provided.

C. Public Involvement Plan

All Public Involvement Plans prepared by Respondent shall be submitted to U.S. EPA for comment and approval prior to use. Respondent must never appear to represent or speak for the U.S. EPA before the public, other government officials, or the media.

1. Public Involvement activities that may be required of Respondent include the following:
 - Conducting an open house or informal meeting (i.e., availability session) in a public location where people can talk to Agency officials and Respondent on a one-to-one basis;
 - Preparing fact sheets summarizing current or proposed corrective action activities (all fact sheets should be reviewed by the U.S. EPA prior to public distribution);
 - Communicating effectively with people who have vested interest in the corrective action activities, (e.g., providing written or verbal information in the foreign language of a predominantly non-English-speaking community); and
 - Maintaining an easily accessible repository (such as a town hall or public library or the Facility itself, in some limited circumstances) of information on the facility-specific corrective action program, including the order, approved workplans, and/or other reports.
2. A schedule for community relations activities shall be included in the Public Involvement Plan.

D. Quality Assurance Project Plan

Respondent shall prepare a plan to document all monitoring procedures, sampling, field measurements and sample analysis performed during interim measures so as to ensure that all information, data, and resulting decisions are technically sound, statistically valid, and properly documented. The QAPP shall be prepared in accordance with Attachment V. A pre-QAPP meeting shall be held prior to preparation of the QAPP. Participants shall include, but are not limited to Respondent, their QAPP preparer, laboratory representatives, U.S. EPA Project Coordinator, and U.S. EPA Quality Assurance representatives. A performance audit may be conducted by U.S. EPA on the laboratory selected by Respondent.

E. Data Management and Reporting Plan

Respondent shall develop and initiate a Data Management and Reporting Plan to document and track interim measures data and results. This plan shall identify and set up 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 of the interim measures.

All groundwater data shall be submitted in a computer accessible format, i.e., diskette. The format used shall be compatible with the U.S. EPA, Region 5 groundwater database known as the Ground Water Information Tracking System (GRITS), Version 4.0.

Section II: Interim Measures Design Program

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:
 - Compliance with all applicable or relevant environmental and public health standards; and
 - Minimization of environmental and public impacts.
2. Discussion of the technical factors of importance including:
 - Use of currently accepted environmental control measures and technology;
 - The constructibility of the design; and
 - 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:
 - Qualitative flow sheets;
 - Quantitative flow sheets;
 - Facility layout; and
 - Utility locations.
6. Tables listing materials, equipment and specifications.
7. Tables giving material balances.
8. Appendices including:
 - Sample calculations (one example presented and explained clearly for significant or unique design calculations);
 - Derivation of equations essential to understanding the report; and
 - Results of laboratory or field tests.

General correlations between drawings and technical specifications is a basic requirement of any set of working construction plans and specifications. Before submitting the project specifications, Respondent shall coordinate and cross-check the specifications and drawings and complete the proofing of the edited specifications and required cross-checking of all drawings and specifications.

B. Operation and Maintenance Plan

Respondent shall prepare an Operation and Maintenance Plan to cover both implementation and long-term maintenance of the interim measure. The plan shall be composed of the following elements as appropriate to the specific interim measure:

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 experienced 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), including:
 - Description of tasks for operation;
 - Description of tasks for maintenance;
 - Description of prescribed treatment or operation conditions;
 - Schedule showing frequency of each O&M task; and
 - Common and/or anticipated remedies.
 3. Description of routine monitoring and laboratory testing, including:
 - Description of monitoring tasks;
 - Description of required laboratory tests and their interpretation;
 - Required QA/QC; and
 - Schedule of monitoring frequency and date, if appropriate, when monitoring may cease.
 4. Description of equipment, including:
 - Equipment identification;
 - Installation of monitoring components;
 - Maintenance of site equipment; and
 - Replacement schedule for equipment and installed components.
 5. Records and reporting mechanisms required, including:
 - Daily operating logs;
 - Laboratory records;
 - Mechanism for reporting emergencies;
 - Personnel and maintenance records; and
 - Monthly/annual reports to Federal/State agencies.

The Operation and Maintenance Plan shall be submitted with the Final Design Documents or as approved in the Interim Measures Workplan.

C. Project Schedule

Respondent shall develop a detailed Project Schedule for construction and implementation of the interim measure(s) which identifies timing for initiation and completion of all critical path tasks. Respondent shall specifically identify dates for completion of the project and major interim milestones which are enforceable terms of this Order. A Project Schedule shall be submitted simultaneously with the Final Design Documents.

D. Final Design Documents

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



Section III: Interim Measure Construction Quality Assurance Plan

A. Construction Quality Assurance Objectives

In the CQA plan, Respondent shall identify and document the objectives and framework for the development of a construction quality assurance program including, but not limited to the following: responsibility and authority; personnel qualifications; inspection activities; sampling requirements; and documentation. The responsibility and authority of all organizations (i.e., technical consultants, construction firms, etc.) and key personnel involved in the construction of the interim measure should be described fully in the CQA plan. Respondent must identify a CQA officer and the necessary supporting inspection staff.

B. 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 CQA plan. The 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
 - a. Respondent shall conduct a preconstruction inspection and meeting to:
 - Review methods for documenting and reporting inspection data;
 - Review methods for distributing and storing documents and reports;
 - Review work area security and protocol;
 - Discuss any appropriate modifications of the construction quality assurance plan to ensure that site-specific considerations are addressed; and
 - Conduct a site walk-around to verify that the design criteria, plans, and specifications are understood and to review material and equipment storage locations.
 - b. The preconstruction inspection and meeting shall be documented by a designated person and minutes should be transmitted to all parties.
2. Prefinal inspection
 - a. Upon preliminary project completion, Respondent shall notify U.S. EPA for the purposes of conducting a prefinal inspection. The prefinal inspection will consist of a walk-through inspection of the entire project site. The inspection is to determine whether the project is complete and consistent with the contract documents and the U.S. EPA approved interim measure. Any outstanding construction items discovered during the inspection will be identified and noted. Additionally, treatment equipment will be operationally tested by 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. The prefinal inspection report should outline the outstanding construction items, actions required to resolve items, completion date for these items, and date for final inspection.

3. Final Inspection
 - a. Upon completion of any outstanding construction items, Respondent shall notify U.S. EPA for the purpose of conducting a final inspection. The final inspection will consist of a walk-through inspection of the project site. The prefinal inspection will be used as a checklist with the final inspection focusing on the outstanding items that have been resolved.
4. Sampling and Testing Requirements
 - a. The sampling and testing activities, sample size, sample and test locations, frequency of testing, acceptance and rejection criteria, and plans for correcting problems should be presented in the CQA.

C. Documentation

Reporting requirements for CQA activities shall be described in detail the CQA plan. This 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.

Section IV: Reports

A. Progress

Respondent shall at a minimum provide the U.S. EPA with signed, monthly 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 representatives of the local community, public interest groups, or State government during the reporting period;
5. Summaries of *all* problems of 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 Sections I, II and III.

C. Final Design Documents

Respondent shall submit the Final Design Documents as described in Section II.

D. Draft Interim Measures Report

At the "completion" of the construction of the project (except for long-term operations, maintenance and monitoring), Respondent shall submit an Interim Measures and Implementation Report to U.S. 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 plan and why these were necessary for the project;
3. Listing of 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 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 the inspection summary reports, inspection data sheets, problem identification and corrective measure reports, block evaluation reports, photographic reporting data sheets, design engineers' acceptance reports, deviations from design and material specifications (with justifying documentation) and as-built drawings.

E. Final Interim Measures Report

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

Section V: Proposed Schedule

Respondent will provide U.S. EPA with IM submittals according to the following schedule:

| Facility Submission | Due Date |
|--|--|
| Interim Measures Workplan <ul style="list-style-type: none"> ● Interim Measures Objectives ● Health and Safety Plan ● Public Involvement Plan ● Quality Assurance Project Plan ● Data Management and Reporting Plan ● Construction QA Plan | Within 30 days of U.S. EPA request/determination or upon written request |
| Final Design Documents <ul style="list-style-type: none"> ● Design Plans and Specs ● O&M Plan ● Project Schedule | As outlined in the approved IM workplan |
| Draft Interim Measures Report | In accordance with the project schedule approved in the IM Workplan |
| Final Interim Measures Report | 45 days after receipt of U.S. EPA comments on Draft IM Report |
| Progress Reports | Monthly |

ATTACHMENT II
RCRA Facility Investigation
Scope of Work

ATTACHMENT II RCRA Facility Investigation Scope of Work

Purpose

The purpose of the RCRA Facility Investigation (RFI) is to determine the nature and extent of releases of hazardous waste or constituents from regulated units, solid waste management units, areas of concern, and other source areas at and from the Facility and to gather all necessary data to support a Corrective Measures Study. Respondent shall furnish all personnel, materials, and services necessary for, or incidental to, performing the RFI.

Scope

The RCRA Facility Investigation is one step in the corrective action program. The RFI consists of the following components, which for clarity have been designated as sections.

Section I: Description of Current Conditions

- A. Facility Background
- B. Preliminary Assessment of Nature and Extent of Contamination
- C. Implementation of Interim/Stabilization Measures

Section II: RFI Workplan

- A. Purpose/Objectives
- B. Project Management Plan
- C. Quality Assurance Project Plan
- D. Data Management and Reporting Plan
- E. Health and Safety Plan
- F. Public Involvement Plan
- G. Schedule for Facility Investigation

Section III: Facility Investigation

- A. Purpose/Objectives
- B. Environmental Setting
- C. Source Characterization
- D. Contamination Characterization
- E. Potential Receptor Identification

Section IV: Investigation Results and Analysis

- A. Data Analysis
- B. Media Cleanup Standards
- C. Analysis of Risk

Section V: Progress Reports

Section VI: Proposed Schedule



Section I: Description of Current Conditions

Respondent shall submit to U.S. EPA for review and comment, a report (as set forth below) providing the background information on the Facility, contamination, and interim measures. Respondent shall indicate in the applicable section if some of this information is not available. This report shall contain information that is consistent with the data gathered during the RCRA Facility Assessment. The current condition report shall be submitted prior to the submission of the RFI to allow the U.S. EPA to review it.

A. Facility Background

Respondent's report shall summarize the regional location, pertinent boundary features, general facility physiographic, hydrogeology, and historical use of the facility for the treatment, storage, or disposal of solid and hazardous waste. Respondent's report shall include:

1. *Maps.* All maps shall be of sufficient detail and accuracy to locate and report all current and future work performed at the site. Aerial photographs may be used with solid waste management units, areas of concern, and other source areas superimposed on them. Maps shall depict the following:
 - General geographic location;
 - Property lines, with the owners of all adjacent property clearly indicated;
 - Topography and surface drainage depicting all waterways, wetlands, flood plains, water features, drainage patterns, and surface-water containment areas;
 - All tanks, buildings, utilities, paved areas, easements, rights-of-way, and other features;
 - All solid or hazardous waste treatment, storage, or disposal areas active after November 19, 1980;
 - All known past solid or hazardous waste treatment, storage or disposal areas regardless of whether they were active on or after November 19, 1980;
 - All known past and present product and waste underground tanks or piping;
 - Surrounding land uses (residential, commercial, industrial, agricultural, recreational);
 - The location of all municipal, public, private and industrial wells, along with all monitoring wells, at the Facility and within a 1-mile radius of the Facility. These wells shall be clearly labeled and ground and top of casing elevations and construction details included, if available (these elevations and details may be included as an attachment); and
 - Wind rose and meteorology.
2. A history and description of ownership and operation, solid and hazardous waste generation, treatment, storage and disposal activities at the facility.
3. Approximate dates or periods of past product and waste spills, identification of the materials spilled, the amount spilled, the location where spilled, and a description of the response actions conducted (local, State, or Federal response units or private parties), including any inspection reports or technical reports generated as a result of the response.
4. A summary of past permits applied for and/or received, any enforcement actions and their subsequent responses and a list of documents and studies prepared for the facility. This may include information from previous and/or present owner/operators, if available.
5. A general description of major habitat types (e.g., grasslands, forests, lakes, streams, wetlands) located in and adjacent to the facility. In delineating wetlands, the U.S. Fish



and Wildlife Service's National Wetland Inventory maps should be consulted. The U.S. Army Corps of Engineers should be consulted and wetlands should be delineated using the Federal Manual for Identifying and Delineating Jurisdictional Wetlands.

6. A general description of plants and animals at and adjacent to the facility, including the following: qualitative observations of resident plants and animals (birds, mammals, fish, stream benthos, etc.); and classification of vegetation community types. Threatened and endangered species possibly on or near the facility should be identified as early as possible.

B. Preliminary Assessment of Nature and Extent of Contamination

Respondent shall prepare and submit for U.S. EPA review, a preliminary report describing the existing information on the nature and extent of contamination.

1. Respondent's report shall summarize all possible source areas of contamination. This, at a minimum, shall include all RCRA-regulated units, solid waste management units, areas of concern, spill areas, and other suspected source areas of contamination. For each area, Respondent shall identify the following:
 - Location of unit/area (to be depicted on facility map provided in Section LA.1);
 - Quantities of solid and hazardous wastes (both managed and spilled or released);
 - Type of hazardous waste or constituents (both causing or potentially causing contamination), to the extent known;
 - Identification of areas where additional information is necessary; and
 - The results of previous investigations.
2. Respondent shall prepare a preliminary assessment and description of the existing degree and extent of contamination. This shall include:
 - For each medium where the Order identifies a release (e.g., soil, groundwater, surface water, sediments, etc.), a description of the existing extent of contamination. This description must include all available monitoring data and qualitative information on the locations and levels of contamination at the facility (both on-site and off-site). Include biodata (e.g., fishkills, distressed vegetation, abnormal individuals of a species, carcasses, tissue studies, etc.). Include a general assessment of the data quality, a map showing the location of all existing sampling points and potential source areas and contour maps showing any existing ground water plumes at the facility. Highlight potential ongoing release areas that would warrant use of interim measures (see Section I.C. Implementation of Interim/Stabilization Measures); and
 - A list and brief description of all previous investigations that have occurred at the facility, who they were conducted for (i.e., agency) and agency contacts.
 - Respondent shall submit a report that identifies the potential impact(s) on human health and the environment, including potential exposure pathways, migration routes, and potential receptors for all relevant land use scenarios related to the sources of contamination identified as relevant in paragraph 1 above. A site-conceptual model should be created to illustrate these pathways, routes, and receptors. The report shall include, at a minimum:
 - All potential migration pathways, including information on geology, pedology, hydrogeology, physiography, hydrology, water quality, foodwebs, meteorology,

- air quality, chemistry, fate and transport characteristics associated with affected media, and natural attenuation, as appropriate;
- o Physical properties of known contaminants;
- An assessment of whether off-site migration of contaminants has occurred or is likely to occur;
- o An assessment of media-specific potential human exposure pathways (e.g., ingestion, inhalation, dermal contact), including groundwater and surface water use;
- o Identification of current and future land use;
- o Identification of current or potential receptors at risk including demography and identification of possible sensitive subpopulations (e.g., schools, homes for the elderly, hospitals, and ecosystems).

C. Implementation of Interim/Stabilization Measures

Respondent's report shall document past, present, or proposed interim/stabilization measures at the facility. This shall include:

- Objectives of the interim/stabilization measures: how the measure is mitigating a potential threat to human health and the environment and/or is consistent with and integrated into any long-term solution at the facility;
- Design, construction, operation, and maintenance requirements;
- Schedules for design, construction and monitoring;
- Schedule for progress reports; and
- Data in support of the potential need for future interim measures or related to any assessment undertaken to determine the need for future interim/stabilization measures.

Section II: RFI Workplan

A. Purpose/Objectives

Respondent shall prepare an RFI Workplan. The purpose of the RFI Workplan is to present to U.S. EPA the specific plans to characterize the nature and extent of contamination. The RFI Workplan shall include the development of several plans, which will be prepared concurrently. During the RCRA Facility Investigation, it may be necessary to revise the RFI Workplan to increase or decrease the detail of information collected to accommodate facility-specific situations.

B. Project Management Plan

Respondent shall prepare a Project Management Plan (PMP) which will include a discussion of the technical approach, schedules, and personnel. The PMP will also include a description of qualifications of personnel performing or directing the RFI, including contractor personnel. This plan shall also document the overall management approach to the RFI.

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C. Quality Assurance Project Plan

Respondent shall prepare a plan to document all monitoring procedures, sampling, field measurements and sample analysis performed during the investigations so as to ensure that all information, data, and resulting decisions are technically sound, statistically valid, and properly documented. The QAPP shall be prepared in accordance with Attachment V. A pre-QAPP meeting shall be held prior to preparation of the QAPP. Participants shall include, but are not limited to Respondent, their QAPP preparer, laboratory representatives, U.S. EPA Project Coordinator, and U.S. EPA Quality Assurance representatives.

A performance audit may be conducted by U.S. EPA on the laboratories selected by Respondent. This audit will be completed and laboratories approved for use on the project prior to the start of field work for the RFI.

D. Data Management and Reporting Plan

Respondent shall develop and initiate a Data Management and Reporting Plan to document and track investigation data and results. This plan shall identify and set up 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 of the interim measures.

All groundwater data shall be submitted in a computer accessible format, i.e., diskette. The format used shall be compatible with the U.S. EPA, Region 5 groundwater database known as the Ground Water Information Tracking System (GRITS), Version 4.0.

E. Health and Safety Plan

Respondent shall submit a Health and Safety Plan to U.S. EPA for review, although it does not require approval by U.S. EPA.

1. M:Uor elements of the Health and Safety Plan may include:
 - Facility description, including availability of resources such as roads, water supplies, electricity and telephone services;
 - Description of the known hazards and evaluation of the risks associated with the incident and with each activity conducted;
 - A list of key personnel and alternates responsible for site safety, response operations, and for protection of human health;
 - Description of the levels of protection to be worn by personnel;
 - Delineation of the work area;
 - Procedures to control site access;
 - Description of decontamination procedures for personnel and equipment;
 - Site emergency procedures;
 - Emergency medical care for injuries and toxicological problems;
 - Description of requirements for an environmental surveiiiance program;
 - Routine and special training required for response personnel; and
 - Procedures for protecting workers from weather-related problems;

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2. The Facility Health and Safety Plan shall be consistent with:
 - NIOSH Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (1985);
 - U.S. EPA Order 1440.1- Respiratory Protection;
 - U.S. EPA Order 1440.3- Health and Safety Requirements for Employees engaged in Field Activities;
 - Facility Contingency Plan;
 - U.S. EPA Standard Operating Safety Guide (1984);
 - OSHA regulations particularly in 29 CFR 1910 and 1926;
 - State and local regulations; and
 - Other U.S. EPA guidance as provided.

F. Public Involvement Plan

The Public Involvement Plan (PIP) prepared by Respondent shall be submitted to U.S. EPA for comment and approval prior to use. Respondent must never appear to represent or speak for the U.S. EPA before the public, other government officials, or the media.

Public involvement activities that may be required of Respondent include the following:

- Conducting an open house or informal meeting (i.e., availability session) in a public location where people can talk to Agency officials and Respondent on a one-to-one basis;
- Preparing fact sheets summarizing current or proposed corrective action activities (all fact sheets should be reviewed by the U.S. EPA prior to public distribution);
- Communicating effectively with people who have vested interest in the corrective action activities, (e.g., providing written or verbal information in the foreign language of a predominantly non-English-speaking community); and
- Maintaining an easily accessible repository (such as a town hall or public library or the Facility itself, in some limited circumstances) of information on the facility-specific corrective action program, including the order, approved workplans, and/or other reports.

A schedule for community relations activities shall be included in the PIP.

G. Schedule for Facility Investigation

1. Sampling
2. Analysis
3. Reports
4. Public Involvement Activities
5. Laboratory or Bench-Scale Studies

Section III: Facility Investigation

A. Purpose/Objectives

The Facility Investigation phase of the RFI is the first step of the implementation process. Prior to this implementation phase, all documentation and reports for the Description of Current Conditions and RFI Workplan are drafted and submitted to U.S. EPA for review. Respondent

must have approval prior to implementing the procedures outlined in the RFI Workplan. Throughout the RFI implementation phase, it is critical that Respondent comply with report submission requirements. Respondent shall submit both progress reports and a draft RFI Report to U.S. EPA for review. At the direction of U.S. EPA, Respondent shall develop in final format the RFI Report, which will incorporate any comments received on the draft report.

Respondent shall conduct those additional investigations (including sampling) as approved in the RFI Workplan to: characterize the facility (Environmental Setting); define the source (Source Characterization); define the degree and three dimensional extent of contamination (Contamination Characterization); and identify actual or potential receptors (Potential Receptors Identification).

The investigations shall result in data of adequate technical quality to support the development and evaluation of the corrective measure alternative(s) during the CMS and/or IMs.

B. Environmental Setting

Respondent shall collect information to supplement and verify existing information on the environmental setting at the facility (when information already submitted to U.S. EPA is not sufficient). The U.S. EPA may request additional information not included on the following lists. Respondent shall characterize the following areas:

1. Hydrogeology

Respondent shall conduct a program to evaluate hydrogeologic conditions at the facility. This program shall provide the following information:

- A description of the regional and facility-specific geologic and hydrogeologic characteristics affecting groundwater flow beneath the facility, including:
 - => Regional and facility-specific stratigraphy including: description of strata including strike and dip, and identification of stratigraphic contacts;
 - => Structural geology including: description of local and regional structural features (e.g., folding, faulting, tilting, jointing, etc.);
 - => Depositional history;
 - => Areas and amounts of recharge and discharge
 - => Influence of tidal actions on groundwater flow regimes near large rivers;
 - => Regional and facility-specific groundwater flow patterns; and
 - => Seasonal variations in the groundwater flow regime.
- An analysis of any topographic features that might influence the groundwater flow system. (Note: Stereographic analysis of aerial photographs may aid in this analysis.)
- A representative and accurate classification and description of the hydrogeologic units based on field data, tests, and cores that may be part of the migration pathways at the facility (i.e., the aquifers and any intervening saturated and unsaturated zones), including, but not limited to:
 - => Hydraulic conductivity, intrinsic permeability [particularly when non-aqueous phase liquids (NAPLs) are present], and porosity (total and effective);
 - => Lithology, grain size, sorting, degree of cementation;
 - => An interpretation of hydraulic interconnections between saturated zones; and

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The attenuation capacity and mechanisms of the natural earth materials (e.g. ion exchange capacity, organic carbon content, mineral content, etc.).
 Based on field studies and cores, structural geology and hydrogeologic cross sections showing the extent (depth, thickness, lateral extent) of hydrogeologic units that may be part of the migration pathways identifying:
 Sand and gravel in unconsolidated deposits;
 Zones of fracturing or channeling in consolidated and unconsolidated deposits;
 Zones of higher permeability or low permeability that might direct and restrict the flow of contaminants;
 The uppermost aquifer: geologic formation, group of formations, or part of a formation capable of yielding a significant amount of groundwater to wells or springs;
 Water-bearing zones above the first confining layer that may serve as a pathway for contaminant migration, including perched zones of saturation; and
 All other geologic formations, or parts thereof, yielding a significant amount of groundwater.'

- Based on data obtained from groundwater monitoring wells and piezometers installed upgradient and downgradient of the potential contaminant source, a representative description of water level or fluid pressure monitoring including:
 - =;, Water level contour and/or potentiometric maps;
 - =;, Hydrologic cross sections showing vertical flow gradients;
 - =;, The flow system, including the vertical and horizontal components of flow; and
 - =;, Any temporal changes in hydraulic gradients, (due to tidal or seasonal influences, etc.)
- A description of man-made influences that may affect the hydrogeology of the site, identifying:
 - =;, Active and inactive local water-supply and production wells with an approximate schedule of pumping; and
 - Man-made hydraulic structures (sewers, pipelines, french drains, ditches, unlined ponds, septic tanks, NPDES outfalls, retention areas, etc.).\

2. Soils

Respondent shall conduct a program to characterize the soil and rock units potentially affected by contaminant release(s). Such characterization shall include, but not be limited to, the following information:

- Where remediation by removal of soils is the only corrective measure option, provide map(s) and perpendicular cross sections showing:
 - =;, The extent of contamination;
 - =;, Depth of groundwater; and
 - The consistency and distribution of soils [using the Unified Soil Classification System (ASTM D 2487)];
- Where remediation by removal is the likely option, and it is necessary to determine the extent of migration (e.g., to assess the mobility of wastes from an unlined surface

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impoundment or landfill), provide the following in addition to the requirements immediately above:

- => Depth to bedrock and the characteristics of the bedrock including discontinuities such as faults, fissures, joints, fractures, sinkholes, etc.;
- => A detailed soil survey conducted according to USDA Soil Conservation Service (SCS) procedures including:
 - USDA Textural Soil Classification and soil profiles showing stratifications or zones which may affect or direct the subsurface flow;
 - Hydraulic conductivity and the SCS hydrologic group classification of A,B,Co&D;
 - Relative permeability (only if the waste may have changed the soil's hydraulic conductivity, such as concentrated organics);
 - Storage capacity (if excavated soil will be stored);
 - Shrink-swell potential (where extreme dry weather could lead to the formation of cracks);
 - Potential for contaminant transport via erosion, using the Universal Soil Loss Equation;
 - Soil sorptive capacity;
 - Cation exchange capacity;
 - Soil organic content; and
 - Soil pH.
 - The following contaminant characteristics must be included:
 - Physical state;
 - Viscosity;
 - pH;
 - pKa;
 - Density;
 - Water solubility;
 - Henry's Law Constant;
 - Kow;
 - Biodegradability; and
 - Rates of hydrolysis, photolysis and oxidation.
- Where in-situ soil treatment will likely be the remediation, the above information and the following additional information must be provided:
 - => Bulk density;
 - => Porosity;
 - => Grain size distribution;
 - => Mineral content;
 - => Soil moisture profile;
 - => Unsaturated hydraulic conductivity;
 - => Effect of stratification on unsaturated flow; and
 - => Infiltration and evapotranspiration.



3. Surface Water and Sediment

Respondent shall conduct a program to characterize the surface water bodies likely to be affected by releases from the facility. Such characterization shall include the following activities and information:

- Description of the temporal and permanent surface water bodies including:
 - =:} For lakes: location, elevation, surface area, inflow, outflow, depth, temperature stratification, and volume;
 - =:} For impoundments: location, elevation, surface area, depth, volume, freeboard, and purpose of impoundment;
 - =:} For rivers, streams, ditches, drains, swamps and channels: location, elevation, flow, velocity, depth, width, seasonal fluctuations, and flooding tendencies (i.e., 100-year event);
 - =:} For wetlands obtain any available delineation;
 - =:} Containment measures in place (e.g., levees, concrete lining, etc.)
 - =:} Drainage patterns; and
 - =:} Evapotranspiration rates.
- Description of the chemistry of the natural surface water and sediments. This includes determining:
 - =:} pH;
 - =:} total dissolved solids;
 - =:} total suspended solids;
 - =:} biological oxygen demand;
 - =:} alkalinity;
 - =:} conductivity;
 - =:} dissolved oxygen profiles;
 - =:} nutrients (NH_3 , NO_3/NO_2 , PO_4^{3-});
 - =:} chemical oxygen demand;
 - =:} total organic carbon; and
 - =:} concentrations of the site-specific contaminants of concern.
- Description of sediment characteristics including:
 - =:} Deposition area;
 - =:} Thickness profile; and
 - =:} Physical parameters (e.g., grain size, density, ion exchange capacity, etc.).

4. Air

Respondent shall provide information characterizing the climate in the vicinity of the facility. Such information shall include:

- A description of the following parameters:
 - =:} Annual and monthly rainfall averages;
 - =:} Monthly temperature averages and extremes;
 - =:} Wind speed and direction;
 - =:} Relative humidity/dew point;
 - =:} Atmospheric pressure;



- => Evaporation data;
- => Development of inversions; and
- => Climate extremes that have been known to occur in the vicinity of the facility, including frequency of occurrence.

- A description of topographic and man-made features that affect air flow and emission patterns, including:
 - => Ridges, hills, or mountain areas;
 - => Canyons or valleys;
 - => Surface water bodies (e.g., rivers, lakes, etc.);
 - => Wind breaks and forests; and
 - => Buildings.

C. Source Characterization

Respondent shall collect analytical data to characterize the wastes and the areas where wastes have been placed, collected or removed including: type; quantity; physical form; disposition (containment or nature of disposal); and any facility characteristics that may affect or have affected a release (e.g., facility security, engineered barriers). This shall include quantification of the following specific characteristics, at each source area:

1. Unit/Disposal Area/Area of Concern Characteristics:

- Location of unit/disposal area;
- Type of unit/disposal area;
- Design features;
- Operating practices (past and present) including the history of releases;
- Period of operation;
- Age of unit/disposal area;
- General physical conditions; and
- Method used to close or remediate the unit/disposal area.

2. Waste Characteristics:

- Type of waste placed in the unit;
 - => Hazardous classification (e.g., flammable, reactive, corrosive, oxidizing or reducing agent);
 - => Quantity; and
 - => Chemical composition.
- Physical and chemical characteristics;
 - => Physical form (solid, liquid, gas);
 - => Physical description (e.g., powder, oily sludge);
 - => Temperature;
 - => pH;
 - => General chemical class (e.g., acid, base, solvent);
 - => Molecular weight;
 - => Density;
 - => Boiling point;
 - => Viscosity;
 - => Solubility in water;
 - => Cohesiveness of the waste;

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Vapor pressure; and
Flash point.

- Migration and dispersal characteristics of the waste;
Sorption;
Biodegradability, bioconcentration, biotransformation;
Photodegradation rates;
Hydrolysis rates; and
Expected chemical transformations.

Respondent shall document the procedures used in making the above determinations.

D. Contamination Characterization

Respondent shall collect analytical data on environmental media, including ground water, soils, surface water, sediment, and air likely to be affected by releases from the facility. This data shall be sufficient to define the extent, origin, direction, and rate of movement of contaminant plumes. Data shall include:

- time and location of sampling;
- media sampled;
- concentrations found;
- conditions during sampling; and
- the identity of the individuals performing the sampling and analysis.

Respondent shall address the following types of contamination at the facility:

1. Groundwater Contamination

Respondent shall conduct a groundwater investigation to characterize any plumes of contamination at the facility. This investigation shall, provide the following information:

- A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the facility;
- The horizontal and vertical direction of contaminant movement;
- The velocity of contaminant movement;
- The horizontal and vertical concentration profiles of 40 C.P.R. Part 264 Appendix IX constituents in the plume(s);
- An evaluation of factors influencing the plume movement; and
- An extrapolation of future contaminant movement.

Respondent shall document the procedures used in making the above determinations (e.g., well design, well construction, geophysics, modeling, etc.).

2. Soil Contamination

Respondent shall conduct an investigation to characterize the contamination of the soil and rock units above the water table in the vicinity of the contaminant release. The investigation shall include the following information:

A description of the vertical and horizontal extent of contamination;

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- A description of contaminant and soil chemical properties within the contaminant source area and plume. This includes contaminant solubility, speciation, adsorption, leachability, exchange capacity, biodegradability, hydrolysis, photolysis, oxidation and other factors that might affect contaminant migration and transformation;
- Site-specific contaminant concentrations;
- Velocity and direction of contaminant movement; and
- An extrapolation of future contaminant movement.

Respondent shall document the procedures used in making the above determinations.

3. Surface Water and Sediment Contamination

- Respondent shall conduct a surface water and sediment investigation to characterize contamination in surface water bodies resulting from contaminant releases at the facility. Respondent is also required to characterize contamination from storm water runoff. The investigation shall include the following information:
- A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the facility, and the extent of contamination in underlying sediments;The horizontal and vertical direction of contaminant movement;
- The contaminant velocity;
- An evaluation of the physical, biological, and chemical factors influencing contaminant movement;
- An extrapolation of future contaminant movement; and
- A description of the chemical and physical properties of the contaminated surface waters and sediments. This includes determining the pH, total dissolved solids, specific contaminant concentrations, etc.

Respondent shall document the procedures used in making the above determinations.

4. Air Contamination

Respondent shall conduct an investigation to characterize the particulate and gaseous contaminants released into the atmosphere. This investigation shall provide the following information:

- A description of the horizontal and vertical direction and velocity of contaminant **movement**;
- The rate and amount of the release; and
- The chemical and physical composition of the contaminants(s) released, including horizontal and vertical concentration profiles.

Respondent shall document the procedures used in making the above determinations.

E. Potential Receptor Identification

Respondent shall collect data describing the human populations and environmental systems that currently or potentially are at risk of contaminant exposure from the facility. Chemical analysis of biological samples may be needed. Data on observable effects in ecosystems may also be required by U.S. EPA. The following characteristics shall be identified:

1. Local uses and possible future uses of groundwater:

- Type of use (e.g., drinking water source: municipal or residential, agricultural, domestic non-potable, public and industrial) and
 - Location of groundwater users including wells and discharge areas.
2. Local uses and possible future uses of surface waters characterized in the "Environmental Setting" or "Contamination Characterization" Sections above:
 - Domestic and municipal (e.g., potable and lawn/gardening watering);
 - Recreational (e.g., swimming, fishing);
 - Agricultural;
 - Industrial; and
 - Environmental (e.g., fish and wildlife propagation).
 3. Authorized or unauthorized human use of or access to the facility and adjacent lands, including but not limited to:
 - Recreation;
 - Hunting;
 - Residential;
 - Commercial;
 - Zoning; and
 - Relationship between population locations and prevailing wind direction.
 4. A demographic profile of the people who use or have access (authorized or unauthorized) to the facility and adjacent land, including, but not limited to: age; sex; sensitive subgroups; and environmental justice concerns.
 5. A description of the ecological characteristics of the facility and adjacent areas, including habitat and species present and expected to be present. Data required for this may include the following:
 - Chemical sampling in potentially exposed habitats and reference sites.
 - Toxicity testing.
 - Tissue analyses.
 - Biological community assessment.
 - Habitat assessment of aquatic and terrestrial habitats on or potentially affected by the facility.
 - Revised assessment of ecological impacts on receptors. Impacts should include those occurring at individual level (e.g., mortality, growth and reproductive impairments) and those occurring at higher levels of biological organization (i.e., at population, community, and ecosystem levels).
 6. A description of the biota in surface water bodies on, adjacent to, or affected by the facility.
 7. A description of any State and Federal endangered or threatened species (both proposed and listed) near the Facility.

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Section IV: Investigation Results and Analysis

Respondent shall prepare an analysis and summary of all facility investigations and their results. The investigation data should be sufficient in quality (e.g., quality assurance procedures have been followed) and quantity to describe the nature and extent of contamination, potential threat to human health and/or the environment, and to support the Corrective Measures Study and/or IMs.

A. Data Analysis

Respondent shall analyze all facility investigation data outlined in Section III and prepare a report on the type and extent of contamination at the facility which has not been eliminated from further investigation by the screening methods used, including sources and migration pathways. The report shall describe the extent of contamination (qualitative/quantitative) in relation to background levels indicative for the area as well as in relation to applicable screening levels.

B. Media Cleanup Standards

Respondent shall provide information as required to support U.S. EPA's selection/development for media cleanup standards (MCSs) of any releases that may have adverse effects on human health and the environment due to migration of waste constituents. MCSs are to contain such terms and provisions as necessary to protect human health and the environment, including, the provisions stated below.

1. Groundwater Cleanup Standards

Respondent shall provide information to support U.S. EPA's selection/development of groundwater cleanup standards for all of the 40 C.P.R. Part 264 Appendix IX constituents found in the groundwater during the Facility Investigation (Section III). The groundwater cleanup standards shall consist of:

- For any constituents for which an MCL has been promulgated under the Safe Drinking Water Act, the MCL value;
- Background concentration of the constituent in the ground water; or
- An alternate standard [e.g., an alternate concentration limit (ACL) for a regulated unit] to be approved by U.S. EPA

2. Soil Cleanup Standards

Respondent shall provide information to support U.S. EPA's selection/development of soil cleanup standards. U.S. EPA may require the following information:

- The volume and physical and chemical characteristics of the wastes in the **unit**;
- The effectiveness and reliability of containing, confining, and collecting systems and structures in preventing contaminant migration;
- The hydrologic characteristics of the unit and the surrounding area, including the topography of the land around the unit;
- The patterns of precipitation in the region;
- The existing quality of surface soils, including other sources of contamination and their cumulative impacts on surface soils;

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- The potential for contaminant migration and impact to the underlying groundwater;
- The patterns of land use in the region;
- The potential for health risks caused by human exposure to waste constituents; and
- The potential for damage to domestic animals, wildlife, food chains, crops, vegetation, and physical structures caused by exposure to waste constituents.

3. Surface Water and Sediment Cleanup Standards

Respondent shall provide information to support U.S. EPA's selection/development of surface water and sediment cleanup standards. U.S. EPA may require the following information:

- The volume and physical and chemical characteristics of the wastes in the unit;
- The effectiveness and reliability of containing, confining, and collecting systems and structures in preventing contaminant migration;
- The hydrologic characteristics of the unit and the surrounding area, including the topography of the land around the unit;
- The patterns of precipitation in the region;
- The quantity, quality, and direction of groundwater flow;
- The proximity of the unit to surface waters;
- The current and potential uses of nearby surface waters and any water quality standards established for those surface waters;
- The existing quality of surface waters, including other sources of contamination and their cumulative impacts on surface waters;
- The potential for damage to domestic animals, wildlife, food chains, crops, vegetation and physical structures caused by exposure to waste constituents;
- The patterns of land use in the region; and
- The potential for health risks caused by human exposure to waste constituents.

4. Air Cleanup Standards

Respondent shall provide information to support U.S. EPA's selection/development of air cleanup standards. U.S. EPA may require the following information:

- The volume and physical and chemical characteristics of the wastes in the unit, including its potential for the emission and dispersal of gases, aerosols and particulates;
- The effectiveness and reliability of systems and structures to reduce or prevent emissions of hazardous constituents to the air;
- The operating characteristics of the unit;
- The atmospheric, meteorological, and topographic characteristics of the unit and the surrounding area;
- The existing quality of the air, including other sources of contamination and their cumulative impact on the air;



- The potential for health risks caused by human exposure to waste constituents; and
- The potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents.

5. Other Relevant Cleanup Standards

Respondent shall identify all relevant and applicable standards for the protection of human health and the environment (e.g., National Ambient Air Quality Standards, Ohio Water Quality Standards, water quality criteria, health advisories, proposed MCL's, etc.).

C. Analysis of Risk

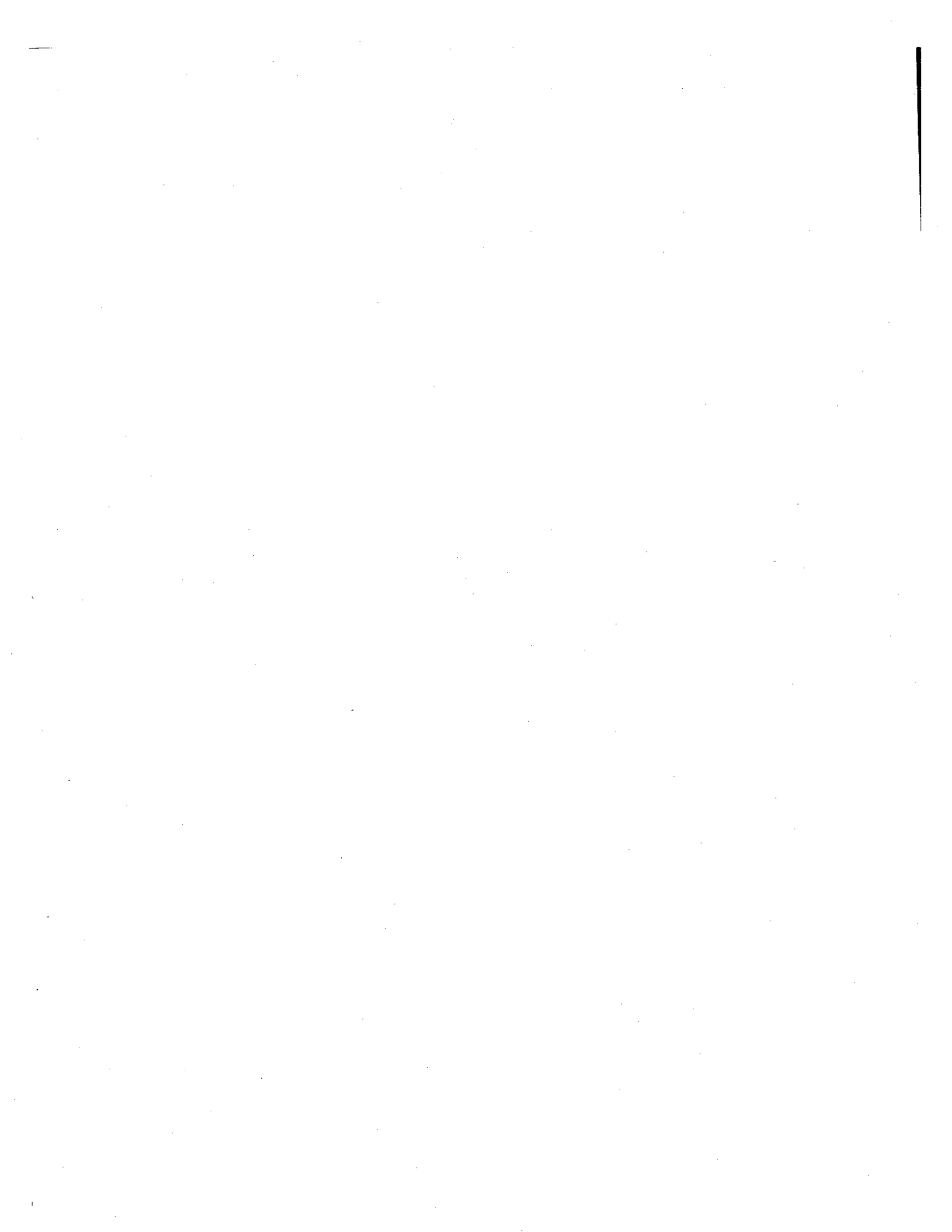
Respondent may determine as necessary an analysis of risk at the facility. This analysis would include ecological as well as human health risk and shall be consistent with applicable guidance provided in **References**. Risk may be evaluated at several milestones within the process, as developed in the U.S. EPA-approved RFI Workplan.

All activities in conducting corrective action pursuant to this Order will allow for risk screening steps to be conducted with the data available at the risk assessment phase as well as within the RFI and CMS as appropriate. Generally, a screening risk assessment would be conducted during the RFI with additional, more detailed analysis, including appropriate cumulative risk, occurring as more data becomes available. The highest level of risk analysis may occur later in the CMS stage.

Section V: Progress Reports

Respondent will, at a minimum, provide the U.S. EPA with signed monthly progress reports. These reports are required to contain the following information, but U.S. EPA requirements are not limited to this list:

1. A description and estimate of the percentage of the RFI completed;
2. Summaries of *all* findings in the reporting period, including results of any sampling and analysis;
3. Summaries of *all* changes made in the RFI during the reporting period;
4. Summaries of *all* contacts with representatives of the local community, public interest groups or State government during the reporting period;
5. Summaries of *all* contacts made regarding access to off-site property;
6. Summaries of *all* problems encountered during the reporting period;
7. Actions being taken to rectify problems;
8. Changes in relevant personnel during the reporting period;
9. Projected work for the next reporting period; and
10. Copies of daily reports, inspection reports, laboratory/monitoring data, etc.



Section VI: Proposed Schedule

Respondent will provide U.S. EPA with RFI submittals according to the following schedule:

| Facility Submission | Due Date |
|---|--|
| Description of Current Conditions (Section I) | 30 days after the effective date of the Order |
| RFI Workplan (Section II) | 90 days after the effective date of the Order |
| Draft RFI Report (Sections III and IV) | As scheduled in the approved RFI Workplan |
| Final RFI Report | 45 days after receipt of comments on the Draft RFI Report |
| Progress Reports on Sections I through IV | Monthly |

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ATTACHMENT III
Corrective Measures Study
Scope of Work



ATTACHMENT III
Corrective Measures Study
Scope of Work

Purpose

The purpose of the Corrective Measures Study (CMS) portion of the RCRA corrective action process is to identify and evaluate potential remedial alternatives for the releases that have been identified at and/or from the Facility.

Scope

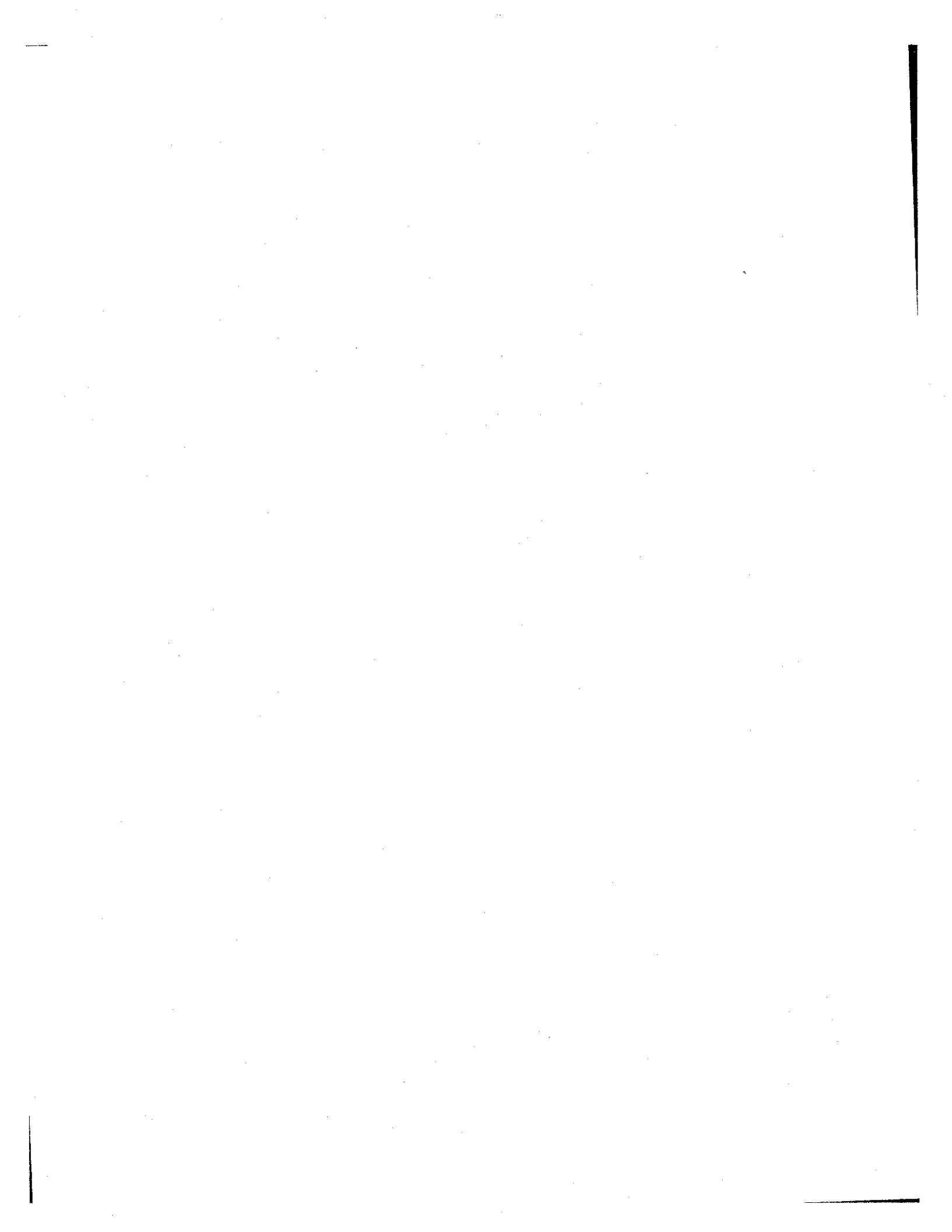
A Corrective Measures Study Report is, unless otherwise specified by U.S. EPA, a required element of the CMS. The CMS consists of the following components:

Section I: Corrective Measures Study Report

- A. Introduction/Purpose
- B. Description of Current Conditions
- C. Media Cleanup Standards
- D. Identification, Screening and Development of Corrective Measure Alternatives
- E. Evaluation of A Final Corrective Measure Alternative
- F. Recommendation by Respondent for a Final Corrective Measure Alternative
- G. Public Involvement Plan

Section II: Progress Report

Section **HI**: Proposed Schedule



Section I: Corrective Measures Study Report

The CMS Report shall include the following elements:

A. Introduction/Purpose

Respondent shall describe the purpose of the document and provide a summary description of the project.

B. Description of Current Conditions

Respondent shall include a brief summary/discussion of any new information that has been discovered since the RFI current conditions report was provided. This discussion should concentrate on those issues which could significantly affect the evaluation and selection of the corrective measures alternative(s).

C. Media Cleanup Standards

Respondent may propose media cleanup standards. The standards must be based on promulgated Federal and State standards, risk derived standards, all data and information gathered during the corrective action process (e.g., from interim measures, RCRA Facility Investigation, etc.), and/or other applicable guidance documents. If no other guidance exists for a given contaminant and media, Respondent shall propose and justify a media cleanup standard.

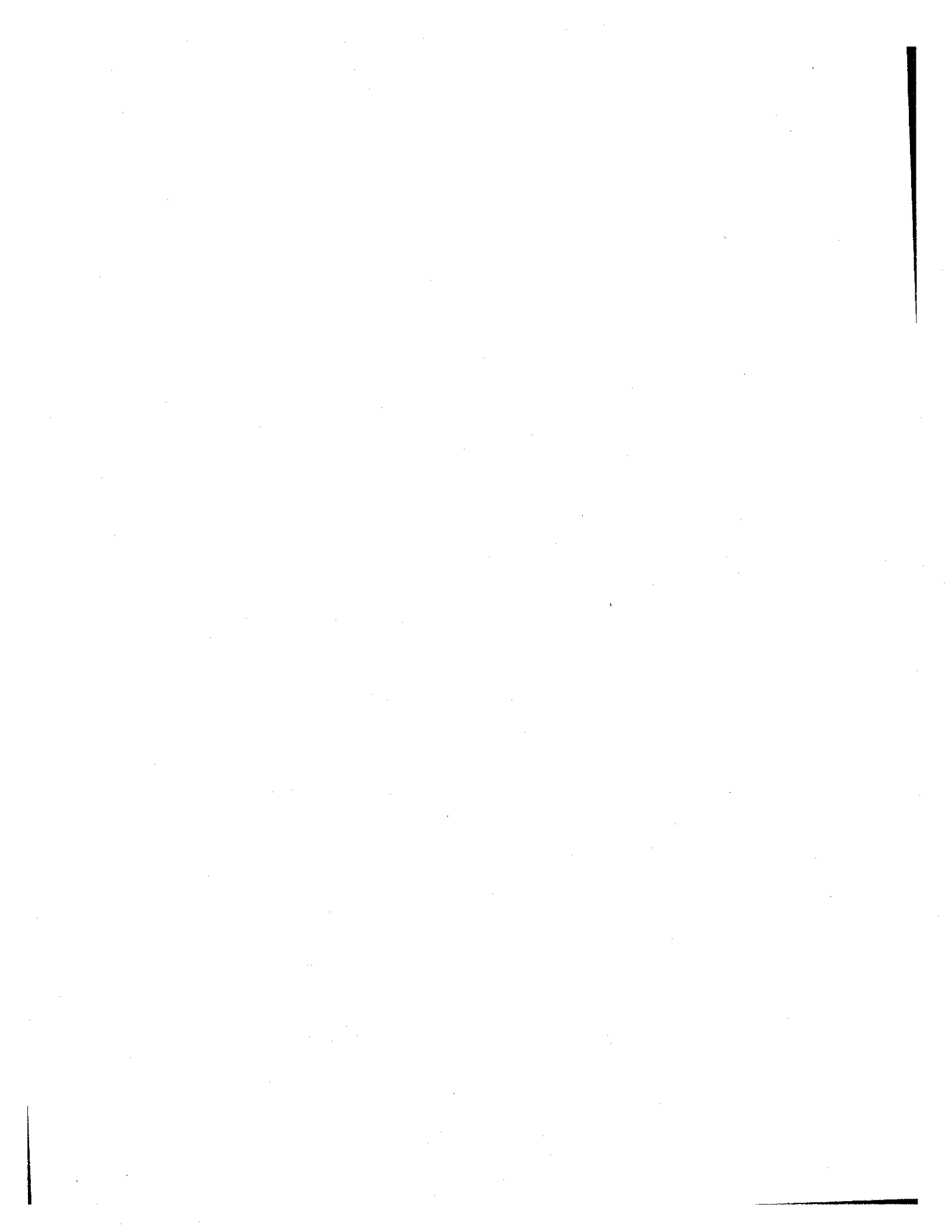
D. Identification, Screening, and Development of Corrective Measure Alternatives

1. Identification: List and briefly describe potentially applicable technologies for each affected media that may be used to achieve the corrective action objectives. Respondent should consider including a table that summarizes the available technologies. Depending on the site-specific situation, U.S. EPA may require Respondent to consider additional technologies.

Respondent should consider innovative treatment technologies, especially in situations where there are a limited number of applicable corrective measure technologies. Innovative technologies are defined as those technologies utilized for remediation other than incineration, solidification/stabilization, and pumping with conventional treatment for contaminated groundwater. Innovative treatment technologies may require extra effort to gather information, to analyze options, and to adapt the technology to the site-specific situation. Treatability studies and on-site pilot scale studies may be necessary for evaluating innovative treatment technologies.

2. Screening: When Respondent is required to, or chooses to, evaluate a number of corrective measures technologies, Respondent will evaluate the technology limitations to show why certain corrective measures technologies may prove unfeasible to implement given existing waste and site-specific conditions.

Likewise, if only one corrective measure alternative is being analyzed, Respondent must indicate any technological limitations given waste and site-specific conditions at the facility for which it is being considered. Respondent should consider including a table that summarizes these findings.



Each alternative may consist of an individual technology or a combination of technologies used in sequence (i.e., treatment train). Depending on the site-specific situation, different alternatives may be considered for separate areas of the facility. List and briefly describe each corrective measure alternative.

E. Evaluation of a Final Corrective Measure Alternative

For each remedy which warrants a more detailed evaluation, including those situations when only one remedy is being proposed, Respondent shall provide detailed documentation of how the potential remedy will comply with each of the standards listed below. These standards reflect the major technical components of remedies including cleanup of releases, source control and management of wastes that are generated by remedial activities. The specific standards are provided below:

1. Protect human health and the environment.
2. Attain media cleanup standards set by the U.S. EPA.
3. Control the source of releases so as to reduce or eliminate, to the extent practicable, further releases that may pose a threat to human health and the environment.
4. Comply with any applicable standards for management of wastes.
5. Other Factors.

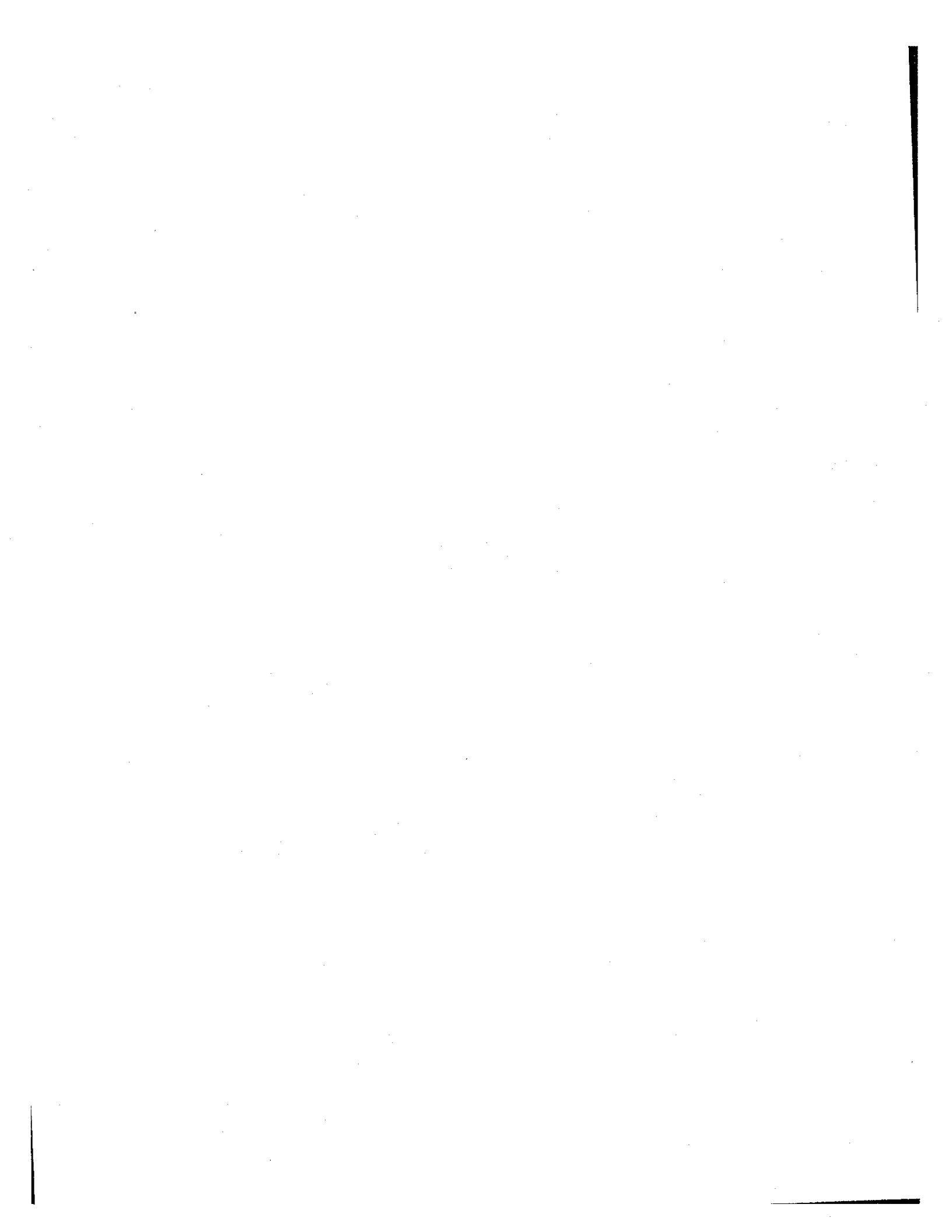
In evaluating the selected alternative or alternatives Respondent shall prepare and submit information that documents that the specific remedy will meet the standards listed above. The following guidance should be used in completing this evaluation. This guidance provides examples of the types of information that would be supportive; U.S. EPA may require additional information.

1. Protect Human Health and the Environment

Corrective action remedies must be protective of human health and the environment. Remedies may include those measures that are needed to be protective, but are not directly related to media cleanup, source control, or management of wastes. An example would be a requirement to provide alternative drinking water supplies in order to prevent exposures to releases from an aquifer used for drinking water purposes. Another example would be a requirement for the construction of barriers or for other controls to prevent harm arising from direct contact with waste management units. Therefore, Respondent shall include a discussion on what types of short term remedies are appropriate for the particular facility in order to meet this standard. This information should be provided in addition to a discussion of how the other corrective measure alternatives meet this standard.

2. Attain Media Cleanup Standards Set by U.S. EPA

Remedies will be required to attain media cleanup standards set by U.S. EPA which may be derived from existing State or Federal regulations (e.g. groundwater standards) or other standards. The media cleanup standards for a remedy will often play a large role in determining the extent of and technical approaches to the remedy. In some cases, certain technical aspects of the remedy, such as the practical capabilities of remedial technologies, may influence to some degree the media cleanup standards that are established.



As part of the necessary information for satisfying this requirement, Respondent shall address whether the potential remedy will achieve the preliminary remediation objective as identified by U.S. EPA as well as other, alternative remediation objectives that may be proposed by Respondent. Respondent shall also include an estimate of the time frame necessary for each alternative to meet these standards.

3. Control the Sources of Releases

A critical objective of any remedy must be to stop further environmental degradation by controlling or eliminating further releases that may pose a threat to human health and the environment. Unless source control measures are taken, efforts to clean up releases may be ineffective or, at best, will essentially involve a perpetual cleanup. Therefore, an effective source control program is essential to ensure the long-term effectiveness and protectiveness of the corrective action program.

The source control standard is not intended to mandate a specific remedy or class of remedies. Instead, Respondent is encouraged to examine a wide range of options. This standard should not be interpreted to preclude the equal consideration of using other protective remedies to control the source, such as partial waste removal, capping, slurry walls, in-situ treatment/stabilization and consolidation.

As part of the *CMS* Report, Respondent shall address the issue of whether source control measures are necessary, and if so, the type of actions that would be appropriate. Any source control measure proposed should include a discussion on how well the method is anticipated to work given the particular situation at the facility and the known track record of the specific technology.

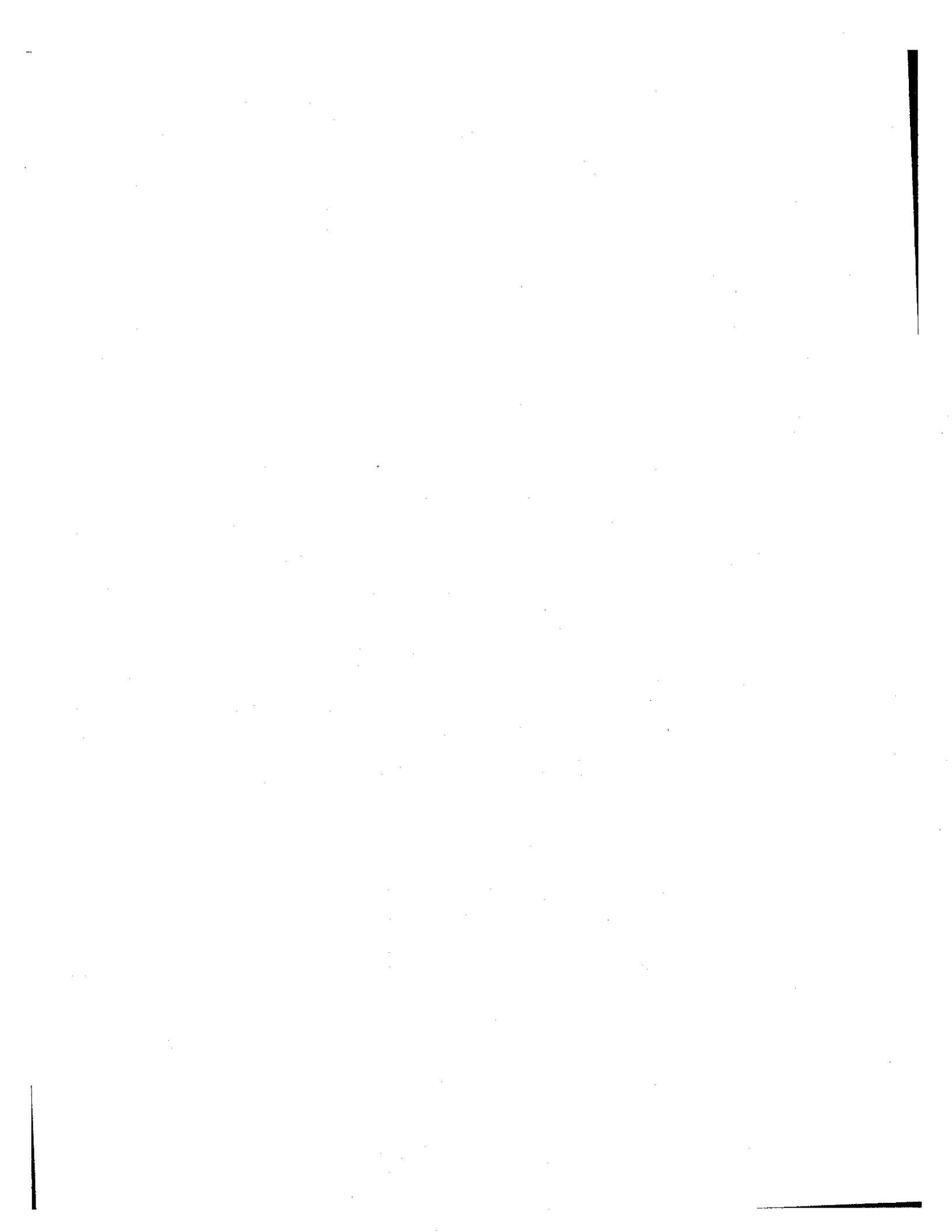
4. Comply With Any Applicable Standards for Management of Wastes.

Respondent shall include a discussion of how the specific waste management activities will be conducted in compliance with all applicable State or Federal regulations (e.g., closure requirements, land disposal restrictions).

5. Other Factors

There are five general factors that will be considered as appropriate by U.S. EPA in selecting/approving a remedy that meets the four standards listed above. These factors represent a combination of technical measures and management controls for addressing the environmental problems at the facility. The five general decision factors include:

- a. Long-term reliability and effectiveness;
- b. Reduction in the toxicity, mobility or volume of wastes;
- c. Short-term effectiveness
- d. Implementability; and
- e. Cost.



U.S. EPA may request Respondent to provide additional information to support the use of these factors in the evaluation of viable remedial alternatives. Examples of the types of information that may be requested are provided below:

a. Long-term Reliability and Effectiveness

Demonstrated and expected reliability is a way of assessing the risk and effect of failure. Respondent may consider whether the technology or a combination of technologies have been used effectively under analogous site conditions, whether failure of any one technology in the alternative would have an immediate impact on receptors, and whether the alternative would have the flexibility to deal with uncontrollable changes at the site (e.g., heavy rain storms, flooding, earthquakes, etc.).

Most corrective measure technologies, with the exception of destruction, deteriorate with time. Often, deterioration can be slowed through proper system operation and maintenance, but the technology eventually may require replacement. Each corrective measure alternative should be evaluated in terms of the projected useful life of the overall alternative and of its component technologies. Useful life is defined as the length of time the level of effectiveness can be maintained.

b. Reduction in the Toxicity, Mobility or Volume of Wastes

As a general goal, remedies will be preferred that employ techniques, such as treatment technologies, that are capable of eliminating or substantially reducing the inherent potential for the wastes in SWMUs (and/or contaminated media at the facility) to cause future environmental releases or other risks to human health and the environment. There may be some situations where achieving substantial reductions in toxicity, mobility or volume may not be practical or even desirable. Examples might include large, municipal-type landfills, or wastes such as unexploded munitions that would be extremely dangerous to handle, and for which the short-term risks of treatment outweigh potential long-term benefits.

Estimates of how much the corrective measures alternatives will reduce the waste toxicity, volume, and/or mobility may be helpful in applying this factor. This may be done through a comparison of initial site conditions to expected post-corrective measure conditions.

c. Short-term Effectiveness

Short-term effectiveness may be particularly relevant when remedial activities will be conducted in densely populated areas, or where waste characteristics are such that risks to workers or to the environment are high and special protective measures are needed. Possible factors to consider include fire, explosion, exposure to hazardous substances and potential threats associated with treatment, excavation, transportation, and re-disposal or containment of waste material.

d. Implement ability

Implement ability will often be a determining variable in shaping remedies. Some technologies will require State or local approvals prior to construction, which may increase the time necessary to implement the remedy. In some cases, State or local restrictions or concerns may necessitate eliminating or deferring certain technologies or remedial approaches from consideration in remedy selection. Information to consider when assessing implementability may include:

1. The administrative activities needed to implement the corrective measure alternative (e.g., permits, rights of way, offtsite approvals, etc.) and the length of time these activities will take;
 2. The constructability, time for implementation, and time for beneficial results;
 3. The availability of adequate off-site treatment, storage capacity, disposal services, needed technical services and materials; and
 4. The availability of prospective technologies for each corrective measure alternative.
- e. Cost

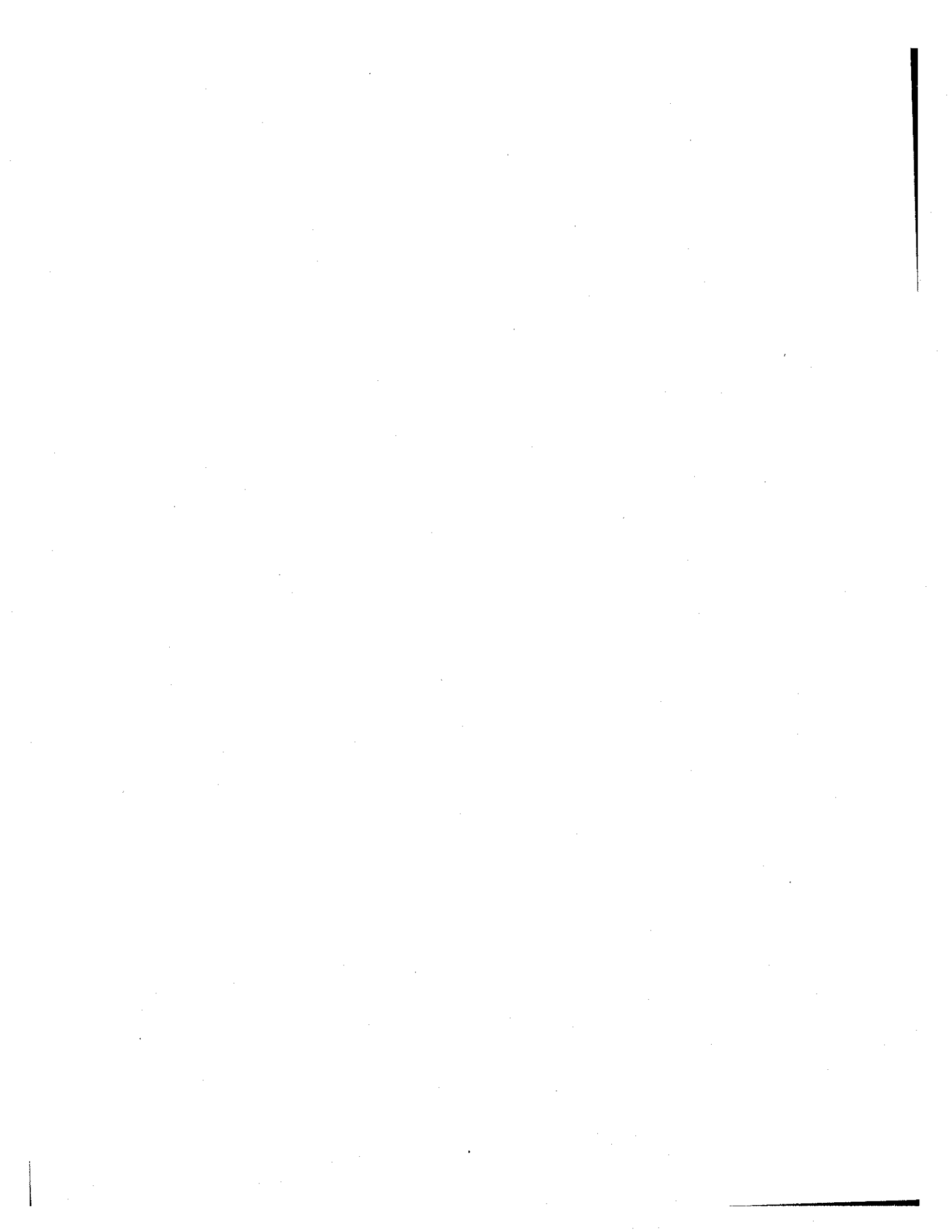
The relative cost of a remedy may be an appropriate consideration, especially in those situations where several different technical alternatives to remediation will offer equivalent protection of human health and the environment, but may vary widely in cost. However, in those situations where only one remedy is being proposed, the issue of cost would not need to be considered. Cost estimates could include costs for: engineering, site preparation, construction, materials, labor, sampling/analysis, waste management/disposal, permitting, health and safety measures, training, operation and maintenance, etc.

F. Recommendation by Respondent for a Final Corrective Measure Alternative

In the CMS Report, Respondent may recommend a preferred remedial alternative for consideration by U.S. EPA. Such a recommendation should include a description and supporting rationale for the proposed remedy, consistent with the remedial standards and the decision factors discussed above. Such a recommendation is not required and the U.S. EPA still retains the role of remedy selection.

G. Public Involvement Plan

After the CMS has been performed by Respondent and the U.S. EPA has selected a preferred alternative for proposal in the Statement of Basis, it is the agency's policy to request public comment on the Administrative Record and the proposed corrective measure(s). Changes to the proposed corrective measure(s) may be made after consideration of public comment. U.S. EPA may also require that Respondent perform additional corrective measures studies. If the public is interested, a public meeting may be held. After consideration of the public's comments on the proposed corrective measure, the agency develops the Final Decision and Response to Comments to document the selected corrective measure, the agency's justification for such selection, and the response to the public's comment. Additional public involvement activities may be necessary, based on site-specific circumstances.



Section II: Progress Reports

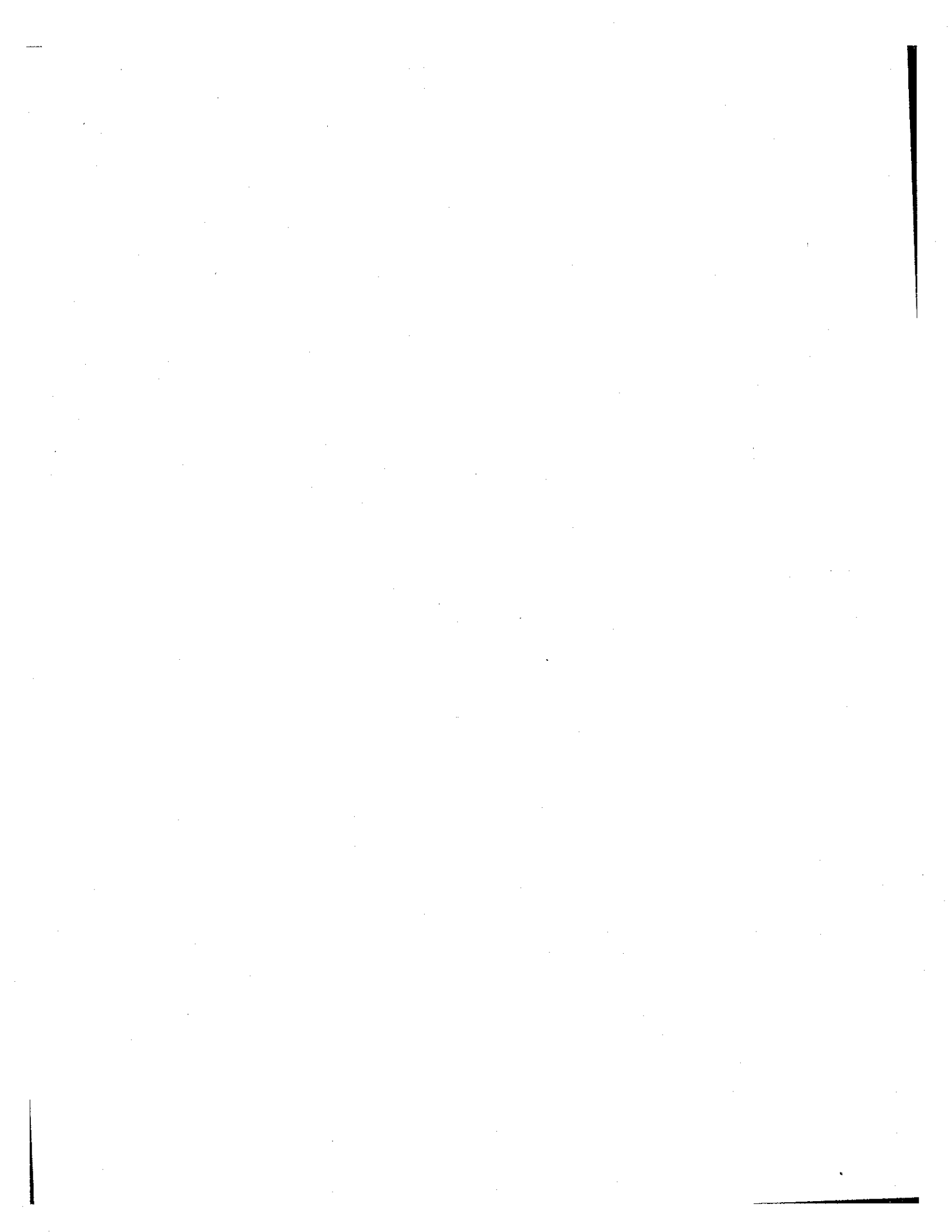
Respondent will, at a minimum, provide U.S. EPA with signed monthly progress reports. These reports are required to contain the following information, but U.S. EPA requirements are not limited to this list:

1. A description and estimate of the percentage of the CMS completed;
2. Summaries of *all* findings in the reporting period, including results of any pilot studies;
3. Summaries of *all* changes made in the CMS 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* contacts made regarding access to off-site property;
6. Summaries of *all* problems encountered during the reporting period;
7. Actions being taken to rectify problems;
8. Changes in relevant personnel during the reporting period;
9. Projected work for the next reporting period; and
10. Copies of daily reports, inspection reports, laboratory/monitoring data, etc.

Section III: Proposed Schedule

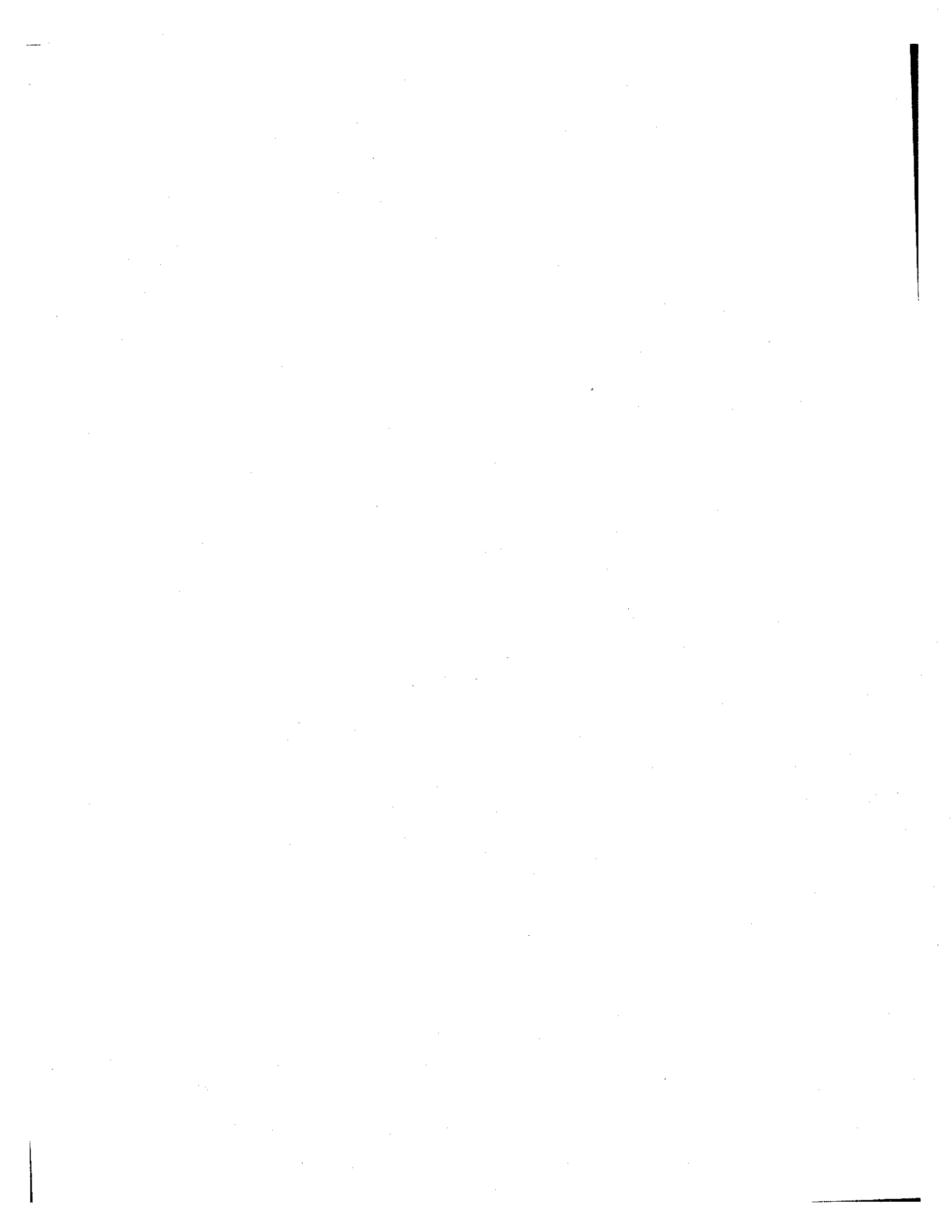
Respondent will provide the U.S. EPA with CMS submittals according to the following schedule:

| Facility Submission | Due Date |
|--------------------------------|---|
| Draft CMS Report (Section I) | Within 90 days of U.S. EPA approval of the RFI Report |
| Final CMS Report (Section I) | 45 days after Public and U.S. EPA Comments on the Draft Final CMS |
| Progress Reports on Sections I | Monthly |



ATTACHMENT IV

Corrective Measures Implementation
Scope of Work



**ATTACHMENT IV Corrective
Measures Implementation Scope of
Work**

PURPOSE

The purpose of the Corrective Measures Implementation (CMI) program is to design, construct, operate, maintain and monitor the performance of the Corrective Measures selected by U.S. EPA and other measures/additional work determined necessary by U.S. EPA pursuant to this Order such that the performance standards are achieved and maintained. Respondent shall furnish all personnel, materials and services necessary for the implementation of the Corrective Measures.

SCOPE

The CMI program shall consist of four tasks:

Section I: Corrective Measures Implementation Workplan

- A. Program Management Plan
- B. Public Involvement Plan
- C. Health and Safety Plan
- D. Quality Assurance Project Plan
- E. Sampling and Analysis Plan
- F. Surveys

Section II: Corrective Measures Design

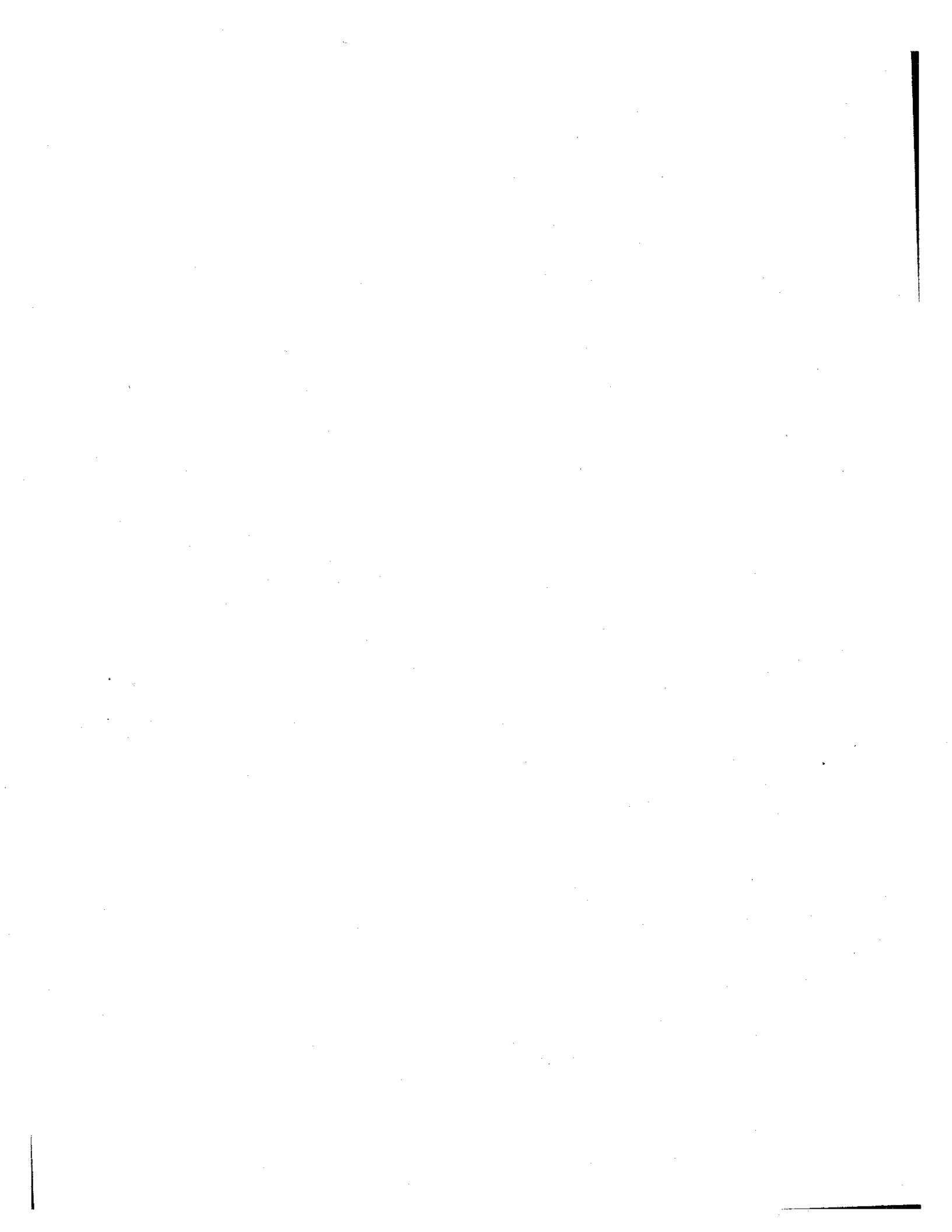
- A. Preliminary Design
- B. Preliminary and Final Designs
- C. Operation and Maintenance Plan
- D. Cost Estimate
- E. Project Schedule
- F. Construction Quality Assurance Objectives

Section III: Corrective Measures Construction

- A. Responsibility and Authority
- B. Construction Quality Assurance Personnel Qualifications
- C. Inspection Activities
- D. Sampling Requirements
- E. Documentation

Section IV: Other Reports and Submissions

- A. Progress
- B. Construction Completion Report
- C. Attainment of Groundwater Performance Standards Report
- D. Completion of Work Report
- E. Institutional Controls
- F. Submittal Summary



Section I: Corrective Measures Implementation (CMI) Workplan

Respondent shall prepare and submit a CMI Workplan which includes the development and implementation of several plans, which shall be prepared concurrently. Respondent shall submit a draft CMI Workplan within 60 days of U.S. EPA's decision on the corrective measure(s) and submit a final CMI Workplan that incorporates U.S. EPA comments on the draft CMI Workplan according to the schedule identified in the Submittal Summary, Section IV. The CMI Workplan includes the following:

A. Program Management Plan

Respondent shall prepare and submit a Program Management Plan (PMP) which includes a discussion of the technical approach, engineering designs and plans, schedules, and personnel needed for performing the design, construction, operation, maintenance and monitoring of Corrective Measures for U.S. EPA review and approval. The PMP shall document the responsibility and authority of all organizations and key personnel involved with the implementation. The PMP shall also include a description of qualifications of key personnel directing the Corrective Measure Design and Implementation, including contractor personnel.

B. Public Involvement Plan

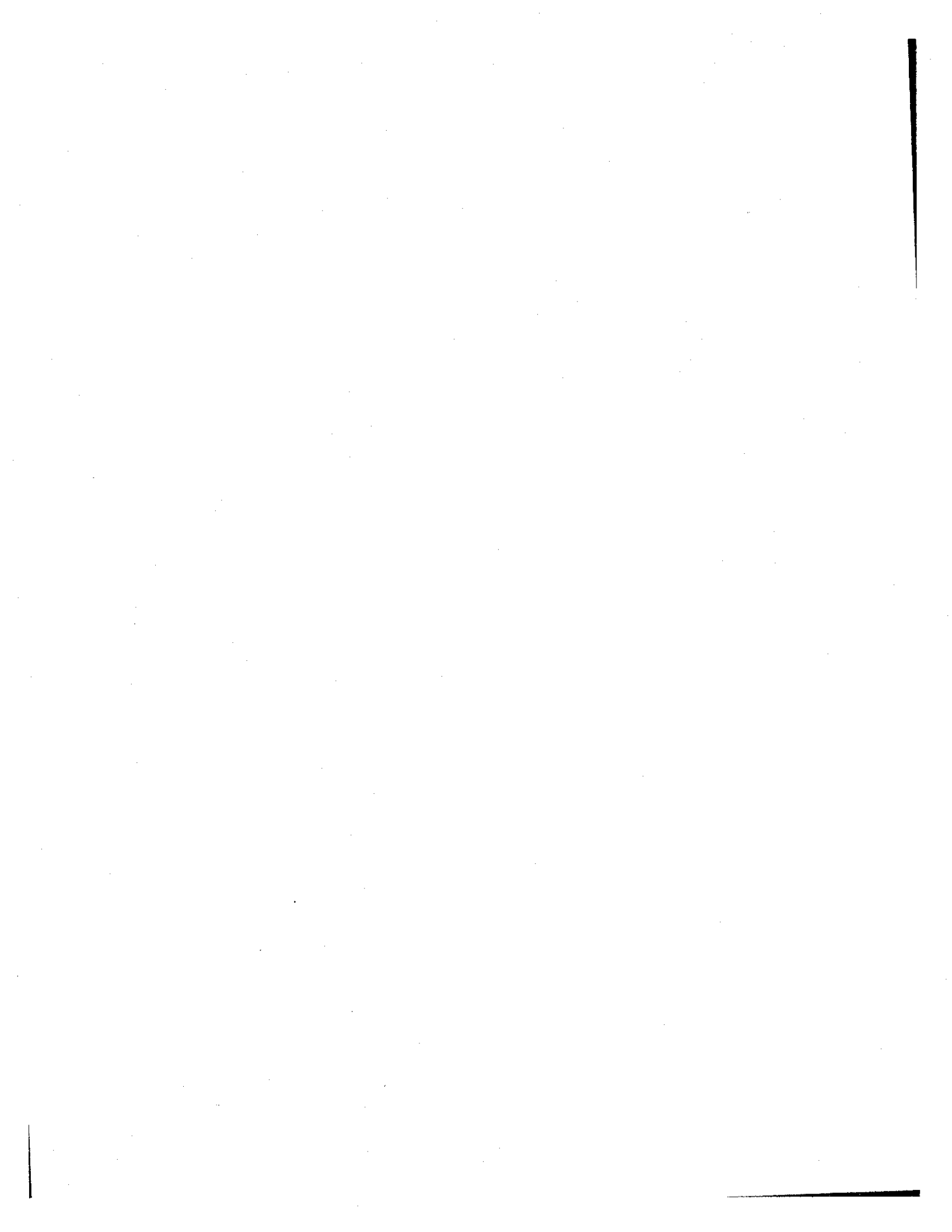
The existing Public Involvement Plan (PIP) shall be revised to describe the community relations program to be implemented by Respondent during the design and construction subject to the approval of U.S. EPA. Specific activities which must be conducted include the revision of the PIP to reflect knowledge of community concerns and involvement during design and construction and the preparation of a fact sheet at the completion of the engineering design. At the request of U.S. EPA, Respondent shall participate in the preparation of information disseminated to the public and in providing information for public meetings that may be held or sponsored by the U.S. EPA.

C. Health and Safety Plan

Respondent shall submit a Health and Safety Plan (HSP) to U.S. EPA for review although it does not require approval by U.S. EPA. The HSP shall be designed to protect on-site personnel and area residents from physical, chemical and other hazards posed by the Corrective Measures, including pre-design studies.

1. Major elements of the HSP shall include:

- Facility description including availability of resources such as roads, water supply, electricity, and telephone service;
- Description of the known hazards and evaluation of the risks associated with each activity conducted;
- A list of key personnel and alternates responsible for site safety, response operations, and protection of human health;
- Delineation of work area;
- Description of protective clothing or other protective items to be worn by personnel in work area;
- Procedures to control site access;



- Description of decontamination procedures for personnel and equipment;
- Site emergency procedures;
- Emergency medical care needed for injuries and toxicological problems;
- Description of requirements for an environmental surveillance program;
- Routine and special training required for response personnel; and
- Procedures for protecting workers from weather-related problems.

2. The Facility HSP shall be consistent with:

- NIOSH Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (1985);
- EPA Order 1440.1 - Respiratory Protection;
- EPA Order 1440.3 - Health and Safety Requirements for Employees engaged in Field Activities;
- Facility Contingency Plan;
- EPA Standard Operating Safety Guide (I 984);
- OSHA regulations particularly in 29 CFR 1910 and 1926;
- State and local regulations; and
- Other applicable EPA guidance as provided.

D. Quality Assurance Project Plan

Respondent shall prepare and submit a Quality Assurance Project Plan (QAPP) to document all monitoring procedures, sampling, field measurements, and sample analyses to be performed during the Corrective Measures, so as to ensure that all information, data and resulting decisions are technically sound, statistically valid and properly documented. The QAPP shall be prepared in accordance with Attachment V. At the request of U.S. EPA, Respondent shall participate in a pre-QAPP meeting with the U.S. EPA prior to preparation of any QAPP.

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

E. Sampling and Analysis Plan

Respondent shall develop a Sampling and Analysis Plan (SAP) for the predesign field activities and any monitoring programs required by this Order. Respondent shall submit the SAP addressing predesign field activities with the draft CMI Work Plan and shall propose a schedule for the submittal of any additional sampling plans. The SAP shall include, at a minimum:

1. A description of the proposed field activities;
2. The proposed locations of soil borings, ground water monitoring wells and surface water monitoring points;
3. A description of how the SAP is expected to meet the requirements of the final remedy;
4. A description of the planned operation and maintenance (O&M) activities, including the anticipated frequency of each O&M task;
5. A flow chart and schedule of work to be performed during the CMI.



F. Surveys

Respondent shall submit surveys to delineate current Facility boundaries and to update water well use adjacent to the Facility.

Section II: Corrective Measures Design

Respondent shall prepare final construction plans and specifications to implement the Corrective Measures at the facility which have been selected by U.S. EPA. The final product of the Corrective Measures Design shall be a technical package (or packages) that contain and address all elements necessary to accomplish the Corrective Measures. This includes all design support activities, initial permitting and access requirements, operation and maintenance, and institutional controls, as well as technical elements.

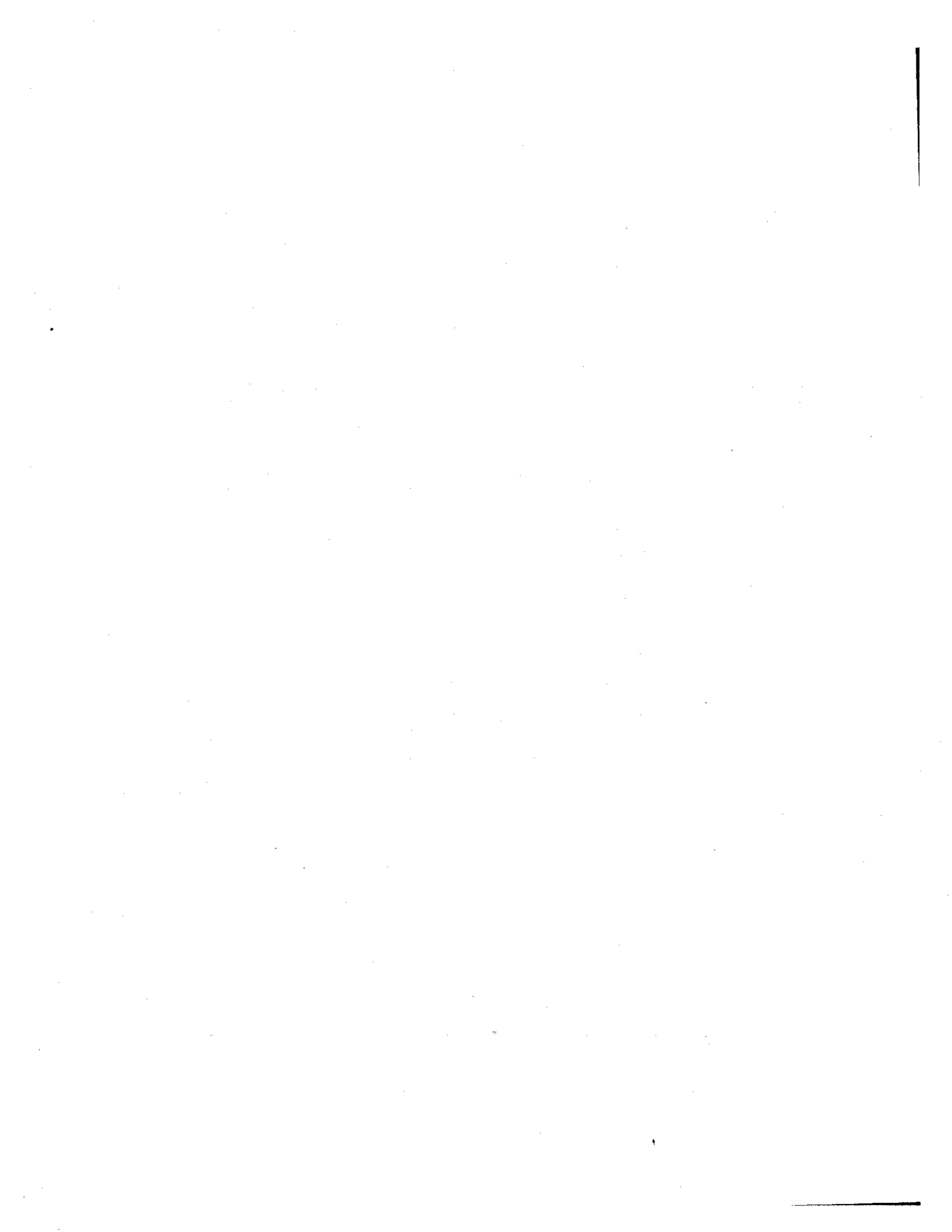
A. Preliminary Design

Respondent shall submit for U.S. EPA review and approval a Preliminary Design when the design effort is approximately 50% complete. The Preliminary Design submittal shall include or discuss, at a minimum, the following:

1. Design strategy and basis, including compliance with all applicable or relevant environmental and public health standards and minimization of environmental and public impacts;
2. Technical factors of importance, including use of currently accepted environmental control measures and technology, design constructability, and use of currently acceptable construction practices techniques;
3. A summary of activities performed and data generated during Corrective Measures Design or Predesign, including results and interpretations of data and studies;
4. Design assumptions and parameters, including design restrictions and process performance criteria;
5. Real estate, easement and permit requirements;
6. Preliminary construction schedule, including contracting strategy;
7. Discussion of the possible sources of error and references to possible operation and maintenance problems;
8. Detailed drawings of the proposed designs, including qualitative and quantitative flow sheets;
9. Tables listing equipment and specifications;
10. Tables giving material and energy balances; and
11. Sample calculations and derivation of equations essential to understanding the report.

B. Prefinal and Final Designs

Respondent shall submit for U.S. EPA review and approval the Prefinal Design when the design effort is 95% complete and shall submit the Final Design when the design effort is 100% complete. The Prefinal Design shall fully address all U.S. EPA's comments on the Preliminary Design. After receipt of U.S. EPA comments on the Prefinal Design, Respondent shall execute the required revisions and submit the Final Design with reproducible drawings and specifications suitable for bid advertisement. The Final Design consists of the Final Design Plans and Specifications (100% complete), Final Construction Cost Estimate, Final Operation and



Maintenance Plan, Construction Quality Assurance Objectives, Final Project Schedule and Final Health and Safety Plan specifications.

The U.S. EPA may require additional work, including but not limited to studies, to supplement the available technical data. Respondent shall furnish all equipment and personnel necessary to complete any additional work needed. Draft and final reports shall be prepared and present all data obtained during the additional studies, a summary of the results, and conclusions.

C. Operation and Maintenance Plan

Respondent shall prepare an Operation and Maintenance (O&M) Plan to cover both implementation and long term maintenance of the Corrective Measures. A draft O&M Plan shall be submitted for U.S. EPA review and comment concurrently with the Prefinal Design and the final O&M Plan shall be submitted for U.S. EPA review and approval with the Final Design.

The plan shall include 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.
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. Description of routine monitoring and laboratory testing:
 - a. Description of monitoring tasks;
 - b. Description of required laboratory tasks and their interpretation;
 - c. Required data collection, Quality Assurance Project Plan (QAPP);
 - d. Schedule of monitoring frequency; and
 - e. Description of triggering mechanisms for ground water/surface water monitoring results.
4. Description of alternate O&M:
 - a. Should system fail, alternate procedures to prevent release or threatened releases of hazardous substances, pollutants or contaminants which may endanger public health and the environment or exceed cleanup standards; and
 - b. Analysis of vulnerability and additional resource requirements should a failure occur.
5. Corrective steps:
 - a. Description of corrective steps to be implemented in the event that cleanup or performance standards are not met; and
 - b. Schedule for implementing these corrective steps.

6. Safety plan:
 - a. Description of precautions, of necessary equipment, etc., for site personnel; and
 - b. Safety tasks required in event of systems failure.
7. 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.
8. Records and reporting mechanisms required:
 - a. Daily operating logs;
 - b. Laboratory records;
 - c. Records for operating costs;
 - d. Mechanism for reporting emergencies;
 - e. Personnel and maintenance records; and
 - f. Monthly/annual reports to State agencies.

D. Cost Estimate

Respondent shall refine the cost estimate developed in the CMS to reflect the more detailed/accurate design plans and specifications being developed. The cost estimate shall include both capital and O&M costs. An Initial Cost Estimate shall be submitted simultaneously with the Prefinal Design and the Final Cost Estimate with the Final Design.

E. Project Schedule

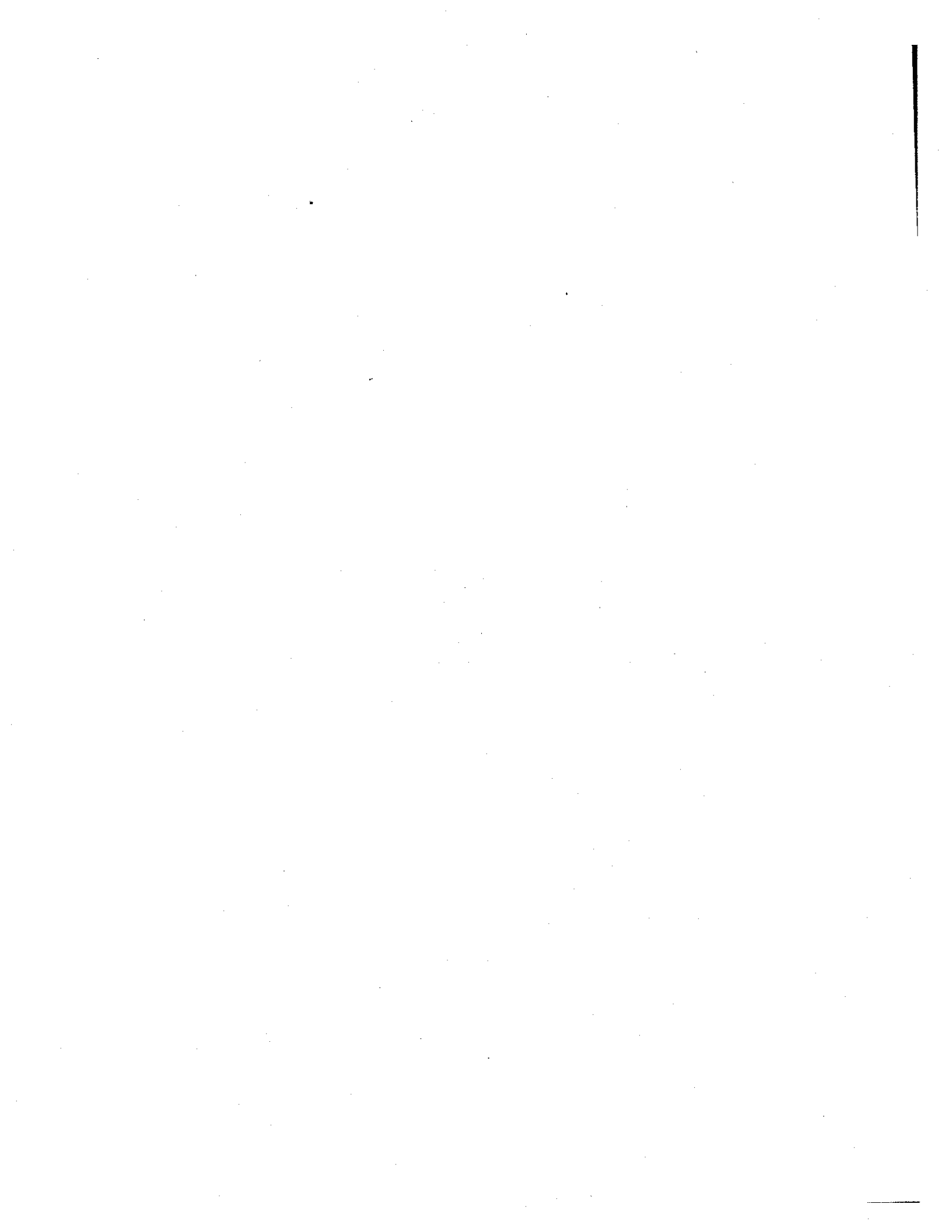
Respondent shall develop a project schedule for construction and implementation of the Corrective Measures which identifies timing for initiation and completion of all critical path tasks. The schedule to be submitted to U.S. EPA for review and approval shall provide for the completion of the Corrective Measures in a reasonable period of time. Respondent shall specifically identify dates for completion of the project and major interim milestones. An initial project schedule shall be submitted simultaneously with the Prefinal Design and a final project schedule with the Final Design.

F. Construction Quality Assurance Objectives

Respondent shall identify and document the objectives and framework for the development of a construction quality assurance program including, but not limited to the following: responsibility and authority; personnel qualifications; inspection activities; sampling requirements and documentation. Draft Construction Quality Assurance Objectives, Prefinal Design, and the Final Construction Quality Assurance Plan shall be submitted for U.S. EPA review and approval within 45 days after U.S. EPA's approval of the Final Design.

Section III: CORRECTIVE MEASURES CONSTRUCTION

Respondent shall finalize the Construction Quality Assurance Plan incorporating comments received on the draft Construction Quality Assurance Plan submitted with the Prefinal Design.



Within 45 days of U.S. EPA's approval of the Final Design, Respondent shall implement a construction quality assurance (CQA) program and submit the Final CQA Plan to ensure, with a reasonable degree of certainty, that a completed Corrective Measure will meet or exceed all design criteria, plans and specifications. The CQA Plan is a facility specific document which must be approved by U.S. EPA prior to the start of the construction. At a minimum, the CQA Plan should include the elements which are summarized below. Within 120 days of U.S. EPA's approval of the CQA Plan, Respondent shall construct and implement the Corrective Measures in accordance with the approved design, schedule and CQA Plan. Respondent shall also implement the elements of the approved O&M Plan.

A. Responsibility and Authority

Respondent shall describe fully in the CQA Plan the responsibility and authority of all organizations (i.e., technical consultants, construction firms, etc.) and key personnel involved in the construction of the corrective measures. Respondent shall also identify a CQA officer and the necessary supporting inspection staff.

B. Construction Quality Assurance Personnel Qualifications

Respondent shall set forth the qualifications of the CQA Officer and supporting inspection personnel shall be presented in the CQA plan to demonstrate that they possess the training and experience necessary to fulfill their identified responsibilities.

C. Inspection Activities

Respondent shall summarize in the CQA plan the observations and tests that will be used to monitor the construction and/or installation of the components of the Corrective Measures. The plan shall include the scope and frequency of each type of inspection. Inspections shall verify compliance with 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 shall also ensure compliance with all health and safety procedures. In addition to the oversight inspections, Respondent shall conduct construction inspections.

Within 30 days after Respondent makes a preliminary determination that construction is complete, Respondent shall notify U.S. EPA for the purposes of conducting an inspection. The inspection shall consist of a walk-through inspection of the entire project site. The inspection is to determine whether the project is complete and consistent with the contract documents and the U.S. EPA-approved Corrective Measures. Any outstanding construction items discovered during the inspection shall be identified and noted. Additionally, treatment equipment, if installed, shall be operationally tested by Respondent. Respondent shall certify that the equipment has performed to meet the purpose and intent of the specifications. Retesting will be completed where deficiencies are revealed. Respondent shall outline in the inspection report the outstanding construction items, actions required to resolve items, completion date for these items and date for final inspection.

Upon completion of any outstanding construction items, Respondent shall notify U.S. EPA for the purposes of conducting a final inspection. The final inspection shall consist of a walk-through inspection of the project site. Confirmation shall be made that outstanding items have been resolved subject to EPA's approval.



D. Sampling Requirements

Respondent shall present in the CQA Plan the sampling activities, sample size, sample locations, frequency of testing, criteria for acceptance and rejection and plans for correcting problems as addressed in the project specifications.

E. Documentation

Respondent shall describe in detail in the CQA plan the reporting requirements for CQA activities. This shall include such items as daily summary reports, inspection data sheets, problem identification and corrective measures reports, design acceptance reports and final documentation. Provisions for the final storage of all records shall be presented in the CQA Plan.

Section IV: Other Reports and Submissions

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

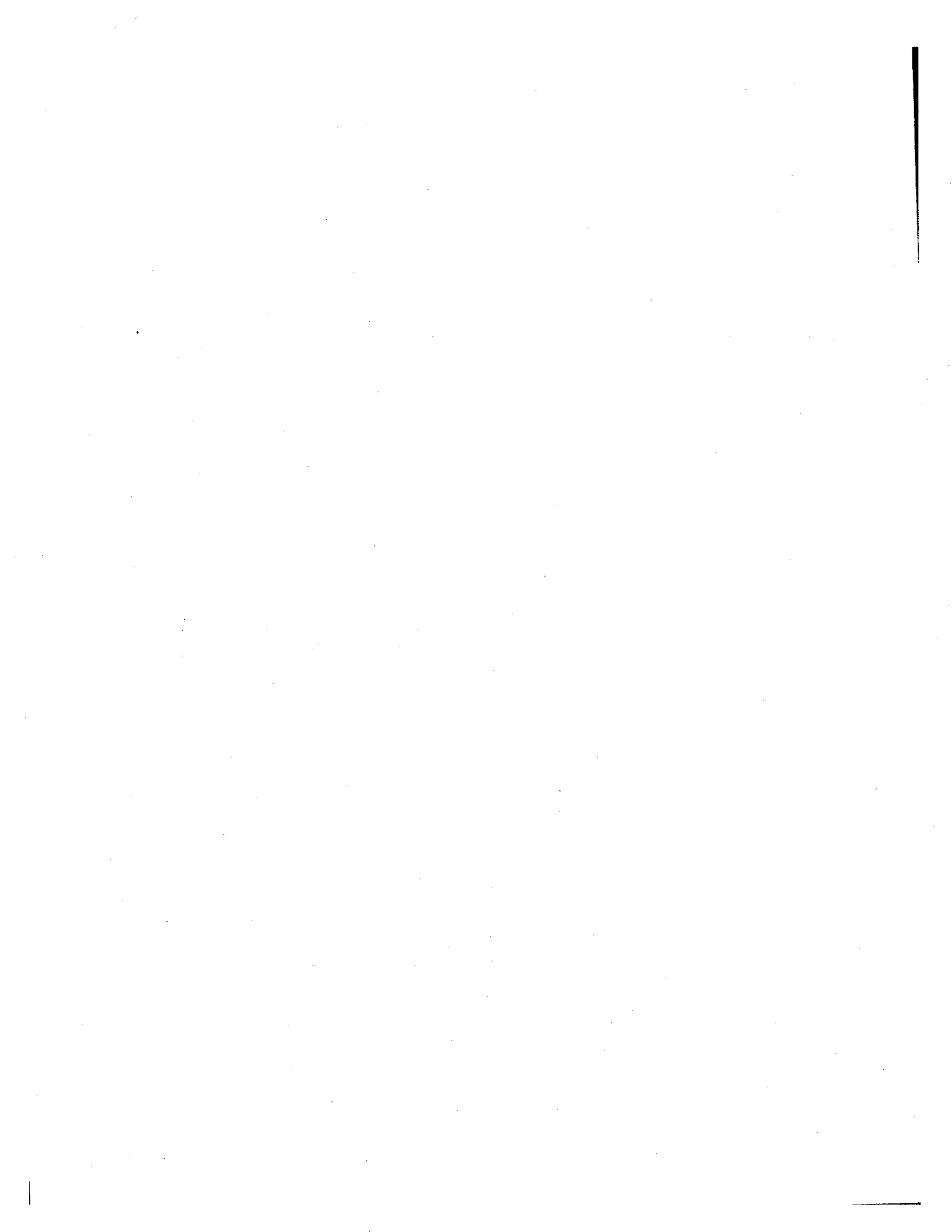
A. Progress

Respondent shall at a minimum provide the U.S. EPA with signed monthly progress reports during the design and construction phases and semi-annual progress reports for operation and maintenance activities containing:

1. A description 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 representatives 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. Construction Completion Report

Within 30 days of a successful final inspection, as determined by U.S. EPA, Respondent shall submit a Construction Completion Report. In the report, a registered professional engineer and Respondent's Project Coordinator shall state that the Corrective Measures have been constructed in accordance with the design and specifications, to the best of their knowledge, and the performance standards have been attained. The written report shall include as-built drawings signed and stamped by a registered professional engineer. The report shall be certified by a Responsible Official pursuant to Section XIV of the Order. The Final O&M Plan shall be submitted concurrently with the Construction Completion Report.



C. Attainment of Ground Water Performance Standards Report

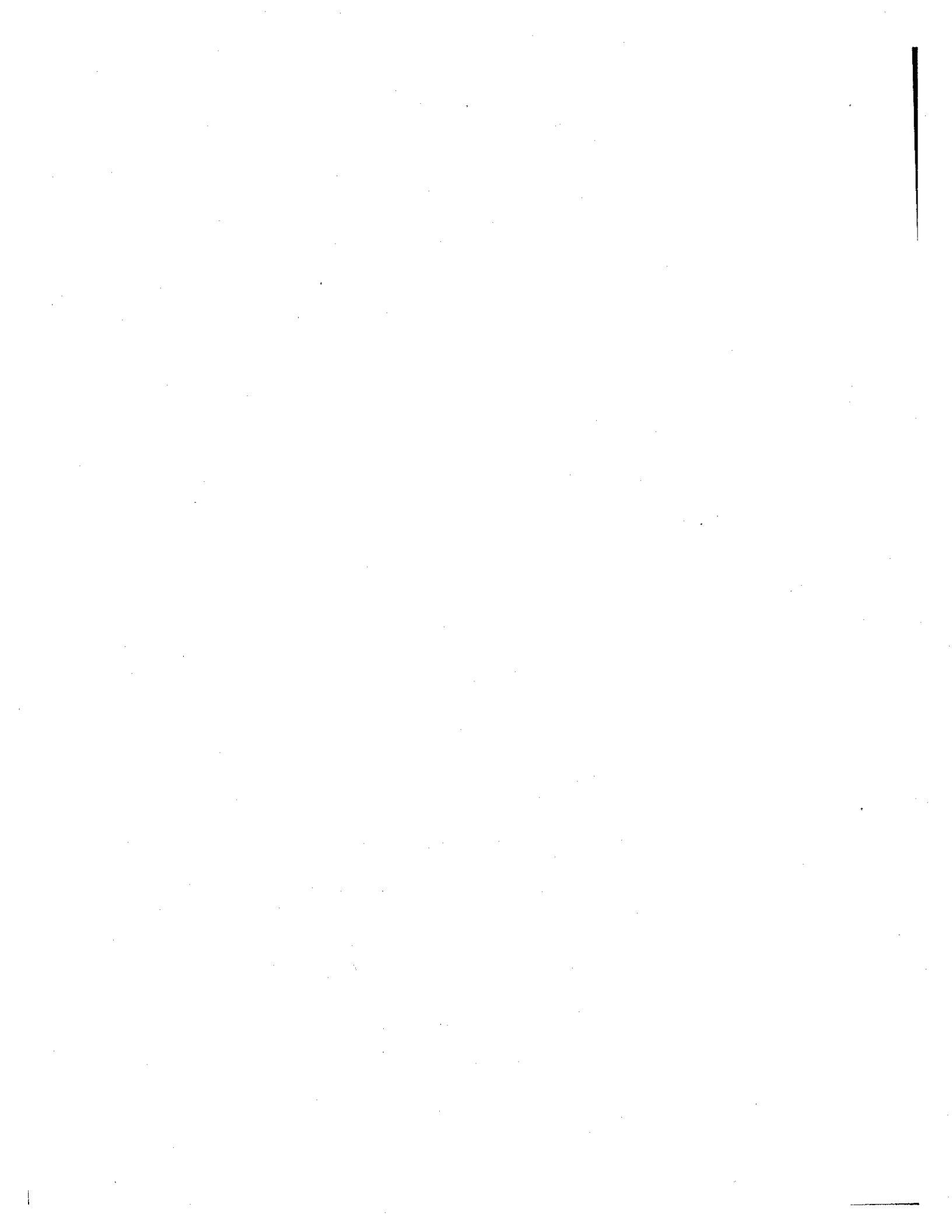
Within 30 days after Respondent concludes that the ground water performance standards have been attained, Respondent shall submit a written report and certification to U.S. EPA for review and approval. In the report, a registered professional engineer and Respondent's Project Coordinator shall state that the ground water performance standards have been attained in full satisfaction of the requirements of this Order. The report shall be certified by a Responsible Official pursuant to Section XIV of the Order.

D. Completion of Work Report

This report shall be submitted by Respondent when construction is complete, performance standards have been attained and O&M is complete. Within 30 days after Respondent concludes that all phases of the work (including O&M and monitoring) have been completed, Respondent shall schedule and conduct a precertification inspection to be attended by representatives of Respondent and U.S. EPA. After the precertification inspection and any prefinal or subsequent final inspections required by U.S. EPA, Respondent shall submit within 30 days of a successful final inspection, a written Completion of Work Report to U.S. EPA for approval. In the report, a registered professional engineer and Respondent's Project Coordinator shall state that the Corrective Measures have been completed in full satisfaction of the requirements of this Order. The written report shall include as-built drawings stamped by a registered professional engineer. The report shall be certified by a Responsible Official pursuant to Section XIV of the Order.

E. Institutional Controls

- I. Respondent shall execute and record an Environmental Covenant in accordance with Ohio Revised Code ("ORC") Sections 5301.80 to 5301.92 imposing the following activity and use limitations upon the refinery and land farm portions of the Facility:
 - No use of groundwater
 - No subgrade development
 - No residential use
 - No daycare or preschools
2. A model format of the environmental covenant shall be provided to Respondent following execution of this Order. Respondent shall submit a draft environmental covenant to U.S. EPA for review within 30 days of receipt of the model format from U.S. EPA. The schedule for executing and recording the Environmental Covenant and for providing to U.S. EPA a file and date-stamped copy of the recorded Environmental Covenant shall be included in the RIP.
 - a. Respondent shall assure that the activity and use limitations set forth in the Environmental Covenant are continually maintained so long as Respondent owns the Facility.
 - b. If Respondent conveys any interest in any portion of the Facility identified in the Environmental Covenant, including but not limited to easements, deeds, leases and mortgages, Respondent must include, in the instrument



of conveyance, that portion of the Environmental Covenant that describes the activity and use restrictions imposed on the portion of the Facility to be conveyed.

- c. No later than sixty (60) days prior to executing any instrument conveying any interest in any portion of the Facility, including but not limited to deeds, leases and mortgages, Respondent shall provide written notice of the conveyance to U.S. EPA at the following address:

Project Manager, BASF Catalysts (EPA ID OHD 000 804 682)
 U.S. EPA Region 5
 77 W. Jackson Blvd. LU-9J
 Chicago, IL 60604

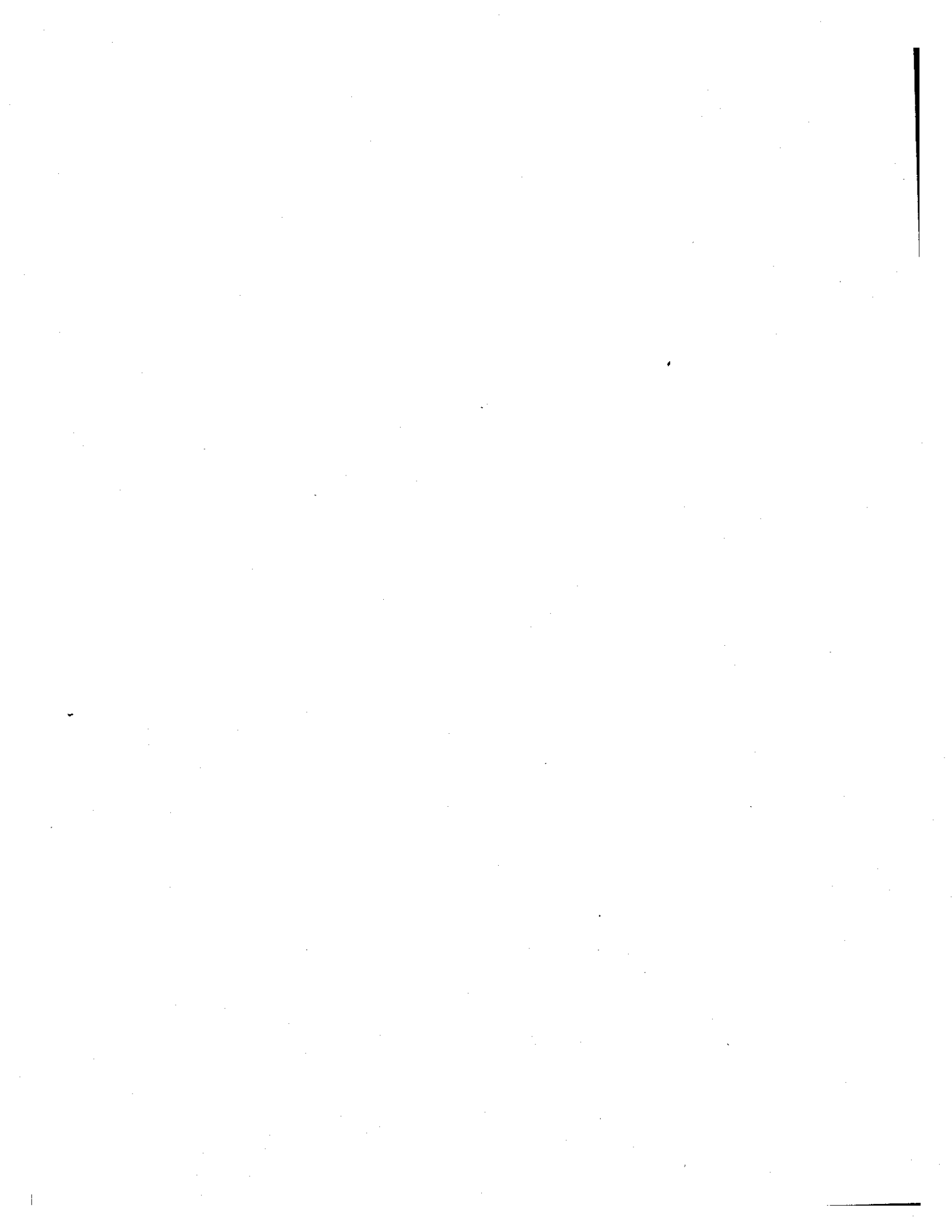
and to OEPA at the following address:

Ohio Environmental Protection Agency
 Lazarus Government Center
 Division of Hazardous Waste Management
 P.O. Box 1049
 Columbus, Ohio 43216-1049

F. Submittal Summary

A summary of the information reporting requirements contained in the CMI Scope of Work is presented below.

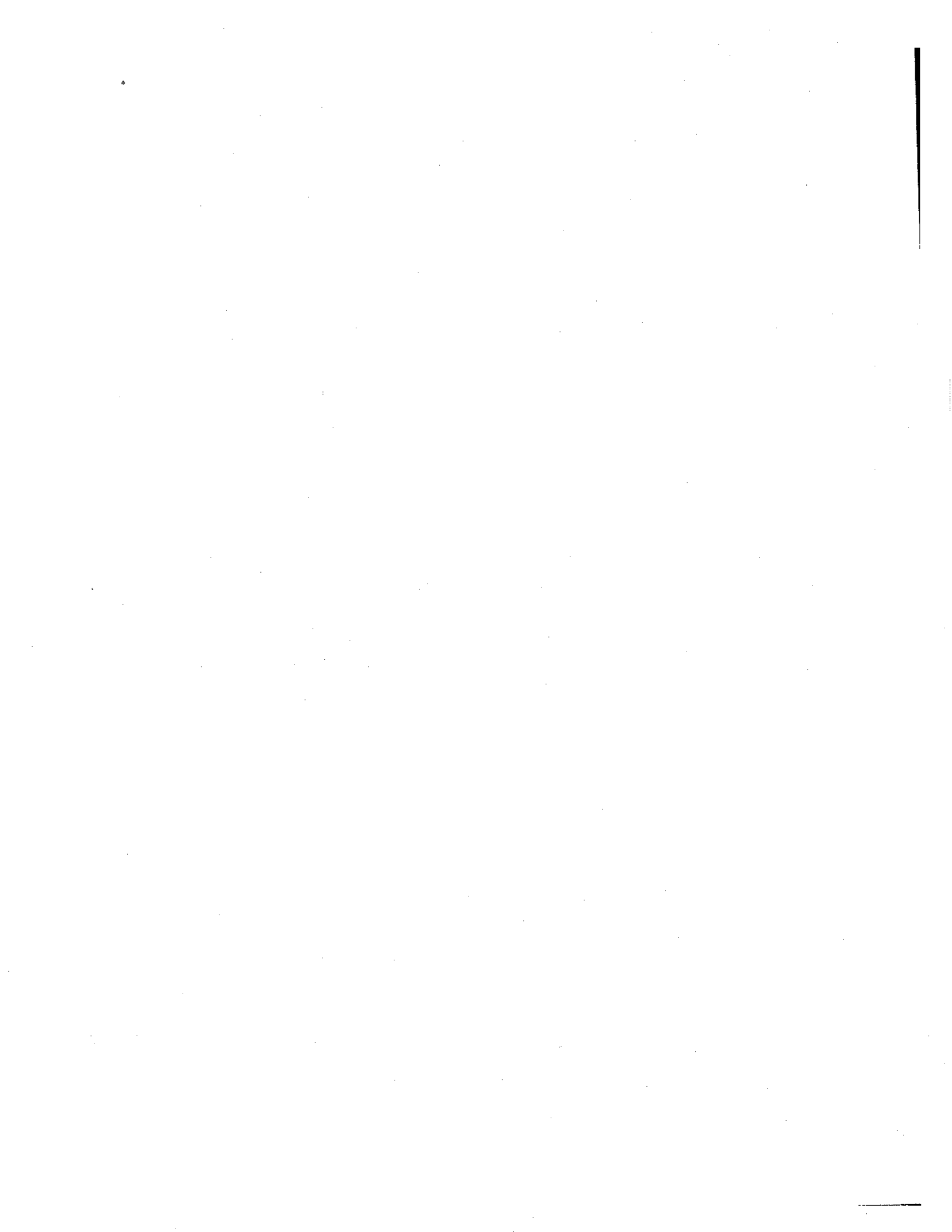
| SUBMITTAL | DUE DATE |
|--|--|
| Draft CMI Workplan -Project Management Plan -Public Involvement Plan -Health and Safety Plan -Pre-Design QAPP -Pre-Design SAP -Surveys | Within 60 days of U.S. EPA's decision on corrective measure(s) |
| Final CMI Workplan -Revisions to Draft | 30 days after receipt of U.S. EPA's comments on Draft CMI Workplan |



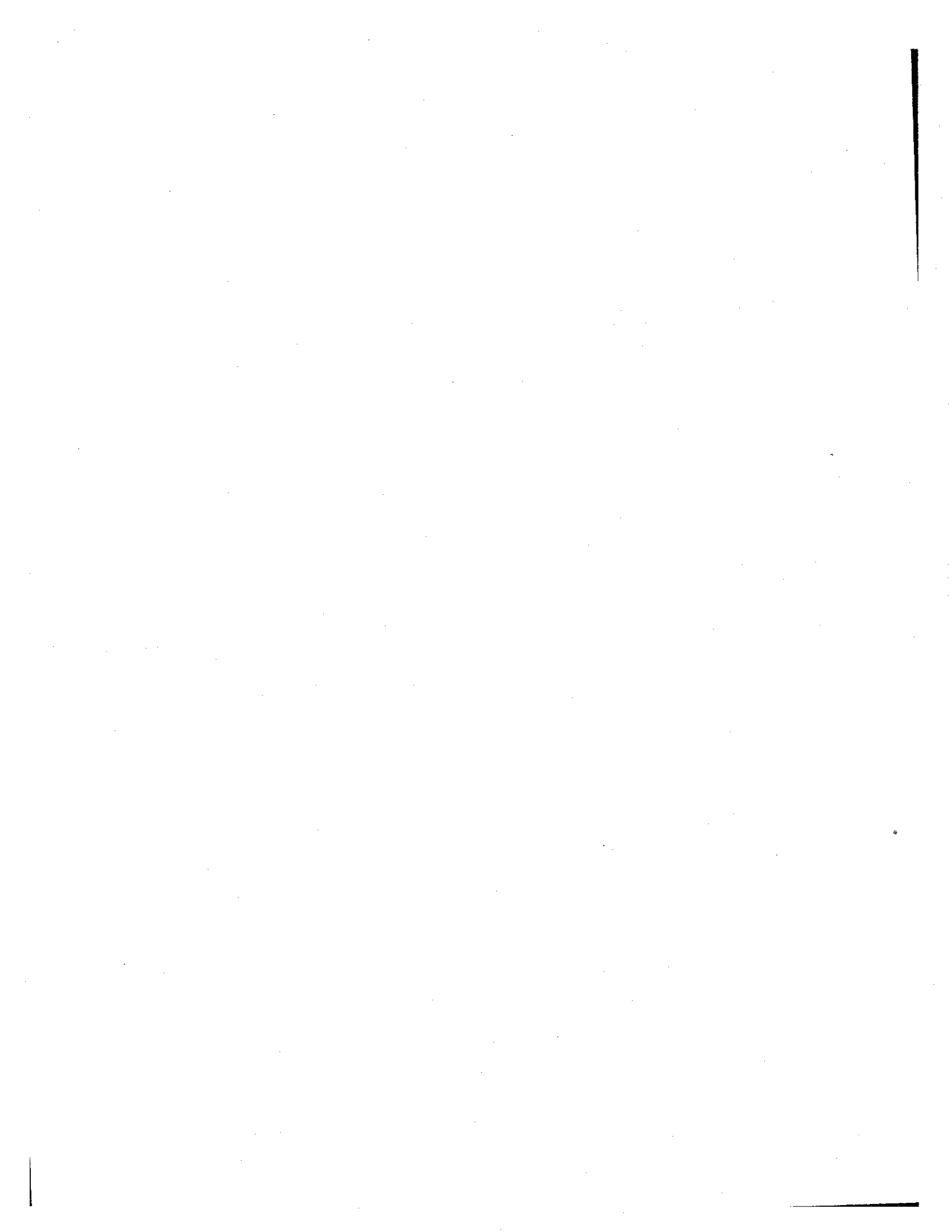


ATTACHMENT V

Quality Assurance Project Plan
Region 5 RCRA Model



Updated Quality Assurance Project **Plan** to be sent when final.



ATTACHMENT VI

REFERENCES

A REFERENCES

The following list comprises additional guidance documents and other information which may be useful in implementing a RCRA §3008(h) Order. This list does not include every guidance document pertaining to work performed under a §3008(h) Order. Documents are organized according to the relevant section of the Order. Contacts for additional information are included at the end of this list.

"Health and Safety Requirements of Employees Employed in Field Activities," EPA Order 1440.2, July 12, 1981.

"Corrective Measures (or Releases to Ground Water from SWMUs)," Draft Final, EPN530-SW-88-020, March 1985.

"Corrective Measures (or Releases to Soil from SWMUs)," Draft Final EPN530-SW-88-022, March 1985.

"Technical Guidance for Corrective Measures-- Subsurface Gas," EPN530-SW-88-023, March 1985.

"Technical Guidance (or Corrective Measures--Determining Appropriate Technology and Response for Air Releases)," Draft Final, EPN530-SW-88-021, March 1985.

"RCRA Ground-Water Monitoring Technical Enforcement Guidance Document (TEGD)," OSWER Directive 9950.1, September 1986.

"Technical Guidance Document: Construction Quality Assurance (or Hazardous Waste Land Disposal Facilities)," EPA 530/SW-86/031, OSWER Directive 9472.003, October 1986.

"RCRA Facility Assessment (RFA) Guidance," EPN530/SW-86/053, October 1986.

"Data Quality Objectives for Remedial Response Activities," EPN540/G-87/003 & 004, OSWER Directive 9335.0-7B, March 1987.

"Alternate Concentration Limit Guidance, Part I: ACL Policy and Implementation Requirements," Interim Final, OSWER Directive 9481.00-6C, July 1987.

"A Compendium of Superfund Field Operations Methods," Two Volumes, EPN540/P-87/001a&b, OSWER Directive 9355.0-14, August 1987.

"Technology Screening Guide for Treatment of CERCLA Soils and Sludges," EPN540/2-88/004, September 1988.

"Ground-Water Modeling: An Overview and Status Report," EPN600/2-89/028, December 1988.

"Risk Assessment Guidance for Superfund. Volume II: Environmental Evaluation Manual," Interim Final, EPN54011-89/001, March 1989.



References

- "Ecological Assessment of Hazardous Waste Sites: A Field and Laboratory Reference Document," EPA 600/3-89/013, March 1989.
- "Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities," Interim Final, EPA/530/SW-89/026, April 1989.
- "Handbook of Suggested Practices for the Design and Installation of Ground-Water Monitoring Wells," EPA/600/4-89/034, April 1989.
- "Stabilization/Solidification for CERCLA and RCRA Wastes," EPA/625/6-89/022, May 1989.
- "Interim Final RCRA Facility Investigation (RFI) Guidance," Volumes I-IV, EPA/530/SW-89-031, May 1989.
- "Technical Guidance Document: Final Covers on Hazardous Waste Landfills and Surface Impoundments," EPA/530/SW-89/047, July 1989.
- "Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part dJ)," Interim Final, EPA/540/1-89/002, December 1989
- "Air/Superfund National Technical Guidance Study Series," Volumes I-IV, EPA 450/1-89-001,002,003,004 (1989 and 1990).
- "Handbook on In-Situ Treatment of Hazardous Waste-Contaminated Soils," EPA/540/2-90/002, 1990.
- "Basics of Pump-and-Treat Groundwater Remediation Technology," EPA/600/8-90/003, March 1990.
- "Framework (or Ecological Risk Assessment)," EPA/630/R-92/001, February 1991.
- "Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors," OSWER Directive 9285.6-03, March 25, 1991.
- "Synopsis of Federal Demonstrations of Innovative Site Remediation Technologies," EPA/540/8-91/009, May 1991.
- "Bibliography of Federal Reports and Publications Describing Alternative and Innovative Treatment Technologies for Corrective Action and Site Remediation," EPA/540/8-91/007, May 1991.
- "Handbook: Ground Water," Volumes I and II, EPA/625/6-90/016 (a&b), September 1990 and July 1991.
- "Guide for Conducting Treatability Studies under CERCLA: Aerobic Biodegradation Remedy Screening," EPA/540/2-91/013B, July 1991.



References

- "Handbook: Stabilization Technologies for RCRA Corrective Actions," EPA/62516-911026, August 1991.
- "Guide for Conducting Treatability Studies under CERCLA: Soil Vapor Extraction," EPA/540/2-911019B, September 1991.
- "Guide for Conducting Treatability Studies under CERCLA: Soil Washing," EPA/540/2-91/020B, September 1991.
- "Selected Alternative and Innovative Treatment Technologies for Corrective Action and Site Remediation." EPA/540/8-91/092, 1991.
- "Characterizing Heterogeneous Wastes: Methods and Recommendations," EPA/600/R-92/033, Feb. 1992.
- "Final Guidance (or Data Useability in Risk Assessment," (Parts A & B), OSWER Directive 9285.7-09A, April 1992.
- "Literature Survey of Innovative Technologies for Hazardous Waste Site Remediation: 1987-1991," EPA/542/B-92/004, July 1992.
- "Handbook of RCRA Ground-Water Monitoring Constituents: Chemical and Physical Properties," EPA/530/R-921022, September 1992.
- "Ground-Water Monitoring: Draft Technical Guidance," EPA/530-R-93-001, November 1992.
- "Statistical Training Course (or Ground-Water Monitoring Data Analysis," EPA/530/R-93/003, 1992.
- "Guidance for Evaluating the Technical Impracticability of Ground-Water Restoration," OSWER Directive 9234.2-25, September 1993.
- "RCRA Corrective Action Plan," OSWER Directive 9902.3-2A, May 1994.
- "Ecological Risk Assessment Guidance for RCRA Corrective Action," U.S. EPA, Region 5, Interim Draft, October 1994.
- "Land Use in the CERCLA Remedy Selection Process," OSWER Directive 9355.7-04, May 25, 1995.
- "Standard Guide for Risk Based Corrective Action Applied to Petroleum Release Sites," ASTM E-1739-95, November 1995. (As approved by Region 5 guidance policy)
- "Conducting Risk-Based Corrective Action for Federally-Regulated UST Petroleum Releases," U.S. EPA, Region 5, December 7, 1995.
- "Sitting at the RCRA Data Quality Level Table. Update 1," U.S. EPA, Region 5, Memorandum, December 14, 1995.

References

- "Soil Screening Guidance: Users Guide." OSWER Publication 9355.4-23, April 1996.
- "Soil Screening Guidance: Technical Background Document." EPN540!R-95/128, May 1996.
- "Corrective Action for Releases From Solid Waste Management Units at Hazardous Waste Management Facilities." Advanced Notice of Proposed Rulemaking, 61 Fed. Reg. 19432, May I, 1996.
- "Region 9 Preliminary Remediation Goals (PRGs) 1996." U.S. EPA, Region 9, Annual Update, August 1, 1996.
- "Region 5 Ecological Data Quality Levels," Final Report, August 26, 1996.
- "EPA's Proposed Guidelines for Ecological Risk Assessment." 61 Fed. Reg. 47552, September 9, 1996. (Note: Final document to be released in early-1998.)
- "Corrective Action Principles." U.S. EPA, Region 5, Memorandum, November 19, 1996.
- "Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments," Interim Final, EPN540/R-97/006, June 5, 1997.
- "Ecological Data Quality Levels, RCR4. Appendix IX Hazardous Constituents." U.S. EPA, Region 5, Draft Report, August 18, 1997.

GENERAL INFORMATION:

- "OSWER Directives- System Catalog," OSWER Directive 9013.15-3D, March 1992. (Provides a list of OSWER Directives published through March 1991.)
- "Technical Support Services for Superfund Site Remediation and RCRA Corrective Action" (third edition), EPN540/8-911091, March 1992.
- "Accessing Federal Data Bases for Contaminated Site Clean-Up Technologies," EPN540/8-91/008, May 1991.
- "Memorandum on the Use of Supplemental Environmental Projects, Amendment to GM 22," James M. Strock, February 12, 1991.

References

USEFUL TELEPHONE NUMBERS:

RRCNRCERCLA/UST Hotline

(800) 424-9346

EPA's Office of Research and Development publishes occasional ground water and engineering issue papers. For information contact:

ORD Publications Office, Center for Environmental Research Information (CERI), (513) 569-7562

National Technical Information Services (NTIS)(703) 487-4650 (800) 553-6847

ATTACHMENT VII
Acknowledgment of Termination

**ATTACHMENT VII
Acknowledgment of Termination**

**ACKNOWLEDGMENT OF TERMINATION and
AGREEMENT TO RECORD PRESERVATION AND RESERVATION OF RIGHTS**

1. The United States Environmental Protection Agency (U.S. EPA) agrees and acknowledges that the terms of Order RCRA- - - issued by U.S. EPA on , 19 (Order), including any additional tasks determined by U.S. EPA to have been required pursuant to the Order, but excluding Section XIII: Record Preservation, have been satisfactorily completed based upon the information presently available to U.S. EPA.
2. Respondent agrees and acknowledges that the terms of Section XIII: Record Preservation remain in effect until , 20 (date 6 years after termination of the Order).
3. Respondent agrees and acknowledges that Respondent's completion of the terms of the Order does not limit or otherwise preclude U.S. EPA from taking additional enforcement action pursuant to Section 3008(h) of the Solid Waste Disposal Act, commonly referred to as the Resource Conservation and Recovery Act of 1976 (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984, 42 U.S.C. §6928(h), or other available legal authorities, should U.S. EPA determine that such actions are warranted.
4. Respondent agrees and acknowledges that Respondent's completion of the terms of the Order does not relieve Respondent of its obligations to comply with RCRA or any other applicable local, State, or Federal laws and regulations.

IT IS SO AGREED AND ACKNOWLEDGED:

Date: _____ **By:** _____
 (Name),(Title)
 (Respondent)

Date: _____ **By:** _____
 Margaret M. Guerriero, Director
 Land and Chemicals Division
 United States Environmental Protection Agency, Region 5
 (Petitioner)

Attachment 8
SWMUs and AOCs

SWMUs and AOCs Identified in June 1990 Harshaw Site PANS!

| SWMUNo, | Description | <u>Status and Order</u> |
|---------|--|--|
| 1 | Container Storage Area | Excluded-not located on the Facility (closed February 1992) |
| 2 | Tank T-5 | Excluded from RFI upon submission of confirming documentation – closed February 1992 |
| 3 | Tank T-2 | Excluded from RFI upon submission of confirming documentation -closed February 1992 |
| 4 | Fluoroborate Wastewater Treatment System (WWTS) (including Tank T-1) | Tank T-1: Excluded from RFI upon submission of confirming documentation -closed February 1992 Remainder: Included |
| 5 | Nickel WWTS | Included |
| 6 | Iron WWTS | Included |
| 7 | Fixed-Bed Reaction Tower WWTS | Included |
| 8 | Metal Plating Collection System | Included |
| 9 | Color-Plate Collection System | Included |
| 10 | Electrolysis Copper Collection System | Included |
| 11 | BF ₃ Collection System | Included |
| 12 | Milling Area Trench | Included |
| 13 | Fluoride Process Collection Trench | Included |
| 14 | K-1 Trenches | Included |
| 15 | Former Small Product Pollution Treatment System | Included |
| 16 | Former Nibrite Pollution Treatment System | Included |
| 17 | Former Pentavalent Antimony Oxide Treatment System | Included |
| 18 | Former Acetate Pollution Treatment System | Included |
| 19 | Fixed-Bed Reaction Towers and Pipes | Included |
| 20 | T-2 Pipe and Loading Station | Included |
| 21 | Landfill A | Included |
| 22 | UST Waste Pile | Included |
| 23 | Scrap Yard A | Included |
| 24 | Scrap Yard B | Included |
| 25 | Demolished Nickel Sulfate Building Staging Area | Excluded – not located on the Facility |
| 26 | Sludge Pad | Included |
| 27 | Sludge Rolloff Box | Included |
| 28 | Sludge Transport Container | Included |
| 29 | Sludge Dollies | Included |
| 30 | South Empty Drum Storage Area | Included |
| 31 | North Empty Drum Storage Area | Included |
| 32 | Sanitary Sewer | Included |
| 33 | Storm Sewer | Included |

| | | |
|----|----------------------|----------|
| 34 | Tank Vent Scrubber | Included |
| 35 | HF Kiln Scrubber | Included |
| 36 | 70 Percent Sump | Included |
| 37 | Filling Station Pump | Included |

| AOC No. | Description | Status under Order |
|----------------|------------------------|---------------------------|
| A | Tank 57 | Included |
| B | Inactive HF Plant | Included |
| C | Inactive Nickel Tanks | Included |
| D | Fiberglass UST Area | Included |
| E | Steel UST Area | Included |
| F | 20,000 Gallon UST Area | Included |
| G | Sabotage Spill Area | Included |

SWMUs and AOCs Not Identified in June 1990 Harshaw Site PANSI

| AOC No. | Description | <u>Status under Order</u> |
|----------------|--|----------------------------------|
| H | Groundwater contamination associated with the former Nickel Chloride/Sulfide Production Area | Included |

CERTIFICATE OF SERVICE

I hereby certify that an original signed copy of the Administrative Order on Consent for the BASF Corporation was filed on March 30, 2010, with the Regional Hearing Clerk (E-19)), U.S. Environmental Protection Agency, Region 5, 77 West Jackson Boulevard, Chicago, Illinois, 60604, and that I mailed by Certified Mail, Receipt No. 7001 0320 0006 0192 6043, a second original signed copy to Respondent:

Ms. Nancy Lake Martin
BASF Catalysts
100 Campus Drive
Florham Park, New Jersey 07932

And forwarded copies (intra-Agency) to:

Steve Mendoza, ORC Section Chief

Diane Debus
Remediation and Reuse Branch
U.S. EPA- Region 5
77 West Jackson Boulevard
Chicago, IL- 60604

Docket No. RCRA-05-2010-0013