

BEFORE THE

OHIO ENVIRONMENTAL PROTECTION AGENCY

In the Matter of:

Hancock Manufacturing Company  
Cleveland & Fifth Streets  
Toronto, Ohio 43964

RESPONDENT

Ohio Revised Code Sections  
3734.13, 3734.20 and  
6111.03 :

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Director's Final Findings  
and Orders

These Final Findings and Orders ("Findings" and "Orders") are issued pursuant to the authority vested in the Director of the Ohio Environmental Protection Agency (OEPA) by Ohio Revised Code (ORC) Sections 3734.13, 3734.20 and 6111.03.

I. STATEMENT OF PURPOSE

The purpose of these Orders is to set standards for the performance of a Remedial Investigation and Feasibility Study by Respondent. To accomplish this, Respondent is ordered (1) to conduct a full investigation of the Site, as more fully described in paragraph III.A. below; (2) to determine the extent of contamination at the Site caused by the release of hazardous substances, pollutants, industrial wastes, contaminants, or other wastes; (3) to develop and evaluate a program of appropriate cleanup measures employing sound scientific, engineering and construction practices which shall be consistent with state law; and (4) to subsequently choose appropriate remedial action and implement and monitor the selected remedial action at the Site.

II. DEFINITIONS

As used in these Orders and the Workplans to be attached hereto and incorporated herein as Exhibit B, the following shall be defined terms:

A. The term "Respondent" shall mean Hancock Manufacturing Co., Inc., its directors, officers, employees, agents, subsidiaries, successors, designated representatives and assigns and contractors or consultants retained to carry out the purpose of these Orders.

B. "The Contractor" shall mean a qualified contractor retained by Respondent pursuant to these Orders, and any subcontractor, representative, agent or designee thereof.

C. The term "the parties" shall mean Respondent and OEPA.

D. The term "OEPA" shall mean the Ohio Environmental Protection Agency and its designated representatives.

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E. Hancock Manufacturing Co., Inc., located at Cleveland and Fifth Streets, Toronto, Ohio, sometimes referred to herein as "Site" shall be the site described in paragraph III. A., below, which is the subject of the work to be conducted pursuant to these Orders.

F. "Documents" shall mean any correspondence or narrative reports and any and all documentary evidence, of any kind, reflecting any information concerning the investigation and remediation of hazardous substances, hazardous wastes or industrial wastes or other wastes or contaminants or pollutants at or migrating from the Site. The term "document" shall be construed broadly to promote the effective sharing of information concerning the work to be done between the Respondent and OEPA.

G. "Remedial Investigation" ("RI") means the investigation conducted to determine the nature and extent of the contamination in and from the Site and to gather necessary data to support the Feasibility Study.

H. "Feasibility Study" ("FS") means the evaluation, development and design of remedial alternatives for the Site.

I. "Workplan" means that document detailing the data needs for characterizing the Site and for support of the Remedial Investigation and Feasibility Study ("RI Workplan," "FS Workplan," "RI/FS Workplan") and, upon completion of the RI/FS and submittal of the final RI/FS Report, means a document that describes the outline for implementation of the selected remedial actions by means of remedial design and remedial action ("RA/RD" "RA/RD Workplan"). The required content of the workplans is outlined in the Generic Statement of work included herein as Exhibit A.

J. "Days" shall mean calendar days unless business days are specified.

### III. FINDINGS OF FACT

OEPA has determined that all findings of fact necessary for the issuance of these Findings and Orders pursuant ORC Sections 3734.13, 3734.20 and 6111.03 have been made and are outlined below.

The Director of OEPA has determined the following:

A. Respondent leases and operates a metal stamping facility at Cleveland and Fifth Streets, Toronto, Jefferson County, Ohio.

B. Trichloroethylene ("TCE") is a volatile organic contaminant ("VOC") used to degrease metal products at the Site.

C. TCE is a degreasing solvent which when spent or disposed of is a hazardous waste within the meaning of Rule 3745-51-31 of the Ohio Administrative Code ("OAC").

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D. On April 10, 1986, Ohio Drilling Company notified OEPA at the Respondent's request of VOC contamination in the Respondent's production well. Sample results of water from the well showed 8400 ppb trichloroethylene and 10 ppb of unknown VOC.

E. Six monitor wells have been installed and sampled since April 10, 1986. Analysis of groundwater samples showed up to 2900 ppb trichloroethylene and 10 ppb of unknown VOC. A VOC scan was performed February 2, 1987 on a water sample from Respondent's production well. Results showed 7900 ppb of trichloroethylene and 420 ppb of trans-1,2-dichloroethylene. Analysis of soil samples taken with split-spoon showed up to 1600 ppb of trichloroethylene.

F. Trichloroethylene is an "industrial waste" as defined in ORC Section 6111.01(C) and/or "hazardous waste" as defined in ORC Section 3734.01(J).

G. Discharge, deposit, injection, dumping, leaking, spilling, or placing of TCE into or on the soil, groundwater, surface water at, under, or from the Site constitutes "disposal" of hazardous wastes as defined in ORC Section 3734.01(F).

H. The migration and threatened migration of these industrial wastes, and/or hazardous wastes, into the soil, groundwater, and surface water at or from the Site constitute a discharge of industrial wastes and/or hazardous wastes into "waters of the State," as that term is defined in ORC Section 6111.01 (H).

I. The actions referred to in paragraph H. supra, constitute an unlawful "placement" or "disposal" or threatened placement or disposal of industrial wastes and/or hazardous wastes into waters of the State in violation of ORC Sections 6111.04, 3734.02 and 3734.11.

J. The OEPA Director has determined that a release or disposal in industrial wastes and/or hazardous wastes from the Site is causing or contributing to or threatening to cause or contribute to air or water pollution or soil contamination within the meaning of ORC Section 3734.20(B).

K. Respondent is a "person" as that term is defined in ORC Sections 3734.01(G) and 6111.01(I)

L. The actions to be taken pursuant to these Orders are reasonable and necessary to protect the public or welfare or the environment.

M. A reasonable time for beginning and completing the actions required by these Orders has been provided herein.

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#### IV. ORDERS

##### 1. PERSONS BOUND

A. These Findings and Orders shall apply to and be binding upon Respondent, its officers, directors, employees, and subsidiaries, agents, successors, and assigns and upon all persons, contractors acting on behalf of Respondent.

B. Respondent shall provide a copy of these Orders to all contractors, subcontractors, laboratories, and consultants retained to conduct the work or any portion of the work to be performed pursuant to these Orders prior to their individual participation on Respondent's behalf and shall ensure that any such contractors, subcontractors, laboratory and consultants abide by the terms of these Orders.

C. No change in ownership or corporate status relating to the facility will in any way alter the Respondent's responsibilities under these Orders.

##### 2. ACCESS

A. To the extent that portions of the Site or areas where work is to be performed are presently owned by parties other than Respondent, Respondent shall use its best efforts to obtain voluntary access agreements from the present owners, including any agreements necessary to provide access to OEPA and its authorized representatives. These agreements are attached or will be attached as Exhibits hereto. In the event Respondent is unable to obtain such access, Respondent shall promptly notify OEPA regarding both the lack of access agreements and the efforts to obtain such access agreements and OEPA will contact the landowners.

B. Respondent shall assure that OEPA and/or any of its authorized representatives shall have access to enter all property at the facility at all reasonable times for purposes consistent with these Orders and ORC Sections 3734.20 and 6111.05 including, but not limited to: inspection of records, operating logs and contracts related to work to be performed under these Orders; reviewing the progress of the Respondent in carrying out the terms of these Orders; conducting such tests as OEPA or its Project Coordinator deems necessary; and verifying the data submitted to OEPA by the Respondent. The Respondent shall permit such OEPA representatives to inspect and request copies of all records, files, photographs, documents and other writings, including all sampling and monitoring data, which pertain to work to be performed under these Orders.

C. All parties with access to the Site pursuant to this paragraph shall comply with all approved health and safety plans. Nothing herein shall act to limit the statutory authority of OEPA to conduct inspections and gather information.

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### 3. WORK TO BE PERFORMED

A. Exhibit A to these Orders provides a Statement of Work ("SOW"), for the completion of the RI/FS, which is incorporated into and made a part of these Orders. In the event of any conflict between any provisions in these Orders and the SOW, the Findings and Orders shall control in resolving any such conflict.

B. If the final Work Plan(s) is/are revised pursuant hereto, each revision should be attached to these Findings and Orders and incorporated into and made a part hereof.

C. The following work shall be performed:

1) Within thirty (30) days of the effective date of these Findings and Orders, Respondent shall submit a draft RI/FS Workplan to OEPA. The draft RI/FS Workplan shall be developed in conformance with the SOW, U.S. EPA "Guidance on Remedial Investigations under CERCLA," dated May, 1985, as amended, U.S. EPA Guidance on Feasibility Studies under CERCLA," dated April, 1985, as amended, and any additional guidance documents provided by OEPA and which are not inconsistent with the National Contingency Plan, 40 CFR Section 300 et seq. as amended, ("NCP").

2) The RI/FS Workplan submittal shall include and discuss all the items described in the SOW, attached hereto, and shall include a schedule for implementation of RI and FS tasks and a schedule for submission of draft and final RI and FS Reports. The RI/FS Workplan shall provide, at a minimum, for a schedule for submittal of a draft RI Report, a final RI Report, a draft FS Report, and final FS Report.

3) The draft RI/FS Workplan shall be subject to review, modification and approval or disapproval by OEPA in accordance with the procedures set forth in Section 4 below of these Orders.

4) Within thirty (30) days of OEPA final approval of the RI/FS Workplan, Respondent shall implement the work detailed in the RI/FS Workplan in accordance with the schedule set forth therein.

5) When the final RI/FS Workplan, the final RI Report, and the final FS Report are approved by OEPA, they shall each be attached to these Orders and incorporated into and made a part hereof.

6) Upon completion of Task 13 of the RI/FS, Respondent shall select and recommend the Respondent's preferred alternative for cleanup action as set forth in RI/FS. Thereafter, OEPA shall approve or disapprove Respondent's selection within thirty (30) days.

Whenever two or more alternatives are identified as meeting the remedial response objective set forth in ORC Section 3734.20, the lowest cost alternative that is technologically feasible and reliable and which effectively mitigates and minimizes damage to and provides adequate

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protection of public health, welfare, or the environment will be considered the alternative. Total cost includes implementation of the alternative and the operation and maintenance of the proposed alternative.

#### 4. DOCUMENT SUBMITTAL AND REVIEW

A. Respondent shall submit all raw data and all copies of original reports of analytical procedures and results to OEPA within ten (10) business days after Respondent receives such raw data and reports from each laboratory involved in the analyses of any samples collected at or near the Site.

Respondent may submit to OEPA any interpretive reports and written explanations concerning such raw data and original laboratory reports.

B. With regard to each document that Respondent is required under these Orders to submit to OEPA for review and approval, OEPA shall notify Respondent in writing within thirty (30) days after receipt of such document of approval or disapproval, or required modifications of the document, or any parts thereof, specifying deficiencies in the event of any disapproval or proposed modification. In the event that any document requires a longer review period, OEPA shall notify Respondent in writing of that fact within thirty (30) days after receipt of the document. If OEPA gives notice of such delay to Respondent, delay by Respondent in performance of the work under these Orders and the attached SOW due to OEPA document review time beyond thirty (30) days shall not be considered a violation of these Orders, and the time allowed for performance by Respondent shall be extended by the number of days beyond thirty (30) days that elapse before Respondent receives the written notice from OEPA relating to OEPA's review of such document.

1) Within ten (10) days of receipt of the written notice required by paragraph B of this Section, Respondent may request a meeting with OEPA discuss and/or dispute any deficiencies specified in the notice or the necessity of any proposed modification to the document under review. Such meeting shall be held within five (5) days of such request, if possible, and may be conducted by telephone.

2) Within twenty (20) days of the date of the meeting, or if no meeting is requested by Respondent, within thirty (30) days of the receipt of written notice of any deficiency and required modification to the document under review, Respondent shall submit a revised document to OEPA which incorporates OEPA modifications as revised or amended as the result of any meeting held between the parties.

3) In the event of subsequent OEPA disapproval of any document, OEPA retains the right to conduct a complete RI/FS, complete the RD/RA, and implement the selected cleanup action and/or enforce the terms of these Orders.

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C. No modification or additions shall be made by the Respondent in the Workplan(s) as approved by OEPA and described in Section 3 above, without written notification required by this paragraph shall set forth the nature of and reasons for the requested modification.

## 5. PROJECT COORDINATORS

Respondent and OEPA shall each designate a Project Coordinator and an alternate for each designated Project Coordinator for the purpose of overseeing the implementation of these Orders. To the maximum extent possible, except as specifically provided in these Orders, communications between Respondent and OEPA concerning the terms and conditions of these Orders shall be made between the Project Coordinators. Each Project Coordinator shall be responsible for assuring that all communications from the other parties are appropriately disseminated and processed. The Project Coordinators shall attempt to resolve disputes informally through good faith discussions of the technical issues.

Without limitation of any authority conferred on OEPA by statutes or regulations, the OEPA Project Coordinator's authority includes, but is not limited to: (1) taking samples or, in accordance with the terms of the Workplan(s), directing the type, quantity and location of samples to be taken by the Respondent in accordance with the Workplan(s); (2) observing, and taking photographs and making such other report on the progress of the work as the Project Coordinators deem appropriate; (3) directing that work stop for a period not to exceed 72 hours whenever the OEPA Project Coordinator determines that activities at the Site present a danger to public health or welfare or the environment; (4) reviewing records, files and documents relevant to work performed under these Orders.

The Respondent's Project Coordinator or alternate shall be on-site at the Site during all hours of field work and shall make himself/herself available for the pendency of these Orders. The absence of the OEPA Project Coordinator from the Site shall not be cause for stoppage of work unless otherwise provided.

OEPA and Respondent each have the right to change their respective Project Coordinator. Such a change shall be accomplished by notifying the other party in writing at least five (5) calendar days prior to the change.

## 6. REPORTING

Respondent shall submit written progress reports which describe the progress achieved during the reporting period toward compliance with these Orders during the previous month, to OEPA by the tenth day of every month following the effective date of these Orders, unless otherwise designated pursuant to these Orders. At a minimum, these reports shall:

- A. Identify the Site and activity;
- B. Describe the status of work at the Site and progress to date;
- C. Demonstrate the percentage of completion;
- D. Describe difficulties encountered during the reporting period;

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- E. Describe actions being taken to rectify problems;
- F. Describe activities planned for the next month; and
- G. Identify changes in key personnel.

The monthly progress reports will list target and actual completion dates for each element of activity, including the project completion, and provide an explanation of any deviation from the milestones in any of the Workplan(s) schedules.

Such progress reports and any other documents, reports, approvals, or correspondence submitted pursuant to these Orders shall be sent by certified mail return receipt requested to the OEPA at the following addresses (or to such other address as the OEPA may hereafter designate in writing).

Ohio Environmental Protection Agency  
Post Office Box 1049  
Columbus, Ohio 43266-0149  
Attn: Unregulated Sites Coordinator

Ohio Environmental Protection Agency  
Southeast District Office  
2195 Front Street  
Logan, Ohio 43138  
Attn: Stephen L. Hamlin, P.E.

All correspondence to the Respondents shall be directed to the following:

Hancock Manufacturing Company  
Cleveland and Fifth Streets  
Toronto, Ohio 43964

OEPA may, in its discretion, direct that reports or plans or proposals made pursuant to these Orders be submitted at extended intervals or that no further reports need be submitted.

#### 7. SAMPLING AND DATA/DOCUMENT AVAILABILITY

OEPA and the Respondent shall make available to each other the results of sampling, tests or other data generated by either of them, or on their behalf, with respect to the implementation of these Orders.

At the request of OEPA, the Respondent shall allow split or duplicate samples to be taken by the OEPA of samples collected by the Respondent during the implementation of these Orders. The Respondent shall notify the OEPA Project Coordinator not less than 10 working days (unless otherwise agreed between the Project Coordinators) in advance of any sample collection for which the OEPA Project Coordinator as indicated that he or she may wish to obtain split or duplicate samples.

Respondent also agrees that it shall preserve during the pendency of these Orders and for a minimum of ten years after its termination one copy of all records and documents within its possession or that of its divisions, employees, agencies, accountants, contractors or attorneys which relate to work performed under these Orders, despite any document retention policy to the contrary. After the ten year period, Respondent shall notify OEPA within 30 days prior to the destruction of any such documents required to be kept pursuant to this paragraph. Upon request by OEPA, Respondent shall make available to OEPA, such records or copies of any such records.

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## 8. CONFIDENTIAL INFORMATION

Respondent may assert a claim of business confidentiality covering the information requested by these Orders, except for analytical data, pursuant to Ohio Administrative Code Rule 3745-49-03(A). Information determined to be confidential by OEPA will be afforded protection under Ohio Administrative Code Rule 3745-49-03. If no such claim accompanies the information when it is submitted to OEPA, it may be made available to the public by the OEPA without further notice to Respondent.

## 9. RESERVATION OF RIGHTS

A. Nothing in these Orders shall be construed to limit in any way the right of the public or of any citizen to obtain public information about the work to be performed under these Orders or the technical basis for these Orders; the right of the public, any citizen and the State of Ohio to sue or to intervene in any action to enforce state or federal law against Respondents; or the right of the public or any citizen to be fully informed pursuant to the procedures established by state and federal environmental law of the actions taken pursuant to these Orders.

B. Notwithstanding compliance with the terms of these Orders, including the completion of the RI/FS and the cleanup actions selected and approved by OEPA, Respondent is not released from any liability which it may have pursuant to any provisions of state and federal law. The State of Ohio reserves the right to take any action pursuant to Ohio Revised Code Chapters 3734 and 6111 and the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986, 42 U.S.C. 9601, et seq., and/or any other available legal authority, including, but not limited to, the right to implement the cleanup action(s) OEPA deems appropriate; to seek cost recovery, including cost recovery for the costs of review of documents or work required by these Orders; injunctive relief; monetary penalties; attorneys' fees; natural resources damages; and other damage claims and punitive damages for any violation of law or of these Orders. Nothing in these Orders shall limit the rights of the State described in Section 121(f)(3) of CERCLA.

## 10. DEED NOTICE, LAND USE AND CONVEYANCE OF TITLE

For the period of time wherein Respondent owns or operates the Site, Respondent shall assure that no portion of the Site will be used in any manner which would adversely affect the integrity of any containment systems which may remain at the Site or monitoring systems installed pursuant to these Orders. Respondent will not grant any interest in the Site or any portion of the Site without provision for continued operation and maintenance of any containment or monitoring system installed pursuant to these Orders. Respondent shall notify OEPA by registered mail at least ninety (90) calendar days prior to any conveyance or an intent to convey any interest in land which is known to comprise the Site and of the provision made for continued maintenance of the system or systems.

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#### 11. OTHER APPLICABLE LAWS

All actions required to be taken pursuant to these Orders shall be undertaken in accordance with the requirements of all applicable local, state and federal laws and regulations including all environmental laws and regulations. OEPA shall promptly consider and decide upon permit applications which Respondent may be required to submit pursuant to environmental laws and regulations.

#### 12. FORCE MAJEURE

Respondent shall notify OEPA of any delay or anticipated delay which occurs or may occur in the performance of the work required by these Orders. Notification of delays shall be made immediately by oral notification to the OEPA Project Coordinator. A record of the minor delays provided orally to OEPA shall be incorporated in the Respondent's monthly progress report to EPA. Notification of delays longer than five (5) days which may affect the schedules for the timely completion of the work, shall be made by written notification, in addition to the oral notification required herein, to OEPA and shall be submitted within three (3) days of the oral or telephonic notification. Such oral and written notification shall describe fully the nature of the delay; the reasons for and the expected duration of the delay; and the action which Respondent will take to mitigate the delay.

#### 13. SEVERABILITY

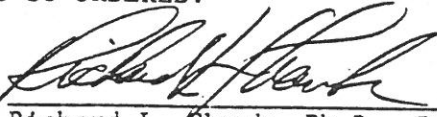
If any provisions of a section or paragraph of these Orders or the application thereof to any person or circumstance is judicially held invalid, the invalidity does not affect other provisions or applications of these Orders which can be given effect without the invalid provision or application. To this end, the provisions of these Orders are severable.

#### 14. TERMINATION

When Respondent determines that Respondent has completed the work required pursuant to these Orders, Respondent shall notify OEPA in writing. The provisions of these Orders shall be deemed satisfied upon the Respondent's receipt of written notice from OEPA that Respondent has demonstrated, to the satisfaction of the OEPA, completion of all terms of these Orders.

IT IS SO ORDERED:

By:

  
Richard L. Shank, Ph.D., Director  
Ohio Environmental Protection Agency

JUN 16 1988

Date

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GENERIC STATEMENT OF WORK  
REMEDIAL INVESTIGATION/FEASIBILITY STUDY  
STATE VERSION

REMEDIAL INVESTIGATION

PURPOSE:

The purpose of this remedial investigation is to determine the nature and extent of the problem at the site and to gather all necessary data to support the feasibility study. The Engineer shall furnish all personnel, materials, and services necessary for, or incidental to, performing the remedial investigation at [specific site].

SCOPE:

The remedial investigation consists of seven tasks:

Task 1 -- Description of Current Situation

Task 2 -- Investigation Support

Task 3 -- Site Investigations

Task 4 -- Site Investigation Analysis

Task 5 -- Laboratory and Bench-Scale Studies

Task 6 -- Final Report

Task 7 -- Additional Requirements

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TASK 1 -- DESCRIPTION OF CURRENT SITUATION

By: Mary Caven Date 6-16-88

The Engineer shall describe the background of the site and its problems and outline the purpose and need for remedial investigation of the site. Data gathered during previous investigations, site inspections, and other relevant activities shall be used. Previous investigations shall be summarized and referenced.

- a. Site Background. Prepare a summary of the regional location, pertinent area boundary features, and general site physiography, hydrology, geology, and current and historic land and water use. The total area of the facility and the general history relative to the use of the facility for hazardous waste/hazardous substance activity should be defined.

- b. Nature and Extent of Problem. Prepare a summary of actual and potential on-site and off-site health and environmental effects. This summary shall include: the types, physical states, and amounts of hazardous substances; the existence and condition of drums, tanks, landfills, surface ponding, and other containers; affected media and pathways of exposure; contaminated releases such as leachate and runoff; and any human or environmental exposure. Emphasis shall be placed on describing the threat or potential threat to public health and the environment.
- c. History of Response Actions. Prepare a summary of any response actions conducted by Federal, State, local, or private parties. This summary shall include field inspections, sampling surveys, cleanup activities, and other technical investigations.

## TASK 2 -- INVESTIGATION SUPPORT

The Engineer shall conduct preliminary work necessary to scope and conduct the site investigations and feasibility study.

- a. Safety Plan. A safety plan shall be developed to protect the health and safety of personnel involved in the site investigations and the surrounding community. The plan will be consistent with:

Section 111(c)(6) of CERCLA

EPA Order 1440.3 -- Respiratory Protection

EPA Order 1440.2 -- Health and Safety Requirements  
for Employees Engaged in Field Activities

EPA Occupational Health and Safety Manual

EPA Interim Standard Operating Safety Procedures  
and other EPA guidance as developed by EPA

Site Conditions

The Safety Plan should identify problems or hazards that may be encountered and their solution. Safety procedures to be followed to protect third parties, such as visitors or the surrounding community, should also be provided.

- b. Define Boundary Conditions. Establish facility boundary conditions to limit the area of remedial investigations. The boundary conditions shall be set so that subsequent investigations will cover the contaminated media in sufficient detail to support following activities, e.g. feasibility study. Boundary conditions will also be used to identify boundaries for site access control and site security.

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- c. Site Map. Prepare a facility map showing all wetlands, surface water features, tanks, buildings, utilities, paved areas, easements, right-of-ways, and other features. The map shall be of sufficient detail and accuracy to locate all current or future work performed at the facility.
- d. Community Relations Plan. Prepare a plan, based on discussions with responsible local and State officials and interested community leaders, for the dissemination of information to the public regarding investigation and feasibility study activities and results. Opportunities for comment and input by citizen, community and other groups must also be identified and incorporated into the plan.
- e. Pre-Investigation Evaluation. Prior to starting any remedial investigations, the Engineer shall assess the site conditions to identify potential remedial technologies applicable to the site and associated data needed to evaluate alternatives based on these technologies for the feasibility studies. A report shall be prepared for State review identifying broad categories of remedial technologies that may be applicable to the site and data needs.

### TASK 3 -- SITE INVESTIGATIONS

The Engineer shall conduct investigations necessary to characterize the site and its actual or potential hazard to public health and the environment. The investigations shall produce sufficient data to assess remedial alternatives and support the detailed evaluation of alternatives during the feasibility study.

- a. The Engineer shall prepare and submit for State review and concurrence a detailed work plan outlining data needs for characterizing the site and for support of the feasibility study. The work plan shall include an outline of proposed investigation activities, a time schedule, personnel and equipment requirements. The work plan shall also include a sampling plan indicating rationals for sampling activities, location, quantity, and frequency of sampling, sampling and analysis methods, constituents for analysis, and quality assurance procedures. In addition to these general sampling plan elements, other requirements will be identified in the following subtasks as they apply.

All sample analyses will be conducted at laboratories following EPA protocols while following strict chain-of-custody procedures.

- 1. Chain-of-Custody. Any field sampling collection and analyses conducted shall be documented in accordance with chain-of-custody procedures as provided by EPA. The Engineer shall prepare and submit as part of the work plan a description of the chain-of-custody procedures to be used.

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2. Quality Assurance/Quality Control (QA/QC). The Engineer shall prepare and submit as part of the work plan a Quality Assurance Project Plan for the sampling, analysis, and data handling aspects of the remedial investigation. The plan shall be consistent with the requirements of EPA's Contract Laboratory Program. The plan shall address the following points:
- a) QA Objectives for Measurement Data, in terms of precision, accuracy, completeness, representativeness, and comparability.
  - b) Sampling Procedures
  - c) Sample Custody
  - d) Calibration Procedures, References, and Frequency
  - e) Internal QC Checks and Frequency
  - f) QA Performance Audits, System Audits, and Frequency
  - g) QA Reports to Management
  - h) Preventive Maintenance Procedures and Schedule
  - i) Specific procedures to be used to routinely assess data precision, representativeness, comparability, accuracy, and completeness of specific measurement parameters involved.
  - j) Corrective Action
- b. Waste Characterization. Develop and conduct a complete sampling and analysis program to supplement existing data and to physically and chemically characterize all potentially hazardous waste/hazardous substances at the site. This activity should include identification of the location and probable quantities of subsurface wastes using appropriate methods.

The sampling plan developed for this subtask shall address incompatibility testing of wastes (tank and drum opening procedures if necessary). Wastes shall be analyzed and grouped in compatibility classes to support any subsequent conclusions about segregating wastes on-site and developing remedial alternatives.

As part of this subtask, all containers of hazardous waste/hazardous substances such as drums, tanks, piles, abandoned vehicles, etc. must be located on the site map. The physical condition of each container, characteristics (color and type) as well as other identifying marks (labels, manufacturer's names, graffiti, etc.) must be recorded in an orderly fashion and should be correlated with the results of chemical analysis for each container when available. A photographic record of each container should also be prepared and included in the Remedial Investigation Report.

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- c. Hydrogeologic Investigation. Develop and conduct a program to determine the present and potential extent of groundwater contamination and to evaluate the suitability for on-site waste containment. A sampling program shall be developed to determine the location of water bearing strata and other subsurface geologic features, groundwater flow direction, vertical and horizontal distribution of contaminants, background levels of contamination, and the ability of the facility and local geology to control or contain the contaminants. Long-term disposition of contaminants will be evaluated based on mobility of the contaminants, attenuation capacity of local soils and other geologic features, regional flow direction and quantity, effects of local pumping, and the presence of discharge/recharge areas. Computer models of flow and contaminate transport may be used to demonstrate conclusions reached as a result of this investigation and predict effects of future remedial actions.

The sampling plan developed for this subtask shall define the type of well construction and any geophysical or modeling techniques proposed.

- d. Soils Investigation. Develop and conduct a program to determine the nature and vertical and horizontal extent of contamination of surface and subsurface soils. Cores from groundwater monitoring wells may serve as soils samples.
- e. Surface Water and Sediments Investigation. Develop and conduct a program to determine the nature and extent of contamination of surface water and sediments. This program shall also evaluate the impacts of the contaminants on the floral and faunal communities in the surface water, sediments, and any adjacent wetlands.
- f. Air Investigation. Develop and conduct a program to determine the nature and extent of on-site and off-site contamination. This program shall also address the tendency of the substance identified through Waste Characterization to enter and disperse in the atmosphere, considering seasonal weather conditions and wind patterns.

The above tasks should be summarized in a single sampling plan which is to be included in the detailed work plan. (Other categories of investigations may be needed for specialized problems. These could include additional biological or radiological investigations.)

#### TASK 4 -- SITE INVESTIGATION ANALYSIS

The Engineer shall prepare a thorough analysis and summary of all site investigations and their results. The objective of this task will be to ensure that the investigation data are sufficient in quality and quantity to adequately describe the nature and extent of contamination and to support the feasibility study.

The results and data from all site investigations shall be organized and presented logically so that the relationships between remedial investigations for each media are apparent.

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- a. Data Analysis. Analyze all site investigation data and develop a summary of the type and extent of contamination at the site. This analysis shall include all significant pathways of contamination and an exposure assessment. The exposure assessment shall describe any actual or potential threats to public health, welfare, and the environment.
- b. Application of Potential Remedial Technologies. Analyze the results of the site investigations in relation to the potential remedial technologies applicable to the site. This analysis will determine the adequacy of data quality and quantity to support the feasibility study and will identify any additional data needs.

#### TASK 5 -- LABORATORY STUDIES AND BENCH-SCALE STUDIES (Optional)

The Engineer shall conduct any necessary laboratory and bench scale treatability studies required to evaluate the applicability of remedial technologies, e.g., leachate treatment, groundwater treatment, compatibility of waste/leachate with liners, cover, or other materials proposed for use in the remedy. The scope of this Task will depend on the results of Task 4. The Engineer will submit a separate work plan for any proposed laboratory studies for State concurrence.

#### TASK 6 -- FINAL REPORT

The Engineer shall prepare a final report covering the remedial investigations and submit copies to the Ohio EPA. The report shall include the results of Task 1 through 5.

#### TASK 7 -- ADDITIONAL REQUIREMENTS

- a. Reporting Requirements. Monthly Technical Progress Reports are required of the Engineer.

Content. For each on-going work assignment, the Engineer shall submit progress reports with the following elements:

1. Identification of site and activity.
2. Status of work at the site and progress to date.
3. Percentage of completion.
4. Difficulties encountered during the reporting period.
5. Actions being taken to rectify problems.
6. Activities planned for the next month.
7. Changes in personnel.

The progress monthly report will list target and actual completion dates for each element of activity including project completion and provide an explanation of any deviation from the milestones in the work plan schedule.

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## FEASIBILITY STUDY

### PURPOSE

The purpose of this feasibility study is to develop and evaluate remedial alternatives for [specific site].

The Engineer shall furnish the necessary personnel, materials, and services required to prepare the remedial action feasibility study.

### SCOPE

The feasibility study consists of ten tasks:

Task 8 -- Description of Current Situation

Task 9 -- Work Plan

Task 10 -- Development of Alternative

Task 11 -- Initial Screening of Alternatives

Task 12 -- Detailed Analysis of Alternatives

Task 13 -- Evaluation and Selection of Cost-Effective Alternative

Task 14 -- Final Report

Task 15 -- Additional Requirements

### TASK 8 -- DESCRIPTION OF CURRENT SITUATION

Any changes to the description of the current situation from Task 1 shall be presented. Justification for changes must be based on results of the remedial investigation.

A site-specific statement of purpose for the response, based on the results of the remedial investigation, should be presented. The statement of purpose should identify the actual or potential exposure pathways that should be addressed by remedial alternatives. This statement of purpose shall be submitted to the State for concurrence before continuing the remaining tasks of the Feasibility Study.

### TASK 9 -- WORK PLAN

A work plan that includes a detailed technical approach, personnel requirements, and schedules shall be submitted to the State for review and concurrence for the proposed feasibility study.

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## TASK 10 -- DEVELOPMENT OF ALTERNATIVES

Based on the results of the remedial investigation, the Engineer shall develop a limited number of alternatives for source control or off-site remedial actions, or both, on the basis of objectives established for the response.

### a. Establishment of Remedial Response Objectives

Establish site-specific objectives for the response based on public health and environmental concerns, information gathered during the remedial investigation, Section 300.68 of the National Contingency Plan (NCP), EPA interim guidance, and the requirements of any other applicable Federal or State statutes. Preliminary cleanup objectives shall be developed in consultation with and for concurrence by the State.

### b. Identification of Remedial Technologies

Based on the remedial response objectives established above and the statement of purpose identified in Task 8, identify appropriate remedial technologies as a basis for the development of remedial alternatives. These technologies shall be identified on a media-specific basis, although consideration should be given to the interrelationship of the media. The technologies should be able to meet the response objectives. The list of potential remedial technologies developed in Tasks 2e and Task 4b shall be considered a master list of applicable technologies and shall be screened based on site conditions, waste characteristics, and technical requirements, to eliminate or modify those technologies that may prove extremely difficult to implement, will require unreasonable time periods to implement, or will rely on insufficiently developed technology.

### c. Identification of Remedial Alternatives

Develop alternatives to incorporate remedial technologies, response objectives, and other appropriate considerations into a comprehensive, site-specific approach. Alternatives developed should include the following:

- 1) Alternatives for off-site treatment or disposal;
- 2) Alternatives which attain applicable and/or relevant Federal and State public health or environmental standards;
- 3) Alternatives which exceed applicable and/or relevant Federal and State public health or environmental standards;
- 4) No action alternative for comparison with other developed alternatives.

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There may be overlap among the alternatives developed. All alternatives except the no action alternative must meet the requirements of all applicable State and Federal environmental laws including permitting requirements. Alternatives shall be developed in close consultation with the State.

#### TASK 11 -- INITIAL SCREENING OF ALTERNATIVES

The alternatives developed in Task 10 shall be screened by the Engineer to eliminate alternatives, prior to detailed analysis, that are clearly not feasible or appropriate. All decisions made as a part of this screening of alternatives should be documented.

The following consideration shall be used as a basis for the initial screening:

- 1) Cost. An alternative that far exceeds the cost of other alternatives evaluated and that does not provide substantially greater public health or environmental benefits will usually be excluded from further consideration.
- 2) Effects of the Alternative. Only those alternatives that effectively contribute to protection of public health, welfare, and the environment will be considered further. Any alternatives that inherently present significant adverse effects will be excluded from further consideration.
- 3) Acceptable Engineering Practices. Alternatives that may prove extremely difficult to implement, will not achieve the remedial objectives in a reasonable time period, or that rely on unproven technologies will be excluded from further consideration.

#### TASK 12 -- DETAILED ANALYSIS OF ALTERNATIVES

The Engineer shall prepare a detailed analysis of the alternatives that pass through the initial screening in Task 11.

This detailed analysis shall consist of the following elements:

##### a. Detailed Description

The detailed description of each remaining alternative shall include as a minimum:

- 1) Description of appropriate treatment and disposal technologies.
- 2) Special engineering considerations required to implement the alternative, e.g., pilot treatment facility, additional studies needed to proceed with final remedial design.
- 3) Operation, maintenance, and monitoring requirements of the completed remedy.

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- 4) Off-site disposal needs and transportation plans.
- 5) Temporary storage requirements.
- 6) Safety requirements for remedial implementation, including both on-site and off-site health and safety considerations.
- 7) An analysis of how the alternative could be phased into individual operations and a discussion of how these operations could best be implemented, individually or in groups, to produce significant environmental improvement.
- 8) A review of any off-site treatment or disposal facilities to ensure compliance with applicable RCRA, TSCA and State requirements; both current and proposed.
- 9) An analysis of the projected performance and expected results of the alternative with emphasis on potential for further future release of hazardous substances.

b. Environmental Assessment

An Environmental Assessment (EA) shall be performed for each alternative including, as a minimum, an evaluation of each alternative's environmental effects, an analysis of measures to mitigate adverse effects, physical or legal constraints, and compliance with Federal and State regulatory requirements.

Each alternative will be assessed in terms of the extent to which it will mitigate damage to, or protect, public health, welfare, and the environment, in comparison to the other remedial alternatives.

The no action alternative will be fully evaluated to describe the current site conditions and anticipate environmental conditions if no actions are taken. The no action alternative will serve as the baseline for the Environmental Analysis.

c. Cost Analysis

The present worth cost of implementing each remedial alternative (and each phase of the alternative) as well as the annual operating and maintenance cost shall be presented. The cost shall be provided as a total cost and on an annual cost basis.

TASK 13 -- EVALUATION AND SELECTION OF COST-EFFECTIVE ALTERNATIVE

The State shall review the results of the detailed analysis of alternatives prepared under Task 12 and select the cost-effective alternative. The lowest cost alternative that is technologically feasible and reliable and which effectively mitigates and minimizes damage to and provides adequate protection of public health, welfare, or the environment will be considered the cost-effective alternative.

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The following considerations shall be used as the basis for selecting the cost-effective alternative:

1. Reliability. The alternatives that minimize or eliminate the potential for release of wastes into the environment will be considered more reliable than other alternatives.
2. Implementability. The alternatives most easily implemented shall be favored.
3. Effects of the Alternative. The alternatives posing the greatest improvement to (and least negative impact on) public health, welfare, and the environment will be favored.
4. Safety Requirements. The alternatives with the lowest adverse safety impacts and associated costs will be favored.
5. Cost. Total cost will include the cost of implementing the alternative and the cost of operation and maintenance of the proposed alternative.

#### TASK 14 -- FINAL REPORT

A final report shall be prepared for submission to the State, including the results of Task 8 through 13. Copies of the report shall be submitted to the State.

#### TASK 15 -- ADDITIONAL REQUIREMENTS

Monthly Technical Progress Reports are required of the Engineer. These documents are described in Task 7 of the remedial investigation scope of work.

The design and implementation of the selected alternative will follow this RI/FS process.

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Deliverables:

Remedial Investigation

1. Task 1a - Site Background
  - b - Nature and Extent of Problem
  - c - History of Response Actions
2. Task 2a - Safety Plan
  - c - Site Map
  - d - Community Relations Plan
  - e - Pre-investigation Evaluation
3. Task 3a - Work Plan
4. Task 4 - Site Investigation Analysis
5. Task 5 - Work Plan for Laboratory and Bench Scale Studies (optional)
6. Task 6 - Final Remedial Investigation Report
7. Task 7 - Monthly Technical Progress Reports

The State shall review and concur with Items 2 and 3 before field activities begin.

Feasibility Study

8. Task 8 - Statement of Purpose
9. Task 9 - Work Plan for Feasibility Study
10. Task 10a - Remedial Response Objectives
  - c - Identified Remedial Alternatives
11. Task 12 - Detailed Analysis of Alternatives Including Decisions Documents
12. Task 14 - Final Feasibility Study Report
13. Task 15 - Monthly Technical Progress Reports

The State shall review and concur with Items 8 and 9 before work on the feasibility study begins.

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