UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

FACT SHEET

FOR MODIFICATION OF A HAZARDOUS WASTE MANAGEMENT PERMIT FOR
W. R. GRACE & CO. - CONN.
COLUMBIA, MARYLAND 24153
EPA ID No. MDD074933961

Permittee:	W.R. Grace & Co. -Conn.
EPA ID Number:	MDD074933961
Facility:	7500 Grace Drive Columbia, MD 21044

Introduction:

The United States Environmental Protection Agency (EPA) under the authority 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 (HSWA), 42 U.S.C. §§ 6901-6992k, and EPA regulations at 40 C.F.R. Parts 260-271, has prepared a draft second permit modification to the HSWA Corrective Action Permit (ID No. MDD074933961) (Second Permit Modification) for the facility located at 7500 Grace Drive in Columbia, Maryland, at latitude 39° 11' 34" North and longitude 76° 54' 13" West and owned by W.R. Grace & Co.-Conn. (W.R. Grace or Permittee). This fact sheet prepared in accordance with the Code of Federal Regulations (CFR) 40 CFR Part 124, describes the facility, the permitting history, and the proposed modification.

History:

On July 10, 1992, EPA issued a HSWA Corrective Action Permit (EPA I.D.# MDD074933961) to the Permittee under the authority of Section 3004(u) RCRA, 42 U.S.C. Section 6924(u) (Original Permit). The Original Permit, which on its terms expired on August 14, 2002, and the conditions of which were administratively continued under 40 C.F.R. Section 270.51. On November 5, 2007, EPA modified the Original Permit with the First Permit Modification (First Permit Modification or 2007 Permit). The First Permit Modification became effective on November 30, 2007 and shall remain in effect until November 30, 2017 unless revoked and reissued, modified or terminated in accordance with 40 C.F.R. §§ 270.41, 270.42 and 270.43 or continued in accordance with 40 C.F.R. §§ 270.51(a).

The Original Permit contained standard permit conditions as well as the requirement to conduct a RCRA Facility Investigation (RFI) to, among other things, characterize the nature, extent, concentration and rate of migration of releases of hazardous waste or hazardous constituents from each SWMU into groundwater, surface water and/or soil. The First Permit Modification requires the implementation of the Final Remedy selected in the Final Decision and Response to Comments dated

September 14, 2006 (FDRTC). For soils, the Final Remedy for the Facility consists of no further action because EPA had determined that there was no threat of exposure from direct contact with Facility soils. For Facility-related groundwater, the Final Remedy consists of operating a groundwater recovery and treatment system for the Main Site and monitored natural attenuation (MNA) with institutional controls for Former Landfill Area. In April 2014 EPA approved the temporary shutdown of the groundwater recovery and treatment system because groundwater had met the Groundwater Cleanup Standards selected in the FDRTC. Data collected during the shutdown demonstrates that Groundwater Cleanup Standards continue to be achieved. W.R. Grace has requested that the 2007 Permit be modified to allow for the permanent shutdown of the groundwater recovery and treatment system accompanied by continued monitoring of groundwater.

With the draft Second Permit Modification, EPA proposes to remove a 58-acre parcel of Facility property identified as the GF Columbia Parcel from the requirements of the Original Permit, as modified by the 2007 Permit. EPA has determined that no additional corrective measures are necessary on the GF Columbia Parcel because there is no further action necessary for Facility soils and there is no Facility-related groundwater contamination under the GF Columbia Parcel.

Facility Description:

The Facility is located in Columbia, Maryland, northeast of Route 32 and north/northwest of Cedar Lane. The Facility consists of approximately 125 acres, including landscaped grassy areas; office, research and support buildings; two ponds, and wooded areas. The Middle Patuxent River is located just east of the Facility. See Attachment A for a Facility map.

W.R. Grace operated a research and development facility, known as the Washington Research Center, at the Facility from the late 1950s until the late 1990s, when W.R. Grace's Davison Chemical Division and Davison Chemical corporate headquarters moved to the Facility. During the 1960s, W.R. Grace burned and disposed of wastes in an area referred to as the Former Landfill Area located in the northeast area of the Facility. The Former Landfill Area
covers approximately 7000 square feet. In 1985, W.R. Grace removed and disposed of waste from the Former Landfill Area and closed the landfill.

W.R. Grace used a former drum storage area, which is located west and north of Building 16, for the collection, staging and storage of drummed solvent wastes. Leaking drums in the storage area are believed to have been the source of groundwater contamination at the Facility. In 1986, W.R. Grace detected volatile organic compounds, including trichloroethene and its degradation products, in drinking water wells SW8 and SW9 at the Facility. Those wells were subsequently shut down and the Facility is now supplied with public water.

Purpose of the Permitting Process:
Section 7004(b) of RCRA and 40 C.F.R. § 124.10 require that the public be given 45 days to comment on each draft permit under RCRA. The comment period will begin on September 17, 2015, and will end on November 2, 2015. Any person interested in commenting on this draft permit must do so within this 45-day comment period.

All persons wishing to comment on the permit conditions that EPA proposes to modify with the Second Permit Modification should submit the comments in writing to the US Environmental Protection Agency, Region 3, 1650 Arch St, Philadelphia, PA 19103-2029, Attention: Catherine McGoldrick (3LC50). Comments should include all reasonably available references, factual grounds, and supporting material.

In the event that EPA receives written notice of opposition to the permit conditions that EPA

proposes to modify with the Second Permit Modification and a written request for a public hearing within the comment period referenced above, a hearing to receive oral comments will be scheduled at a location convenient to Columbia, Maryland. Public hearing requests must be received by EPA by the close of business on November 2, 2015.

When making a determination regarding the issuance of the Second Permit Modification to the Permittee, EPA will consider all written comments received during the comment period, oral or written statements received during the public hearing (if held), the requirements of the hazardous waste regulations of 40 C.F.R. Parts 124, 260-264, 268 and 270, EPA's permitting policies, and HSWA.

When EPA makes a final decision to issue or deny the Second Permit Modification, notice will be given to the Permittee and each person who submitted written comments or requested notice of the final decision. The final permit decision shall become effective 30 days after the service of notice of the decision unless a later date is specified or review is requested under 40 C.F.R. § 124.19. If no comments request a change to the permit conditions that EPA proposes to modify with the Second Permit Modification, the final Second Permit Modification shall become effective immediately upon issuance.

Permit Modification:

The draft Second Permit Modification is divided into three (3) "Parts" as outlined below. The column entitled "Regulation" provides the regulatory authority for the permit conditions.

Part	Topic	Regulation
I	Standard Conditions	40 CFR 270.30 and 270.32
II	Specific Facility Conditions	40 CFR 264.101
III	Remedy Implementation	40 CFR 264.101

Parts I and II contain conditions generally applicable to all hazardous waste facilities.

Part III provides requirements for implementing the selected remedies throughout the term of the permit.

EPA proposes that the Original Permit, as modified by the First Permit Modification, be further modified as follows:

1. Attachment A, which shows the configuration of the Facility, is replaced by an updated Attachment A-2015 which shows the Facility property subject to the Original Permit, as modified by the 2007 Permit and the proposed 2015 Permit. Attachment A-2015 does not include GF Columbia Parcel.

2. In Part III.A.1.a of the 2007 Permit (p.4), modify the final clause of the first sentence to insert the words “or appropriate” so that the first sentence of that paragraph reads as follows: “

The Permittee shall continue operating the groundwater recovery and treatment system by withdrawing, treating and discharging approximately 70,000 gallons per day ("gpd") of groundwater from five recovery wells until the Groundwater Cleanup Standards are achieved and maintained at the Facility in accordance with the Corrective Measures Implementation ("CMI") Workplan, as required in Paragraph A.6., below, or until EPA determines that an alternative remedy is necessary or appropriate to achieve and maintain the Groundwater Cleanup Standards for the Facility.

3. In Part III.E. of the 2007 Permit (p.6), modify the final clause of the first sentence to insert the words “or appropriate” so that the paragraph reads as follows:

The Permittee will operate the groundwater treatment system and conduct MNA until the Groundwater Cleanup Standards are achieved and maintained at the Facility or until EPA determines that an alternative remedy is necessary or appropriate to achieve and maintain the Groundwater Cleanup Standards for the Facility.

List of Permit Attachments

ATTACHMENT A - FACILITY LOCATION MAP

ATTACHMENT B – FINAL DECISION AND REPONSE TO COMMENTS (FDRTC) UNDER RCRA SECTION 3004(u)

ATTACHMENT C – RCRA FACILITY INVESTIGATION (RFI)

ATTACHMENT D – CORRECTIVE MEASURES STUDY (CMS)

ATTACHMENT E – WASTE MINIMIZATION GUIDANCE DOCUMENTS AND SOURCES

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
DRAFT SECOND PERMIT MODIFICATION

UNDER THE RESOURCE CONSERVATION AND RECOVERY ACT AS AMENDED BY THE HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984

Permittee:	W. R. Grace & Co.-Conn.
Permit Number:	EPA ID No. MDD074933961
Facility:	Washington Research Center 7500 Grace Drive Columbia, Maryland 21044

The United States Environmental Protection Agency ("EPA") under the authority 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 ("HSWA"), 42 U.S.C. §§ 6901 - 6992k, and EPA regulations at 40 C.F.R. Parts 260-271, has prepared this Draft Second Permit Modification to the HSWA Corrective Action Permit (EPA I.D.# MDD074933961) for the facility owned by W.R. Grace & Co.-Conn. (hereinafter the "Permittee") located at 7500 Grace Drive in Columbia, Maryland, at latitude 39° 11' 34" North and longitude 76° 54' 13" West (the "Facility").

On July 10, 1992, EPA issued a HSWA Corrective Action Permit (EPA I.D.# MDD074933961) to the Permittee under the authority of Section 3004(u) RCRA, 42 U.S.C. Section 6924(u) (the "Original Permit"). The Original Permit, which on its terms expired on August 14, 2002, and the conditions of which were administratively continued under 40 C.F.R. Section 270.51. On November 5, 2007, EPA modified the Original Permit with the First Permit Modification ("2007 Permit"). The 2007 Permit became effective on November 30, 2007 and shall remain in effect until November 30, 2017 unless revoked and reissued, modified or terminated in accordance with 40 C.F.R. §§ 270.41, 270.42 and 270.43 or continued in accordance with 40 C.F.R. §§ 270.51(a).

EPA proposes that the Original Permit, as modified by the First Permit Modification, be further modified as follows:

1) The preamble in the First Permit Modification is modified to read:

INTRODUCTION

The United States Environmental Protection Agency ("EPA") under the authority 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 ("HSWA"), 42 U.S.C. §§ 6901 - 6992k, and EPA regulations at 40 C.F.R. Parts 260-271, is hereby

issuing this second permit modification (Second Permit Modification) to W.R. Grace & Co.-Conn. (Permittee) for its facility located at 7500 Grace Drive in Columbia, Maryland, at latitude 39° 11' 34" North and longitude 76° 54' 13" West (the "Facility"). The complete RCRA permit for purposes of Section 3005(c) of RCRA, 42 U.S.C. §6925(c), consists of two portions: the modified Original Permit (Permit) and the permit issued by the Maryland Department of the Environment (MDE) on April 15, 1988 (CHS Permit # A-212) (MDE Permit). This Permit addresses the provisions of HSWA and will be enforced by EPA. The MDE Permit addresses the provisions of the Code of Maryland Regulations, (COMAR), Title 26, Subtitle 13, for which the State of Maryland (State) has received authorization under Section 3006(b) of RCRA, 42 U.S.C. § 6926(b), to carry out such program in lieu of the federal hazardous waste management program under RCRA. The MDE Permit will be enforced by MDE, but EPA may also exercise its enforcement discretion if and when appropriate.

This Permit is based on information provided to EPA by the Permittee and MDE. Section 3005(c)(3) of RCRA provides EPA the authority to review and amend the Permit at any time. Any inaccuracies found in the information submitted by the Permittee may be grounds for the termination, modification or revocation and reissuance of this Permit (see 40 C.F.R. §§ 270.41, 270.42 and 270.43). The Permittee must inform EPA of any deviation from or changes in the submitted information which would affect the Permittee's ability to comply with the applicable statutes, regulations or permit conditions.

The Permittee shall comply with all terms and conditions set forth in this Permit, including the attachments hereto. Additionally, the Permittee shall comply with all applicable federal regulations, including 40 C.F.R. Parts 260 through 264, Part 266, Part 268, Part 270, Part 273 and Part 124. Nothing in this Permit shall limit EPA's authority to undertake, or require any person to undertake, response action or corrective action under any law, including, but not limited to, Section 104 or 106 of CERCLA, 42 U.S.C. §§ 9604 and 9606, and Section 7003 of RCRA, 42 U.S.C. § 6973. Nor shall any permit condition relieve the Permittee of any obligations under any law, including, but not limited to, Section 103 of CERCLA, 42 U.S.C. § 9603 to report releases of hazardous wastes, constituents, or substances to, at, or from the Facility.

This Permit is effective on [date to be inserted], 2015 and shall remain in effect until [date to be inserted], 2025 unless revoked and reissued, modified or terminated in accordance with 40 C.F.R. §§270.41, 270.42, 270.43 or continued in accordance with 40 C.F.R. §270.51(a).

2) Attachment A, which shows the configuration of the Facility, is replaced by an updated Attachment A-2015 which shows the Facility property subject to the Original Permit, as modified by the 2007 Permit and this Proposed Second Permit Modification. Attachment A-2015 does not include GF Columbia Parcel.

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3). In Part III.A.1.a of the 2007 Permit (p.4), modify the final clause of the first sentence to insert the words "or appropriate" so that the first sentence of that paragraph reads as follows: "

The Permittee shall continue operating the groundwater recovery and treatment system by withdrawing, treating and discharging approximately 70,000 gallons per day ("gpd") of groundwater from five recovery wells until the Groundwater Cleanup Standards are achieved and maintained at the Facility in accordance with the Corrective Measures Implementation ("CMI") Workplan, as required in Paragraph A.6., below, or until EPA determines that an alternative remedy is necessary *or appropriate* to achieve and maintain the Groundwater Cleanup Standards for the Facility.

4). In Part III.E. of the 2007 Permit (p.6), modify the final clause of the first sentence to insert the words "or appropriate" so that the paragraph reads as follows:

The Permittee will operate the groundwater treatment system and conduct MNA until the Groundwater Cleanup Standards are achieved and maintained at the Facility or until EPA determines that an alternative remedy is necessary *or appropriate* to achieve and maintain the Groundwater Cleanup Standards for the Facility.

EPA proposes the following draft permit to incorporate the above listed modifications to the Original Permit, as modified by the First Permit Modification:

Permittee:	W. R. Grace & Co.-Conn.
Permit Number:	EPA ID No. MDD074933961
Facility:	Washington Research Center 7500 Grace Drive Columbia, Maryland 21044

INTRODUCTION

The United States Environmental Protection Agency ("EPA") under the authority 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 ("HSWA"), 42 U.S.C. §§ 6901 - 6992k, and EPA regulations at 40 C.F.R. Parts 260-271, is hereby issuing this second permit modification (Second Permit Modification) to W.R. Grace & Co.-Conn. (Permittee) for its facility located at 7500 Grace Drive in Columbia, Maryland, at latitude 39° 11' 34" North and longitude 76° 54' 13" West (the "Facility"). The complete RCRA permit for purposes of Section 3005(c) of RCRA, 42 U.S.C. §6925(c), consists of two portions: this Permit and the permit issued by the Maryland Department of the Environment (MDE) on April 15, 1988 (CHS Permit # A-212) (MDE Permit). This Permit addresses the provisions of HSWA and will be enforced by EPA. The MDE Permit addresses the provisions of the Code of Maryland Regulations,

(COMAR), Title 26, Subtitle 13, for which the State of Maryland (State) has received authorization under Section 3006(b) of RCRA, 42 U.S.C. § 6926(b), to carry out such program in lieu of the federal hazardous waste management program under RCRA. The MDE Permit will be enforced by MDE, but EPA may also exercise its enforcement discretion if and when appropriate.

This Permit is based on information provided to EPA by the Permittee and MDE. Section 3005(c)(3) of RCRA provides EPA the authority to review and amend the Permit at any time. Any inaccuracies found in the information submitted by the Permittee may be grounds for the termination, modification or revocation and reissuance of this Permit (see 40 C.F.R. §§ 270.41, 270.42 and 270.43). The Permittee must inform EPA of any deviation from or changes in the submitted information which would affect the Permittee's ability to comply with the applicable statutes, regulations or permit conditions.

The Permittee shall comply with all terms and conditions set forth in this Permit, including the attachments hereto. Additionally, the Permittee shall comply with all applicable federal regulations, including 40 C.F.R. Parts 260 through 264, Part 266, Part 268, Part 270, Part 273 and Part 124. Nothing in this Permit shall limit EPA's authority to undertake, or require any person to undertake, response action or corrective action under any law, including, but not limited to, Section 104 or 106 of CERCLA, 42 U.S.C. §§ 9604 and 9606, and Section 7003 of RCRA, 42 U.S.C. § 6973. Nor shall any permit condition relieve the Permittee of any obligations under any law, including, but not limited to, Section 103 of CERCLA, 42 U.S.C. § 9603 to report releases of hazardous wastes, constituents, or substances to, at, or from the Facility.

This Permit is effective on _____ and shall remain in effect until November 30, 2017 unless revoked and reissued, modified or terminated in accordance with 40 C.F.R. §§270.41, 270.42, 270.43 or continued in accordance with 40 C.F.R. §270.51(a).

PART I - STANDARD CONDITIONS

A. DEFINITIONS

For the purposes of this permit, terms used herein shall have the same meaning as those set forth in 40 C.F.R. Parts 260 through 264, 268 and 270, unless this permit specifically states otherwise. Where terms are not otherwise defined, the meaning associated with such terms shall be as defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the terms. The following definitions also apply to this permit.

1. Days - except as otherwise provided herein, calendar days.
2. Facility - all contiguous property under the control of the owner or operator seeking a permit under Subtitle c of RCRA, except for permit condition I.B., for which the definition in 40 C.F.R. § 260.10 shall apply.
3. Hazardous Constituent - any constituent identified in Appendix VIII of 40 C.F.R. Part 261, or any constituent identified in Appendix IX of 40 C.F.R. Part 264.
4. Regional Administrator - Regional Administrator of the United States Environmental Protection Agency, Region III, his or her designee or authorized representative.
5. Release - any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment.
6. Solid Waste Management Unit - 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 at which solid wastes have been routinely and systematically released.
7. Consent Agreement or State Consent Agreement -Consent Agreement entered into by the Permittee and the Maryland Department of the Environment (Docket No. C-89-086), effective November 8, 1989.

B. STANDARD DUTIES AND REQUIREMENTS

1. Duty to Comply
   a. The Permittee shall comply with all conditions of this Permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit issued under 40 C.F.R. § 270.61 or the analogous provisions of the State's authorized hazardous waste management regulations. Any other permit noncompliance constitutes a violation of RCRA and is grounds for enforcement action; permit termination, revocation and reissuance, or modification, or for denial of a permit renewal application. (40 C.F.R. § 270.30(a))
   b. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Permit. (40 C.F.R. § 270.30(c))

2. Duty to Mitigate

In the event of noncompliance with this permit, the Permittee shall take all reasonable steps to minimize releases to the environment, and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment. (40 C.F.R. § 270.30(d))

3. Duty to Properly Operate and Maintain

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment, monitoring, and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance include effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to maintain compliance with the conditions of the permit. (40 C.F.R. § 270.30(e))

4. Duty to Monitor and Record Results

Pursuant to 40 C.F.R. § 270.30(j), the Permittee shall comply with the following requirements.

a. The following requirements in this section shall pertain to all sampling and analysis conducted after the effective date of the permit. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. All sampling and analyses shall be of adequate quality, scientifically valid, of known precision and accuracy, and of acceptable completeness, representativeness and comparability. Laboratory analysis of each sample must be performed using an appropriate method for testing the parameter(s) of interest taking into account the sample matrix. The test methods found in the agency publication, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, (SW-846), 3rd Edition, as updated, shall be used for: The Toxicity Characteristic analytes (40 C.F.R. § 261.24); the Free Liquids Test (Method 9095) used to determine if free liquid is a component of a waste as a specific requirement for bulk and containerized wastes (40 C.F.R. §§ 264.314(c) and 265.314(d)); and the chemical analysis of wastes for hazardous waste incineration permits (40 C.F.R. § 270.62 (b)(2) (i)(c)).

b. The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports and records required by this permit, the certification required by 40 C.F.R. § 264.73 (b)(9) and records of alldata used to complete the application for this permit for a period of at least three (3) years from the date of the sample, measurement, report, certification or application. These periods may be extended by request of the Regional Administrator at any time and are automatically extended during the course of any unresolved enforcement action regarding this facility. (40 C.F.R.§ 264.74) The Permittee shall maintain records from all

groundwater monitoring wells and associated groundwater surface elevations for the active life of the facility, and, for disposal facilities, for the post-closure care period as well.

c. Records of monitoring information shall specify:
   (1) The date, exact place, and time of sampling or measurements;
   (2) The individual(s) who performed the sampling or measurements;
   (3) The date(s) analyses were performed;
   (4) The individual(s) who performed the analyses;
   (5) The analytical techniques or methods used; and
   (6) The results of such analyses.

5. Duty to Provide Information

The Permittee shall furnish, within a specified reasonable time, any relevant information which the Regional Administrator may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this Permit. The Permittee shall also furnish to the Regional Administrator upon request, copies of records required to be kept by this permit. (40 C.F.R. §§ 270.30(h) and 264.74(a))

6. Duty to Allow Inspection and Entry

Pursuant to 40 C.F.R. § 270.30(i), the Permittee shall allow the Regional Administrator, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

a. Enter at reasonable times upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
d. Sample or monitor, at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by RCRA, any substances or parameters at any location.

7. Duty to Submit Certified Document

a. At least three copies of all plans, reports, notifications or other documents which are required by this permit to be submitted to the Regional Administrator or EPA, shall be sent Certified Mail, Return Receipt Requested, or hand-carried to:

Office of Remediation (3LC20)
EPA Region III, Land and Chemicals Division
1650 Arch St
Philadelphia, PA 19103

Each report, notification or other submission shall reference the Permittee's name, permit number and facility address. In addition, one copy of such submission shall be sent to:

Director of Land Management Administration
Maryland Department of the Environment
Montgomery Park Business Center
1800 Washington Boulevard
Baltimore, MD 21230

b. All reports or other information submitted to the Regional Administrator or EPA shall be signed and certified as required by 40 C.F.R. §§ 270.11(b) and 270.30(k).

8. Duty to Maintain Documents at the Facility

The Permittee shall maintain at the Facility a written operating record that complies with all the requirements of 40 C.F.R. § 264.73.The Permittee shall maintain at the Facility all documents required by this permit and amendments, revisions, and for modifications to these documents.

9. Duty to Minimize Waste

The Permittee shall certify no less often than annually that the Permittee has a program in place to reduce the volume and toxicity of hazardous waste that the Permittee generates to the degree determined by the Permittee to be economically practicable; and the proposed method of treatment, storage or disposal is the practicable method currently available to the Permittee which minimizes the present and future threat to human health and the environment. The Permittee shall maintain each such certification of waste minimization at the Facility until closure of such Facility. (40 C.F.R. § 264.73(b)(9))

Within (90) calendar days of the effective date of this permit, the Permittee shall submit to the Regional Administrator a copy of its annual Waste Minimization certification, and a description of their Waste Minimization Program. Attachment E of this permit lists documents and sources available to develop a Waste Minimization Program.

10. Duty to comply with the Land Disposal Restrictions

All activities of the Permittee which involve the land disposal of hazardous waste are subject to the provisions of RCRA Sections 3004 (b)-(m), 42 U.S.C. § 6924 (b)-(m), and applicable regulations thereunder at 40 C.F.R. Part 268.

11. Reporting Requirements

a. Immediate Reporting of Emergencies to Local Authorities and the On-scene Coordinator or the National Response center.

(1) Pursuant to 40 C.F.R. § 264.56(d)(1) and (2), if the Facility's emergency coordinator determines that the Facility has had a release, fire, or explosion which could threaten human health, or the environment, outside the facility, he/she must report his/her finding as follows:
   (a) If his/her assessment indicates that evacuation of local areas may be advisable, he/she must immediately notify appropriate local authorities. He/she must be available to help appropriate officials decide whether local areas should be evacuated; and
   (b) He/she must immediately notify either the government official designated as the on-Scene Coordinator for that geographical area, (in the applicable regional contingency plan under 40 C.F.R. Part 1510) or the National Response Center (800-424-8802).

(2) The report must include:
   (a) Name and telephone number of the reporter;
   (b) Name, address, and telephone number of the facility;
   (c) Date, time, and type of incident (e.g., release, fire);
   (d) Name and quantity of material(s) involved, to the extent known;
   (e) The extent of injuries, if any; and
   (f) The possible hazards to human health or the environment, outside the Facility;

b. Twenty-four Hour Reporting to the Regional Administrator

(1) Pursuant to 40 C.F.R. § 270.30(1)(6), the Permittee shall report to the Regional Administrator any noncompliance with this permit which may endanger health or the environment. Information shall be provided orally as soon as possible, but no later than twenty-four (24) hours from the time Permittee becomes aware of the circumstances, including:
   (a) Information concerning release of any hazardous waste or hazardous constituent that may cause an endangerment to public drinking water supplies.
   (b) Any information of a release or discharge of hazardous wastes, hazardous constituents or of fire or explosion from the facility, which could threaten the environment or human health outside the facility.

(2) The description of the occurrence and its cause shall include:
   (a) Name, address and telephone number of the owner or operator;
   (b) Name, address and telephone number of the facility;
   (c) Date, time and type of incident;
   (d) Name and quantity of material(s) involved;
   (e) The extent of injuries, if any;
   (f) An assessment of actual or potential hazards to the environment and human health outside the facility, where this is applicable; and
   (g) Estimated quantity and disposition of recovered material

resulting from the incident.

(3) A written submission shall also be provided to the Regional Administrator within five (5) days of the time the Permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The Regional Administrator may waive the five (5) day written notice requirement in favor of a written report within fifteen (15) calendar days.

c. Failure to Submit Relevant and/or Accurate Information

Whenever the Permittee becomes aware that it failed to submit any relevant facts in the permit application, or submitted incorrect information in a permit application or in any report to the Regional Administrator, the Permittee shall notify the Regional Administrator of such failure within seven (7) calendar days of becoming aware of such deficiency or inaccuracy. The Permittee shall submit the correct or additional information to the Regional Administrator or Director no later than fourteen (14) days of becoming aware of the deficiency or inaccuracy (or within such longer period of time based upon EPA's sole undisputable discretion upon written notice to the Permittee). (40 C.F.R. § 270.30(1)(11)) Failure to submit the information required in this permit or misrepresentation of any submitted information is grounds for termination of this permit. (40 C.F.R. § 270.43)

d. Noncompliance with Schedules for Interim and Final Requirements

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than fourteen (14) days following each schedule date. (40 C.F.R. § 270.30(1)(5))

e. Reporting Planned Changes and Anticipated Noncompliance

The Permittee shall give notice to the Regional Administrator, at least 30 days prior to any planned physical alterations or additions to the permitted facility. The Permittee shall give the Regional Administrator at least 45 days advance notice of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. For a new facility, the Permittee may not treat, store, or dispose of hazardous waste; and for a facility being modified, the Permittee may not treat, store, or dispose of hazardous waste in the modified portion of the facility except as provided in 40 C.F.R. § 270.42. (40 C.F.R. §§ 270.30(1)(1) and (2))

f. Other Noncompliance

The Permittee shall report all other instances of noncompliance not otherwise

required to be reported above, at the time monitoring reports are submitted. The reports shall contain the information listed in permit condition I.B.11.b.(2). (40 C.F.R. § 270.30(1)(10))

g. Biennial Report

Pursuant to 40 C.F.R. § 270.30(1)(9), a report must be submitted to the Regional Administrator covering facility activities during odd-numbered calendar years. The report shall be submitted by March 1 of each even-numbered year and shall contain the information required in 40 C.F.R. §264.75.

h. Manifest Discrepancy Report

Pursuant to 40 C.F.R. § 270.30(1)(7), if a significant discrepancy as described in 40 C.F.R. § 264.72 (a) in a manifest is discovered, the Permittee must attempt to reconcile the discrepancy. If not resolved within fifteen (15) days of the discovery, the Permittee must submit a letter report, including a copy of the manifest, to the Regional Administrator.
(40 C.F.R. § 264.72 and 270.30(1)(7))

i. Unmanifested Waste Report

Pursuant to 40 C.F.R. § 270.30(1)(8), if the Permittee receives unmanifested waste the Permittee must report such waste to the Regional Administrator no later than fifteen (15) days after its receipt.
(C.F.R. § 264.76 and 270.30(1)(8))

12. Duty To Comply With RCRA Organic Air Emission Standards

The Permittee must comply with all requirements specified in 40 C.F.R. Part 264, Subparts AA and BB, as applicable, including all reporting, air monitoring and maintenance requirements.

13. Duty To Comply With Regulations For Toxicity Characteristic (TC) And Use And Management Of Containers

The Permittee may store TC wastes D004 through D043 (40 C.F.R. § 261.24) in the container storage area, in accordance with 40 C.F.R. Part 264, Subpart I - Use and Management of Containers.

C. APPROVAL/DISAPPROVAL OF SUBMISSIONS

EPA will review the plans, reports, schedules and other documents (hereinafter collectively referred to as "submission") submitted which require EPA approval. EPA will notify the Permittee in writing of EPA's approval or disapproval of each submission.

Each submission required by this permit is, upon approval by the Regional Administrator, incorporated into this permit. Any noncompliance with such EPA-approved submission shall be deemed noncompliance with this permit.

In the event of EPA disapproval in whole or in part of any submission, the Regional Administrator shall specify the deficiencies in writing. Such disapproval shall not be subject to the Dispute Resolution provision set forth in permit condition I.D. of this permit. The Permittee shall modify the submission to correct/address the specified deficiencies within a reasonable time period established by the Regional Administrator taking into account the tasks to be performed, and submit the revised submission to EPA for approval. If the revised submission is disapproved, EPA will notify the Permittee of the deficiencies in writing and specify a schedule for the Permittee to correct the deficiencies and resubmit the submission to EPA. The Permittee shall correct the deficiencies as directed by EPA and forward the revised submission to EPA within the time period specified by EPA. In the event the Permittee disagrees with EPA's disapproval of the revised submission the Permittee shall notify EPA in writing and the disagreement shall be resolved in accordance with the Dispute Resolution provision in permit condition I.D. of this permit.

D. DISPUTE RESOLUTION

Except as otherwise provided in this permit, in the event the Permittee disagrees, in whole or in part, with EPA disapproval of any submission required by this permit, the Permittee shall notify EPA in writing of its objections, and the basis therefor, within fourteen (14) days of receipt of EPA's disapproval. Such notice shall set forth the specific matters in dispute, the position the Permittee asserts should be adopted as consistent with the requirements of the permit, the basis for the Permittee's position and any matters considered necessary for EPA's determination. EPA and the Permittee shall have an additional fourteen (14) days from EPA receipt of the notification to meet or confer to resolve any disagreement. In the event agreement is reached, the Permittee shall submit the revised submission and implement the same in accordance with such agreement. If agreement is not reached within the 14-day period, an EPA employee with supervisory responsibility will review the dispute and notify the Permittee in writing of EPA's decision on the dispute and the Permittee shall comply with the terms and conditions of EPA's decision in the dispute. The time periods described in this permit condition I.D. may be extended by EPA within its sole undisputable discretion upon written notice to the Permittee.

E. EFFECT OF PERMIT

1. This permit authorizes only the management of hazardous waste expressly described in this permit and does not authorize any other management of hazardous waste.
2. Issuance of this permit does not convey property rights of any sort or any exclusive privilege, nor does it authorize any injury to persons or property, or invasion of other private rights, or any infringement of state or local laws or regulations. (40 C.F.R. §§ 270.30(g) and 270.4(b) and (c)) compliance with the full permit during its term constitutes compliance with Subtitle c of RCRA except for those requirements not included in the permit which become effective by statute or which are promulgated under 40 C.F.R. Part 268. (40 C.F.R. § 270.4(a)) However, compliance with the terms of this permit does not constitute a defense to any action brought under section 7003 of RCRA, 42 U.S.C. § 6973, Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42

U.S.C. § 9606(a) (commonly known as Superfund), or any other law governing protection of public health or welfare or the environment.

3. Nothing contained herein shall in any way be deemed to waive the Permittee's obligation to comply with 40 C.F.R. Part 270, Subpart C, and applicable regulations set forth at 40 C.F.R. Part 124.

F. PERMIT MODIFICATION, REVOCATION AND REISSUANCE

1. This permit may be modified, revoked and reissued, or terminated for cause as specified in 40 C.F.R. §§ 270.41, 270.42, and 270.43.The filing of a request for a permit modification, revocation and reissuance, or termination or the notification of planned changes or anticipated noncompliance on the part of the Permittee does not stay the applicability or enforceability of any permit condition (40 C.F.R. § 270.30(f)).Review of any application for a permit renewal shall consider improvements in the state of control and measurement technology, as well as changes in applicable regulations and laws.
(RCRA Section 3005 (c)(3), 42 U.S.C. § 6925(c)(3))
2. The Regional Administrator will modify the permit in accordance with 40 C.F.R. § 270.41 and section 3005(c) of RCRA in the event that investigations required in this Permit, or any other information available to the Regional Administrator, identify solid waste management units that require corrective measures. Financial assurance by the Permittee is required if corrective measures are necessary (40 C.F.R. § 264.101(b)). This paragraph does not limit the Regional Administrator's authority to otherwise modify this permit in accordance with 40 C.F.R. Part 270, Subpart D.
3. This permit may be modified if the Regional Administrator determines good cause exists for modification, such as an act of God, strike, flood, materials shortage or other events over which the Permittee has little or no control and for which there is no reasonably available remedy. (40 C.F.R. § 270.41)

G. PERMIT EXPIRATION AND CONTINUANCE

1. Pursuant to 40 C.F.R. § 270.50, this permit shall be effective for a fixed term not to exceed ten years. Pursuant to 40 C.F.R. § 270.51, this permit and all conditions herein will remain in effect beyond the permit's expiration date if the Permittee has submitted a timely and complete application for a new permit (see 40 C.F.R. § 270.10 and 270.14 - 270.29) and, through no fault of the Permittee, the Director has not issued a new permit under 40 C.F.R. § 124.15 on or before the expiration date of this permit. In addition, each permit for a land disposal facility shall be reviewed by the Regional Administrator five years after the date of permit issuance or reissuance and shall be modified as necessary, as provided in 40 C.F.R. § 270.41.
(40 C.F.R. § 270.50(d))
2. If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must submit a complete application for a new permit at least 180 days before this permit expires, unless permission for a later date has been granted by the Regional Administrator.

(40 C.F.R. §§ 270.10(h) and 270.30(b))

H. TRANSFER OF PERMIT

1. This permit is not transferable to any person, except after notice to the Regional Administrator. (40 C.F.R. § 270.30(1)(3)) A permit may be transferred by the Permittee to a new owner or operator only if the permit has been modified or revoked and reissued under 40 C.F.R. § 270.40(b) or 270.42(b)(2) to identify the new Permittee and incorporate such other requirements as may be necessary under the appropriate Act. (40 C.F.R. § 270.40)
2. At least 30 days prior to transferring ownership or operation of the Facility during its operating life, the Permittee shall notify the new owner or operator in writing of the requirements of 40 C.F.R. Part 264 and 270, and at the same time shall send a copy of such notice to the Regional Administrator.

I. SEVERABILITY

1. The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby. (40 C.F.R. § l24.16(a)(2))

PART II- SPECIFIC FACILITY CONDITIONS

A. CORRECTIVE ACTION FOR CONTINUING RELEASES; PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

Section 3004(u) of RCRA, 42 U.S.C. § 6924(u), and regulations codified at 40 C.F.R. § 264.101, provide that all permits issued after November 8, 1984 must require corrective action as necessary to protect human health and the environment for all releases of hazardous waste or hazardous constituents from any SWMU at the Facility, regardless of when waste was placed in such unit.

Under Section 3004(v) of RCRA, 42 U.S.C. § 6924(v), EPA may require that corrective action at a permitted facility be taken beyond the facility boundary where necessary to protect human health and the environment, unless the owner or operator of the facility concerned demonstrates to the satisfaction of EPA that, despite the owner or operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake such action.

Section 3005(c)(3) of RCRA, 42 U.S.C. § 6925(c)(3), and 40 C.F.R. § 270.32(b) provide that each permit shall contain such terms and conditions as the Administrator determines necessary to protect human health and the environment.

This Permit Modification requires the Permittee to implement protective measures to protect human health and the environment by preventing exposure of hazardous constituents.

B. FINAL REMEDY

Section II. (The Selected Final Remedy) of the FDRTC is incorporated herein by reference and is set forth as Attachment B herein.

C. GUIDANCE DOCUMENT

Corrective Action guidance documents can be found at EPA, Region III's website: www.epa.gov/reg3wcmd/correctiveaction.htm.

PART III - REMEDY IMPLEMENTATION

A. CORRECTIVE MEASURES IMPLEMENTATION

Based on the information submitted by the Permittee during the RCRA Facility Investigation ("RFI") and other relevant information, the Regional Administrator has selected a remedy for the Facility, as set forth in Attachment B to this Permit Modification and incorporated herein and made a part hereof. This Permit Modification incorporates such remedy and provides for its implementation pursuant to 40 C.F.R § 270.41.

Commencing on the effective date of this Permit Modification and thereafter, the Permittee shall implement the remedy selected by EPA, as follows:

1. The Permittee shall implement the following components of the final remedy at the Main Site as depicted in Attachment A:

   a. Remediation of Contaminated Groundwater

      The Permittee shall continue operating the groundwater recovery and treatment system by withdrawing, treating and discharging approximately 70,000 gallons per day ("gpd") of groundwater from five recovery wells until the Groundwater Cleanup Standards are achieved and maintained at the Facility in accordance with the Corrective Measures Implementation ("CMI") Workplan, as required in Paragraph A.6., below, or until EPA determines that an alternative remedy is necessary or appropriate to achieve and maintain the Groundwater Cleanup Standards for the Facility. Flexibility in regards to the aggregate pumping rate and number/location or recovery wells in operation will be prescribed in the CMI Workplan, to modify remediation operations as Groundwater Cleanup Standards are achieved and maintained at portions of the Facility. The Groundwater Cleanup Standards are included as Attachment C of this Permit.

   b. Groundwater Monitoring

      The Permittee will perform sampling of the recovery wells to gauge the effectiveness of the recovery and treatment system in controlling and remediating the impacted bedrock groundwater at the Main Site in accordance with the CMI Workplan, as required in Paragraph A.6., below.

2. The Permittee shall implement the following components of the final remedy at the Former Landfill Area as depicted in Attachment A of this Permit Modification:

   a. Remediation of Contaminated Groundwater

      The Permittee will remediate groundwater at the Former Landfill Area using monitored natural attenuation ("MNA") until the Groundwater Cleanup Standards are achieved and maintained at the Facility in

accordance with the CMI Workplan, as required in Paragraph A.6., below, or until EPA determines that an alternative remedy is necessary to achieve and maintain the Groundwater Cleanup Standards for the Facility. The Groundwater Cleanup Standards are included as Attachment C of this Permit.

b. Groundwater Monitoring

The Permittee will perform monitoring of wells to gauge the effectiveness of the MNA in accordance with the CMI Workplan, as required in Paragraph A.6., below.

3. The Permittee shall ensure that no on-site wells are installed or used for drinking water or other domestic uses. The prohibition will be effective as long as necessary to prevent exposure while the plume is being remediated.

4. The Permittee shall, within 45 days of the effective day of this permit modification, submit to EPA for review and approval a notice ("Title Notice") to be filed with the Recorder's Office, Registry of Deeds, or other office where land ownership and transfer records are maintained for the Facility. The Title Notice shall provide notice to all successors-in-title that the facility is subject to a RCRA Corrective Action permit and shall recite the prohibition against the development of onsite wells for drinking water or other domestic use at the Facility. The prohibition will be effective as long as necessary to prevent exposure while the plume is being remediated. Upon EPA approval of the Title Notice, the Permittee shall, within 15 days of said approval, file the Title Notice with the Recorder's Office.

5. Within 30 days of EPA's approval of the CMI Workplan as required in Paragraph A.6, the Permittee shall provide assurances of financial responsibility for completing the final remedy as required by Section 3004(u) of RCRA, 42 U.S.C. § 6924(u).

6. Within 60 days of the effective day of this permit modification, the Permittee shall submit to EPA, for review and approval, a CMI Workplan for the implementation of the corrective measures selected in the FDRTC. The CMI Workplan shall include, but not be limited to, the following:

a. a monitoring schedule for the recovery wells in the Main Site Area,
b. a monitoring schedule to gauge the effectiveness of MNA at the Former Landfill Area, and
c. site-wide monitoring well sampling plan to be used as a mechanism to determine when Groundwater Cleanup Standards have been reached.

The permittee should refer to http://www.epa.gov/reg3wcmd/ca/pdf/cmi_sow.pdf for further guidance on the CMI Workplan. After EPA approval of the CMI Workplan, the Permittee shall be responsible for its implementation.

B. EMERGENCY RESPONSE; RELEASE REPORTING

1. Emergencies

If, at any time during the term of this permit, the Permittee discovers that a release of hazardous waste or hazardous constituents at or from the Facility is presenting or may present an imminent and substantial endangerment to human health or the environment, and such release is not subject to Contingency Plan and Emergency Procedures as defined in the portion of the RCRA permit issued by the Maryland Department of the Environment, the Permittee shall:

a. Notify EPA as soon as practicable of the source, nature, extent, location and amount of such release, the endangerment posed by such release and the actions taken and/or to be taken, to the extent known, to address such release. Such notification shall be confirmed in writing within three (3) calendar days of discovery of such release; and
b. Unless otherwise directed by EPA, immediately take such actions as are necessary and appropriate to address such release.

2. Releases

Any SWMUs in service at the Facility found to be leaking *(e.g.,* from the identification of structural cracks) shall be repaired, replaced, or removed from service immediately. All repairs or replacements shall be certified for structural integrity by an independent registered professional engineer, in accordance with 40 C.F.R. § 270.ll(b). The certification must be submitted to EPA and Maryland Department of the Environment within 5 days after such activity.

C. ACCESS FOR CORRECTIVE ACTION OVERSIGHT

EPA and its authorized representatives shall have access to the Facility at all reasonable times for the purpose of monitoring compliance with the provisions of this Permit Modification. The Permittee shall use its best efforts to obtain access to property beyond the boundaries of the Facility at which corrective action is required by this Permit Modification (see Section 3004(v) of RCRA, 42 U.S.C. § 6924(v)) for: (1) itself and any contractor of the Permittee for the purpose of conducting the Final Remedy as set forth in the FDRTC, and (2) EPA and its authorized representatives for the purpose of monitoring compliance with the provisions of this Permit Modification.

D. GUIDANCE DOCUMENTS

Corrective Action guidance documents can be found at EPA, Region III's website: www.epa.gov/reg3wcmd/correctiveaction.htm.

E. COMPLETION OF REMEDY

The Permittee will operate the groundwater treatment system and conduct MNA until the Groundwater Cleanup Standards are achieved and maintained at the Facility or until EPA determines that an alternative remedy is necessary or appropriate to achieve and maintain the Groundwater Cleanup Standards for the Facility.

F. EFFECTIVE DATE

1. This Permit Modification is effective _____ and expires November 30, 2017 unless modified by EPA.

G. SIGNATURE

Date: _____

_____

John A. Armstead, Director
Land and Chemicals Division
U.S. Environmental Protection Agency, Region III

CONCURRENCES

SYMBOL <	3LC50	3LC20	3RC43	3RC43	3LC00			
SURNAME <	McGoldrick	Pizarro	Hodges	Briggs-Steutevill e	Armstead			
DATE <	9/17/15	9/17/15	9/17/15	9/17/15	9.17.15			

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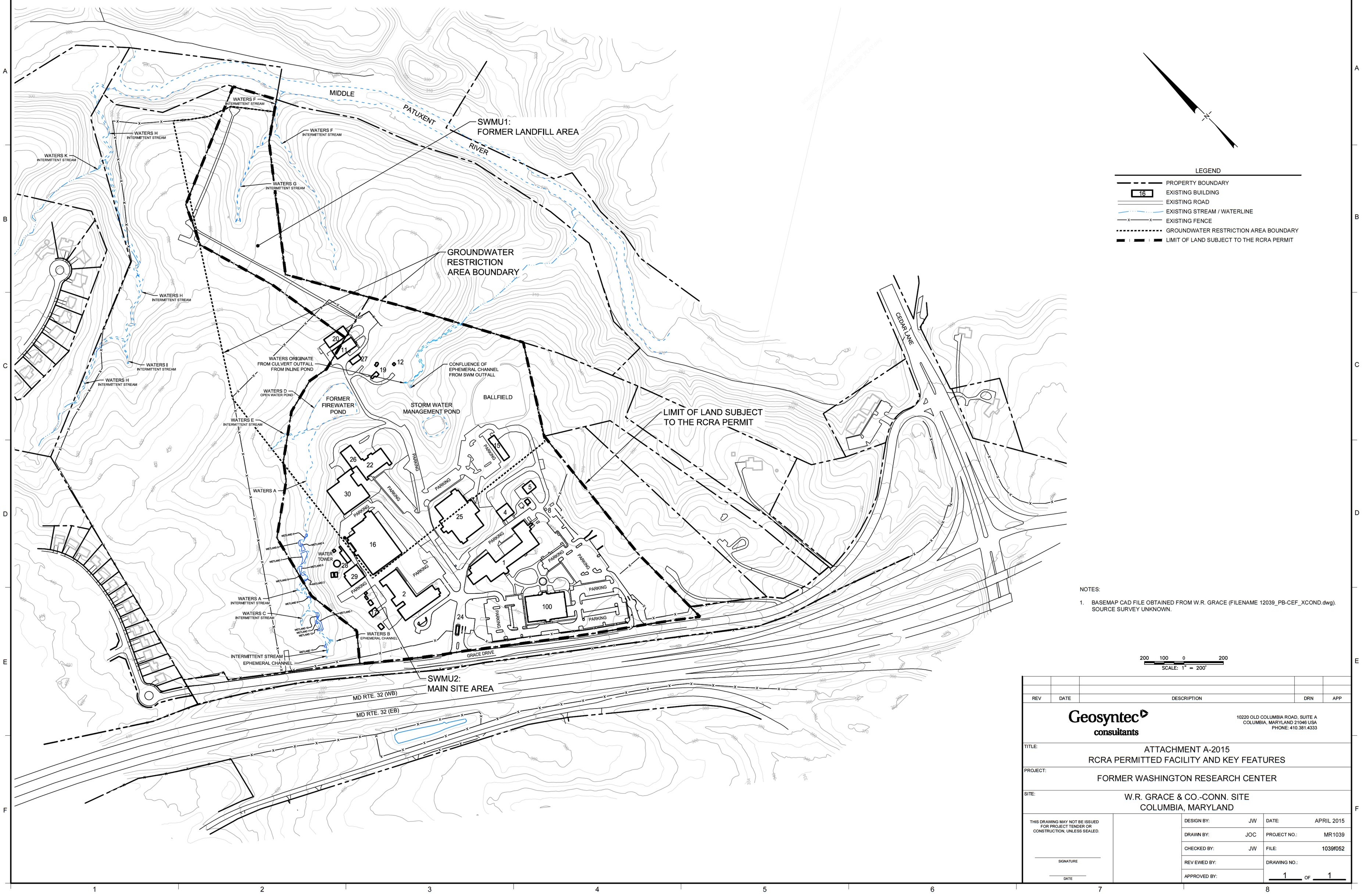

REV	DATE	DESCRIPTION	DRN	APP

Geosyntec consultants

10220 OLD COLUMBIA ROAD, SUITE A
COLUMBIA, MARYLAND 21046 USA
PHONE: 410.381.4333

TITLE: ATTACHMENT A-2015
RCRA PERMITTED FACILITY AND KEY FEATURES

PROJECT: FORMER WASHINGTON RESEARCH CENTER

SITE: W.R. GRACE & CO.-CONN. SITE
COLUMBIA, MARYLAND

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

SIGNATURE

DATE

DESIGN BY:	JW	DATE:	APRIL 2015
DRAWN BY:	JOC	PROJECT NO.:	MR1039
CHECKED BY:	JW	FILE:	1039f052
REV EWED BY:		DRAWING NO.:	
APPROVED BY:		1 OF 1	

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Attachment B

FINAL DECISION AND RESPONSE TO COMMENTS UNDER RCRA SECTION 3004(u)

W.R. GRACE & CO. – CONN. COLUMBIA, HOWARD COUNTY, MARYLAND

I. INTRODUCTION

The United States Environmental Protection Agency ("EPA") is issuing this Final Decision and Response to Comments ("Final Decision") under the authority of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act ("RCRA") of 1976, and the Hazardous and Solid Waste Amendments ("HSWA") of 1984, 42 U.S.C. §§ 6921 to 6939e, to W.R. Grace & Co. - Conn. ("W.R. Grace") for its Washington Research Center ("Facility") located in Columbia, Howard County, Maryland.

On June 29, 2006, EPA issued a Statement of Basis ("SB") which described EPA's proposed Final Remedy for the Facility. The SB is hereby incorporated into this Final Decision by reference and made apart hereof as Attachment A. The SB described the information gathered during the environmental investigations of the Facility, described clean-up actions at the Facility, and explained EPA's proposed Final Remedy for the Facility. Consistent with public participation provisions under RCRA, EPA requested comments from the public on the proposed Final Remedy. The public comment period began July 13, 2006 and ended August 14, 2006. EPA received no comments on the proposed Final Remedy for the Facility.

The purpose of this Final Decision is to describe the Final Remedy selected by EPA for the Facility.

II. THE SELECTED FINAL REMEDY

The selected Final Remedy for the Facility, which is explained in detail in the SB and summarized below, is a combination of groundwater treatment and monitoring and monitored natural attenuation with institutional controls. EPA has determined that the Final Remedy protects human health and the environment and is consistent with EPA's nine criteria for remedy selection, which are discussed in the Corrective Action Advanced Notice of Proposed Rulemaking, 61 Fed. Reg. 19432 (May 1, 1996) and set forth in Section V (Evaluation of Criteria) in the SB. EPA will have the Final Remedy implemented through a permit modification to the existing corrective action permit (the "Permit") issued by EPA to W.R. Grace on July 10, 1992 under Section 3004(u) of RCRA, 42 U.S.C. Section 6924(u).

The Final Remedy for the Facility includes the following components:

A. **Main Site**

1. Remediation of Contaminated Groundwater

The Final Remedy requires W.R. Grace to continue operating a groundwater recovery and treatment system at the Main Site with which it will withdraw, treat and discharge approximately 70,000 gallons per day of groundwater from five recovery wells until the Groundwater Cleanup Standards are achieved and maintained at the Facility or until EPA determines that an alternative remedy is necessary to achieve and maintain the Groundwater Cleanup Standards for the Facility. The proposed Groundwater Cleanup Standards set forth in the SB are made final in this Final Decision.

2. Groundwater Monitoring

W.R. Grace will perform semi-annual sampling of the recovery wells to gauge the effectiveness of the recovery and treatment system in controlling and remediating the impacted bedrock groundwater at the Main Site.

B. **Former Landfill Area**

1. Remediation of Contaminated Groundwater

The Final Remedy requires W.R. Grace to remediate groundwater at the Former Landfill Area using monitored natural attenuation ("MNA").

2. Groundwater Monitoring

W.R. Grace will perform annual monitoring of existing wells to gauge the effectiveness of the MNA.

C. **Institutional Controls**

While on-site groundwater is not currently used as a drinking water source and W.R. Grace has no plans for such future use, to provide additional protection, the Final Remedy includes institutional controls to prohibit the development of on-site wells for drinking water or other domestic uses at the Facility which will be effective for as long as necessary to prevent exposure while the plume is being remediated. The institutional controls will include a notice of use restriction filed with the deed for the Facility.

D. **Financial Assurance**

W.R. Grace estimates that the annual cost of the Final Remedy is $108,000 per year. This cost estimate includes the continued operation of the groundwater recovery and treatment system at the Main Site, all sampling and laboratory work, data compilation, generation of reports, preventive maintenance along with any repairs. EPA will require W.R Grace to provide assurances of financial responsibility for completing the Final Remedy as required by Section 3004(u) of RCRA, 42 U.S.C.§ 6924(u).

III. PUBLIC COMMENTS

EPA did not receive any comments on the proposed final remedy during the public comment period.

IV. DECLARATION

Based on the Administrative Record compiled for this Corrective Action, I have determined that the selected Final Remedy as set forth in the Statement of Basis and this Final Decision is appropriate and will be protective of human health and the environment.

Date: 9/14/06

James J. Burke, Director
Waste and Chemicals Management Division
U.S. Environmental Protection Agency, Region III

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION III

STATEMENT OF BASIS

W.R. GRACE & CO. - CONN.
COLUMBIA
HOWARD COUNTY, MARYLAND

U.S. EPA, REGION III
STATEMENT OF BASIS
W.R. GRACE & CO. - CONN.
HOWARD COUNTY, MARYLAND

W.R. GRACE & CO. - CONN.
HOWARD COUNTY, MARYLAND
STATEMENT OF BASIS

Attachments

Attachment 1 Site Map

Attachment 2 GLOSSARY (**Bold** Words Are Defined In This Part)

Attachment 3 Summary of cleanup standards for groundwater constituents of concern

STATEMENT OF BASIS FOR PROPOSED CORRECTIVE MEASURES
UNDER RCRA SECTION 3008(u)

W.R. GRACE & CO. - CONN.
COLUMBIA, HOWARD COUNTY, MARYLAND

I. INTRODUCTION

The United States Environmental Protection Agency ("EPA") has prepared this Statement of Basis ("SB") for the W.R. Grace & Co. - Conn. ("W.R. Grace") Washington Research Center ("Facility") located in Columbia, Howard County, Maryland. The purpose of this SB is to explain EPA's proposed remedy for the Facility; provide a summary of investigation results used in the remedy selection process, and to solicit public comments on the proposed remedy prior to EPA making its final remedy decision.

With this SB, EPA is proposing to remediate groundwater contamination at the Facility through a combination of groundwater treatment and monitoring and monitored natural attenuation. EPA will consider and address all comments submitted in response to its proposed remedy described in this SB. EPA may modify the proposed remedy or select another remedy based on public comments and/or new information.

The Final Remedy will be described in a Final Decision and Response to Comments. EPA anticipates implementing the Final Remedy through a permit modification to the existing corrective action permit (the "Permit") issued by EPA to W.R. Grace on July 10, 1992 under Section 3004(u) of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. Section 6924(u). The Permit, which on its terms expired on August 14, 2002, has been administratively extended by EPA until the effective date of a new or modified corrective action permit.

II. FACILITY BACKGROUND

The Facility is located in Columbia, Maryland, northeast of Route 32 and north/northwest of Cedar Lane. The Facility consists of approximately 125 acres, including landscaped grassy areas; office, research and support buildings; two ponds, and wooded areas. The Middle Patuxent River is located just east of the Facility. See Attachment 1 for a Facility map.

W.R. Grace operated a research and development facility, known as the Washington Research Center, at the Facility from the late 1950s until the late 1990s, when W.R. Grace's Davison Chemical Division and Davison Chemical corporate headquarters moved to the Facility.

During the 1960s, W.R. Grace burned and disposed of wastes in an area referred to as the Former Landfill Area located in the northeast area of the Facility. The Former Landfill Area covers approximately 7000 square feet. In 1985, W.R. Grace removed and disposed of waste

from the Former Landfill Area and closed the landfill.

W.R. Grace used a former drum storage area, which is located west and north of Building 16, for the collection, staging and storage of drummed solvent wastes. Leaking drums in the storage area are believed to have been the source of groundwater contamination at the Facility. In 1986, W.R. Grace detected VOCs, including trichloroethene ("TCE") and its degradation products, in drinking water wells SW8 and SW9 at the Facility. Those wells were subsequently shut down and the Facility is now supplied with public water.

III. SUMMARY OF ENVIRONMENTAL INVESTIGATIONS

Between 1985 and 1991, to better understand site geology and hydrogeology, W.R. Grace completed several field investigations and installed groundwater monitoring wells at the Facility. In 1995, in accordance with the Permit, W.R. Grace conducted a RCRA Facility Investigation ("RFI"). The purpose of the RFI was to determine fully the nature and extent of any releases of hazardous wastes or hazardous constituents from the Facility. During the RFI, W.R. Grace identified two **solid waste management units** ("**SWMUs**") at the Facility: the Former Landfill Area (SWMU #1) and the Main Site (SWMU #2) which includes the former drum storage area; Building 16 and a pond.

The following summarizes W.R. Grace's environmental investigations of the Facility. For a more comprehensive description of the RCRA activities that have been conducted at the Facility, EPA encourages the public to review the Administrative Record located at the Howard County Central Library and at EPA Region III offices in Philadelphia. The addresses of those locations are provided in Section VIII, herein.

A. Groundwater Investigation

1. Main Site

In 1987, W.R. Grace conducted groundwater sampling at the Main Site and found the following VOCs at levels above the Maximum Contaminant Level ("MCL") established by the Safe Drinking Water Act, 42 U.S.C. Section 300g-1 in Facility groundwater: trichloroethene ("TCE"); 1,1-dichloroethene ("1,1-DCE"); 1,1,1-trichloroethane ("1,1,1-TCA"), and trans-1,2-dichloroethene ("trans-1,2-DCE"). The maximum concentrations of those contaminants found in groundwater associated with the Main Site are summarized in Table 1, below.

Table 1
(Main Site 1987)

CONTAMINANT	MCL	Well No. MW8
TCE	5 ug/L	10,300 ug/L
1,1 -DCE	7 ug/L	920 ug/L
1,1,1-TCA	200 ug/L	4200 ug/L
trans-1,2-DCE	100 ug/L	1300 ug/L

In 1989, W.R. Grace installed a groundwater recovery and treatment system at the Facility to address groundwater contamination associated with the Main Site. The system consists of five (5) recovery wells connected to the granular activated carbon ("GAC") treatment system. W.R. Grace discharges treated water under a National Pollutant Discharge Elimination System ("**NPDES**") permit issued by the Maryland Department of the Environmental ("MDE"). W.R. Grace is currently recovering and treating approximately 70,000 gallons per day ("**gpd**"), under its NPDES permit and a State of Maryland Water Appropriation and Use Permit. As discussed in Section III.B, immediately below, the source area has been addressed and the treatment system has improved ground water quality.

As part of the EPA-approved RFI workplan, in 1995 W.R. Grace installed additional groundwater monitoring wells at the Facility and collected groundwater samples from the new and already existing wells. Table 2, below, summarizes the analytical results for those contaminants which were in concentrations in excess of their respective MCLs.

Table 2
(Main Site 1995)

CONTAMINANT	MCL	Well No. MW3	Well No. MW5	Well No. MW7	Well No. MW8	Well No. MW9	Well No. MW17	Well No. MW22
TCE (ug/L)	5 ug/L	1400	86	19	200	6	590	130
1,1 -DCE (ug/L)	7 ug/L				12		15	
1,1,1-TCA (ug/L)	200 ug/L	260						
vinyl chloride (ug/L)	2 ug/L		8					

2. Former Landfill Area

In 1995 W.R. Grace conducted groundwater sampling in the area of the Former Landfill Area and found tetrachloroethene ("PCE"), 1,1,2,2-tetrachloroethane ("1,1,2,2-PCA") and TCE above their respective MCLs in Facility groundwater. The maximum concentrations of those contaminates found in groundwater are summarized in Table 3, below.

Table 3
(1995 Former Landfill Area)

CONTAMINANT	MCL	RBC	Well No. MW13	Well No. MW19
PCE	5 ug/L	0.1 ug/L		160 ug/L
1,1,2,2- PCA	N/A	0.053 ug/L	1,300 ug/L	500 ug/L
TCE	5 ug/L	0.026 ug/L	120 ug/L	130 ug/L

W.R. Grace has relied on natural attenuation processes to address the groundwater contamination associated with the Former Landfill Area. Groundwater monitoring is confirming the reliability and effectiveness of the natural attenuation processes at the Facility.

B. Soil Investigation

1. Main Site

In 1990, as part of interim measures under the Permit, W.R. Grace installed a soil vapor extraction system ("SVES") at the Main Site in the area of Building 16. The purpose of the SVES was to remediate VOCs in the soil, which, in turn, reduced VOCs in the groundwater. W.R. Grace operated the SVES until 1997 when groundwater data showed 1,1-dichloroethane at 1.1 ug/L and 1,1,1-trichloroethane at 0.034 ug/L, well below their respective MCLs of 7 ug/L and 200 ug/L. EPA approved the abandoning of the wells associated with the SVES, and the system was dismantled in September 1997. The SVES was installed to address contamination in the area of Building 16 while the groundwater recovery system is addressing the contamination for the entire Main Site.

2. Former Landfill Area

In 1991, as part of the RFI, W.R. Grace conducted a soil investigation in the Former Landfill Area. Soil boring samples detected TCE, 1,1,1-TCA, 1,3-dichlorobenzene, 1,1,2,2-PCA, and PCE in on-site soils. See Table 4, below, for the maximum concentrations of those contaminants found in soils. Although concentrations of those contaminants exceeded soil screening levels ("SSLs"), analytical results were not above Region III's risk-based concentration ("RBC").

There is no threat of exposure for direct contact with the soil based on sampling done at the Facility.

Table 4
(1991 Soil Sampling Event of Former Landfill Area)

CONTAMINANT	RBC	SSL	Soil Boring SB-1	Soil Boring SB-2	Soil Boring SB-3
TCE	1.6 mg/kg	0.000013 mg/kg	0.011		
1,1,1-TCA	22,000 mg/kg	1.6 mg/kg		0.2	
1,3-dichlorobenzene	230 mg/kg	0.015 mg/kg	0.019		
1,1,2,2-PCA	3.2 mg/kg	0.000034 mg/kg)		0.049	
PCE	1.2 mg/kg	0.00023 mg/kg			0.064

C. Surface Water and Stream Sediment Investigation

W.R. Grace investigated surface water at the Facility to determine whether it is being impacted by contaminated groundwater. TCE was detected in the stream leading from the former firewater pond at the Main Site to the Middle Patuxent River in concentrations of less than 50 ug/L. W.R. Grace determined that there is no impact to the pond or the river into which the stream flows.

W.R. Grace also assessed potential impacts to sediment from the presence of VOCs and determined that there are no significant impacts to sediments.

D. Drinking water survey

In December 1986, W.R. Grace identified several VOCs, including TCE, above their respective MCLs in on-site water supply wells SW8 and SW9. As stated in Section II, above, W.R. Grace no longer uses those wells for water supply. The Howard County Water and Sewer District provides potable water to the Facility.

Drinking water wells in the vicinity of the Facility have not been impacted by Facility related groundwater contamination. In response to the detection of TCE in W.R. Grace's supply wells, the Howard County Health Department conducted an extensive domestic well sampling and analysis program of neighboring properties. 1,1,1- TCA was detected in a cluster of wells approximately 1/4 mile from the Facility, with clean wells between this cluster and the Facility. It was later determined that the 1,1,1-TCA contamination was caused by a separate residential source.

E. Ecological Investigation

W.R. Grace conducted an Ecological Risk Assessment at the Facility to determine whether chemical constituents detected at the Facility pose a potential current or future risk to ecological receptors. The ecological risk assessment shows no significant ecological impact concerns and no further ecological evaluation is recommended for the Facility.

IV. SUMMARY OF FACILITY RISKS

W.R. Grace submitted a human health risk assessment to EPA in December 1997. The data identified constituents of concern ("COCs") at the Facility, along with some exposure pathways. EPA has evaluated the submitted data, and has determined that: 1) for surface water, the highest detected concentrations of Facility related compounds in surface water do not pose a significant risk to human health (i.e., considerably below one in a million lifetime risk for carcinogens, and no adverse effect for non-carcinogens); 2) for direct contact with soils, the highest detected concentrations of chemicals do not pose a significant risk to human health; and 3) for groundwater, there is no risk related to groundwater exposure, since there are no anticipated current or future receptors to groundwater, either on or immediately adjacent to the Facility (between the Facility and the Middle Patuxent River).

V. PROPOSED CORRECTIVE MEASURES

Following the RFI, W.R. Grace completed a Corrective Measures Study ("CMS"). The CMS evaluated corrective measure alternatives to address contamination identified during the RFI. EPA approved the CMS on April 5, 2006.

In this SB, EPA is proposing to select as the final remedy a combination of corrective measures that W.R. Grace has designed and is now implementing at the Facility as interim measures under the Permit. Under the interim measure provisions of its Permit, W.R. Grace maintained and operated the groundwater treatment and recovery system and the SVES at the Facility. These interim measures have reduced levels of soil and groundwater contamination at the Facility. The analytical results from the most recent sampling events, which occurred in the Spring and Fall 2005, for the Main Site showed TCE and 1,1-DCE at concentrations of 89.8 ug/L and 1.5 ug/L, respectively, and for the Former Landfill Area showed PCE and 1,1,2,2-PCA at concentrations of 130 ug/L and 150 ug/L, respectively.

For soils, EPA is proposing no further action because there is no threat of exposure from direct contact with Facility soils.

For groundwater, the Facility's groundwater cleanup standards consist of the MCLs for TCE; 1,1,1-TCA; 1,3-dichlorobenzene; 1,1,2,2-PCA; 1,1 DCE; trans-1,2-DCE; PCE, and vinyl chloride. See Attachment 3 for a summary of the cleanup standards. The proposed corrective measures for the Main Site and the Former Landfill Area are summarized as follows:

A. Main Site

W.R. Grace will continue to operate the groundwater recovery and treatment system by withdrawing, treating and discharging approximately 70,000 gpd of groundwater from five recovery wells (RW1, RW3, RW8, RW9, and RW17) until the Groundwater Cleanup Standards are achieved and maintained at the Facility or until EPA determines that an alternative remedy is necessary to achieve and maintain the Groundwater Cleanup Standards for the Facility. W.R. Grace will perform annual and semi-annual sampling of the recovery wells to gauge the effectiveness of the recovery treatment system in controlling and remediating the impacted bedrock groundwater. EPA will oversee the treatment and monitoring activities and evaluate the continued effectiveness of W.R. Grace's groundwater recovery and treatment program.

B. Former Landfill Area

W.R. Grace will remediate groundwater in the Former Landfill Area using monitored natural attenuation ("MNA"). MNA would consist of allowing VOC concentrations in the groundwater to decrease through naturally-occurring processes such as biodegradation, dilution and dispersion. W.R. Grace would perform annual and semi-annual monitoring of the wells to gauge the effectiveness of the MNA.

While on-site groundwater is not currently used as a drinking water source and W.R. Grace has no plans for such future use, to provide additional protection, EPA proposes to prohibit, through a modification to the Permit, the use and/or development of on-site wells for drinking water or other domestic uses at the Facility. W.R. Grace shall also submit to EPA for review and approval a notice to be filed with the Recorder's Office, Registry of Deeds, or other office where land ownership and transfer records are maintained for the Facility ("Title Notice"). The Title Notice shall provide notice to all successors-in-title that the Facility is subject to a RCRA Corrective Action permit and shall recite the prohibition against the development of on-site wells for drinking water or other domestic use at the Facility. The prohibition will be effective as long as necessary to prevent exposure while the plume is being remediated.

For surface waters and sediments, EPA is proposing no further action because EPA has determined that there are no significant impacts to surface waters or sediments.

VI. EVALUATION OF CRITERIA

This section provides a description of the criteria EPA uses to evaluate proposed final remedies under the Corrective Action Program. The criteria are considered in two phases. In the first phase, EPA evaluates three remedy threshold criteria as general goals. In the second phase, for those remedies which meet the threshold criteria, EPA then evaluates seven balancing criteria to determine which proposed remedy alternative provides the best relative combination of attributes.

A. Threshold Criteria

EPA's evaluation of the threshold criteria follows:

1. Protect human health and the environment

For groundwater related to the Main Site, the on-site groundwater recovery and treatment system, which W.R. Grace has been operating at the Facility for nearly 17 years, has reduced the mass of contamination remaining on-site and has prevented further migration of contaminants in the groundwater. The proposed ongoing monitoring program will ensure long-term protectiveness to human health and the environment.

For the groundwater related to the Former Landfill Area, concentrations have decreased through W.R. Grace's reliance on natural attenuation processes. The proposed ongoing monitoring program will ensure long-term protectiveness of human health and the environment.

From an ecological standpoint, EPA has no evidence that there are impacts to surface water or soils at the Facility.

2. Achieve media cleanup objectives

VOC concentrations in the groundwater have steadily declined since W.R. Grace began operating the groundwater recovery and treatment system at the Main Site and has been monitoring the natural attenuation process at the Former Landfill Area.

3. Control the source(s)

With respect to the Main Site, W.R. Grace removed the source of contaminants from the soil and installed and maintained an SVES, thereby, eliminating, to the extent practicable, further releases of hazardous constituents from on-site soils as well as the source of the groundwater contamination. With respect to the Former Landfill Area, W.R. Grace's groundwater recovery and treatment system has reduced the mass of VOC contamination in the groundwater and has minimized the future migration of contaminants in the groundwater.

B. Balancing Criteria

EPA is satisfied that the proposed remedy is protective of human health and the environment; and, therefore, a complete evaluation of the balancing criteria is unnecessary. Nonetheless, EPA presents the seven criteria below to illustrate the suitability of the proposed remedy:

1. Long-Term Reliability and Effectiveness

W.R. Grace's interim measures have provided a permanent, effective remedy to address the groundwater contamination. Groundwater monitoring is confirming the reliability and effectiveness of the groundwater recovery and treatment system and natural attenuation processes at the Facility. EPA is proposing to keep the recovery and treatment system running until the Groundwater Cleanup Standards are achieved and maintained at the Facility.

EPA also considers the prohibition of on-site groundwater use for drinking purposes as a long-term component of the remedy. W.R. Grace has stopped using groundwater at the Facility for domestic use and EPA's proposed remedy will require institutional controls to prohibit the development of on-site wells for drinking water or other domestic uses at the Facility.

2. Reduction of Toxicity, Mobility, or Volume of Wastes

Groundwater monitoring data indicate that the groundwater recovery and treatment system and natural processes at the Facility are reducing the toxicity of the VOCs. Continued monitoring is expected to confirm this trend.

3. Short-Term Effectiveness

The short-term effectiveness of a remedy is related to the risks posed to the community and workers involved in the design, construction and implementation of the remedy. The short-term risks posed by the proposed remedy for the Facility are minimal. With respect to groundwater, the levels of contamination at the Facility are being addressed because they exceed the long-term exposure represented by anyone drinking the water for a period of years. The only potential short-term exposures to groundwater at the Facility is to workers taking environmental samples or to workers excavating soil in the vicinity of the contaminated plume. Pursuant to the Permit, W.R. Grace has submitted a Health and Safety Plan to EPA that provides for proper worker training and protective clothing if groundwater exposure is expected. It is also relevant to note that the current levels of groundwater contamination do not represent an immediate threat to anyone who may be exposed during routine sampling or construction activities.

4. Implementability

Implementability includes the technical and administrative feasibility of constructing and

operating the proposed remedy. The proposed remedy for the Facility is both technically and administratively feasible. The groundwater monitoring technology and protocol are already in place and have been approved by EPA. Further, EPA proposes to implement the proposed remedy through a permit modification which will include institutional controls.

5. Cost

W.R. Grace has already expended capital costs in implementing the above described interim measures at the Facility. The additional cost required by operation and maintenance is an efficient use of W.R. Grace's resources.

6. Community Acceptance

The local community's acceptance of EPA's proposed remedy will be evaluated after the public comment period and will be described in the Final Decision and Response to Comments.

7. State Acceptance

MDE's acceptance of EPA's proposed remedy will be evaluated after the public comment period and will be described in the Final Decision and Response to Comments.

VII. ENVIRONMENTAL INDICATORS

EPA has established two environmental indicators that are designated to measure the human health and groundwater impacts of RCRA facilities. These two indicators use environmental data and apply a decision matrix to determine that human health impacts are "under control" and that groundwater contamination is "under control". W.R. Grace met these indicators at the Facility in 2001. EPA believes that these environmental indicators provide additional evidence that the actions completed and proposed for the Facility have been effective and will protect human health and groundwater at the Facility in the long-term.

VIII. PUBLIC PARTICIPATION

On July 13, 2006, EPA placed an announcement in the Columbia Flier to notify the public of EPA's proposed remedy for the Facility and of the location of the Administrative Record. Copies of this Statement of Basis will be mailed to anyone who requests a copy. The Administrative Record, including this Statement of Basis, is available for review during business hours at the following locations:

U.S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, Pennsylvania 19103
Telephone Number: (215) 814-3433
Attn: Mrs. Estena A. McGhee (3WC23)

and

Howard County Central Library
10375 Little Patuxent Parkway
Columbia, Maryland 21044
Telephone Number: 410-313-7800

EPA is requesting comments from the public on EPA's proposed remedy. The public comment period will last thirty (30) calendar days beginning on July 13, 2006 and ending on August 14, 2006. Comments on, or questions regarding, EPA's preliminary identification of a preferred remedy may be submitted to:

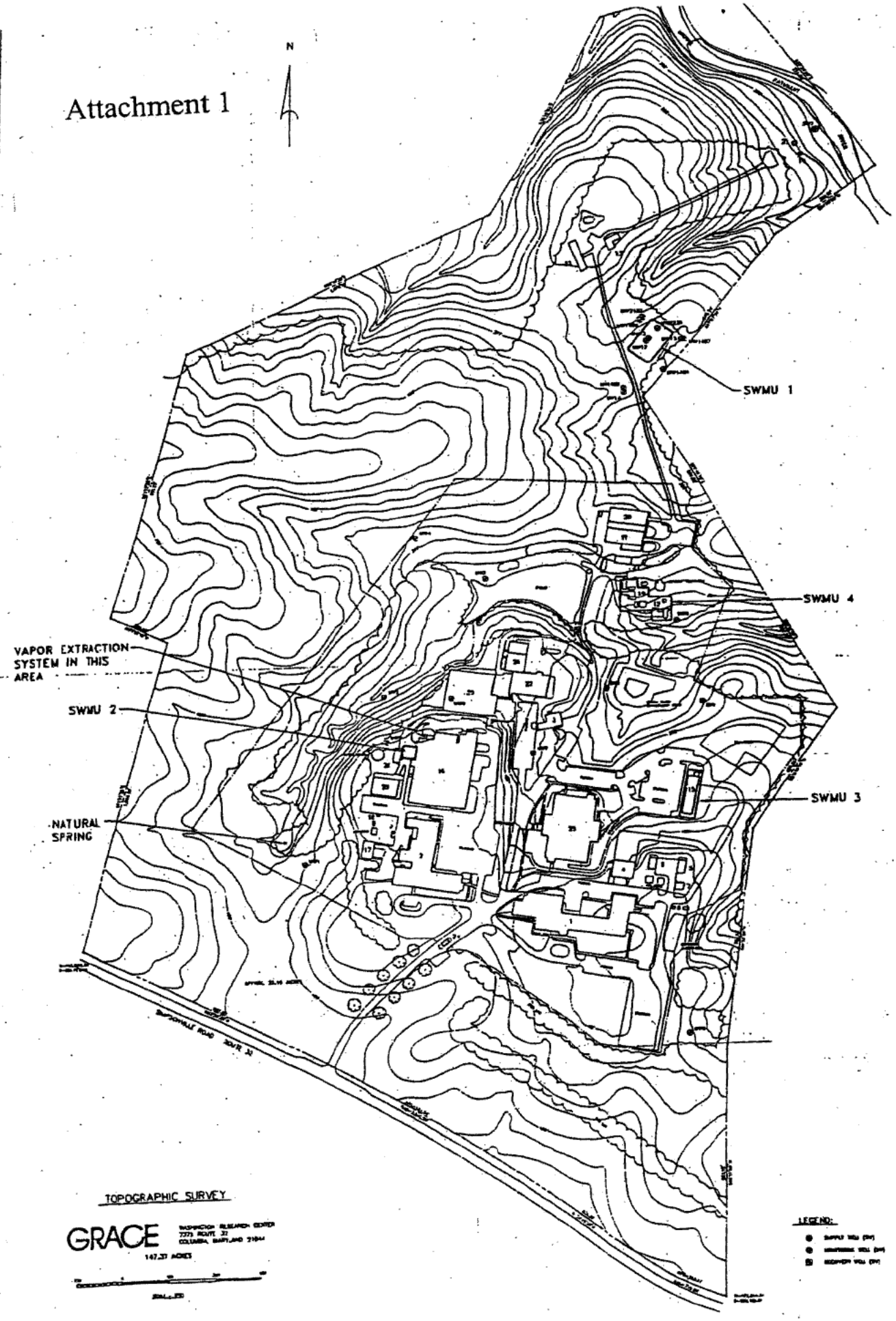
Mrs. Estena A. McGhee (3WC23)
U.S. EPA, Region III
1650 Arch Street
Philadelphia, PA 19103
(215) 814-3433
FAX (215) 814-3113

Following the thirty (30) day public comment period, EPA will hold a public hearing if one is requested, on EPA's preferred remedy if sufficient public interest indicates that a meeting would be valuable for distributing information and communicating ideas. If, on the basis of public comments or other relevant information, significant changes are proposed to be made to the corrective measures alternative identified by EPA in this Statement of Basis, EPA may seek additional public comments. After evaluation of all public comments, EPA will issue a Final Decision and Response to Comments which identifies the final selected remedy and address all comments received during the public comment period. EPA anticipates implementing the final remedy through a permit modification to the Facility's existing corrective action permit.

6/29/06
Date

James J. Burke
James J. Burke, Director
Waste & Chemicals Management Division
EPA Region III

Attachment 1



Attachment 2
GLOSSARY

COC - constituents of concern

GPD - gallons/day

Maximum Contaminant Level (MCL) - MCLs are established by the Safe Drinking Water Act, 42 U.S.C. Section 300g-1. An MCL reflects health factors and represents the maximum permissible level of a contaminant in water delivered to any user of a public water system.

MGD - million gallons/day

NPDES - National Pollution Discharge Elimination Standards promulgated pursuant to the Clean Water Act, 42 U.S.C. Section 402.

RCRA - Resource Conservation and Recovery Act, which was enacted in 1976 and amended in 1984, directed EPA to develop and implement a program to protect human health and the environment from improper hazardous waste management practices. The program is designed to control the management of hazardous waste from its generation to its disposal.

Howard County Central Library - Library where the Administrative Record is located, 10375 Little Patuxent Parkway, Columbia, MD 21044

Solid Waste Management Unit (SWMU) - includes any unit used for the collection, source separation, storage, transportation, transfer, processing, treatment or disposal of solid waste, including hazardous wastes, whether such facility is associated with facilities generating such wastes or otherwise.

Attachment 3
Summary of cleanup standards for groundwater constituents of concern

Contaminant	MCL (ug/L)
trichloroethene ("TCE")	5
1,1-dichloroethene ("1,1-DCE")	7
1,1,1-trichloroethane ("1,1,1-TCA")	200
trans-1,2-dichloroethene ("trans-1,2-DCE")	100
tetrachloroethene ("PCE")	5
1,1,2,2-tetrachloroethane ("1,1,2,2-PCA")	n/a
Vinyl Chloride	2

Attachment C
Summary of cleanup standards for groundwater constituents of concern

Contaminant	MCL (ug/L)
trichloroethene ("TCE")	5
1,1-dichloroethene ("1,1-DCE")	7
1,1,1-trichloroethane ("1,1,1-TCA")	200
trans-1,2-dichloroethene ("trans-1,2-DCE")	100
tetrachloroethene ("PCE")	5
1,1,2,2-tetrachloroethane ("1,1,2,2-PCA")	n/a
Vinyl Chloride	2

RCRA FACILITY INVESTIGATION ATTACHMENT C

1. RCRA Facility Investigation Plan requirements:

   a. General Description of Current Conditions Section

      The Permittee shall provide a description of current conditions at each SWMU identified in permit condition II.D. Such description shall include a topographic map(s) consistent with the requirements set forth in 40 C.F.R. § 270.14(b)(19) and of sufficient detail and accuracy to locate and report all current and future work performed at the site. Such map(s) shall depict the following:

      (1) General geographic location;

      (2) Property lines, with the owners of all adjacent property clearly indicated;

      (3) The location of all known past solid or hazardous waste treatment, storage, or disposal areas and the site of all known spills, fires or other accidental or intentional release locations, including the approximate locations of any groundwater contamination plumes presently identified;

      (4) All known past and presently operating product and hazardous or solid waste underground tanks or piping; and

      (5) The location of all production and groundwater monitoring wells, whether or not they are associated with the particular SWMU under investigation. These wells shall be clearly labeled. Ground, top of casing and screened-interval elevations shall also be provided.

   b. Potential Corrective Measure Technologies Section

      Based on existing information, the Permittee shall identify:

      (1) The potential corrective measure technologies that may be used at the Facility or beyond the boundaries of the Facility to respond to releases of hazardous waste or hazardous constituents at or from the Facility; and

      (2) Any field, laboratory, bench-scale or pilot-scale data that needs to be collected in the RFI to facilitate the evaluation and selection of the final corrective measure(s), if any, for releases at or from the Facility (e.g., compatibility of waste and construction materials, information to evaluate effectiveness, treatability of wastes, etc.).

c. Project Management Plan Section

The Permittee shall submit a Project Management Plan which shall include a discussion of the technical strategy, schedules, budget, and personnel that will be used for the study. The plan shall also include a description of the qualifications of personnel performing or directing the RFI, including contractor personnel, and document the overall management approach to the RFI.

d. Schedule

The Permittee shall provide a schedule for performance of the tasks in the RFI Plan.

2. RCRA Facility Investigations

a. Environmental Setting Investigation

The Permittee shall collect information to supplement and verify existing information on the environmental setting at the Facility. The Permittee shall characterize the following:

(1) Geology and Hydrogeology

The Permittee shall conduct a program to evaluate the hydrogeologic conditions at the Facility. The program shall provide:

(a) A description of the regional and site-specific geologic units underlying the Facility, including:

(i) Stratigraphy: strike and dip, and identification of stratigraphic contacts;

(ii) Structural features: folding, fracturing, channeling, faulting, jointing; and

(iii) Soil: classification, description of appearance, and consistency;

(b) A description of regional and site-specific hydrogeologic characteristics, including:

(i) Regional and Facility specific groundwater flow patterns;

(ii) A characterization of seasonal variations in the groundwater flow regime, including any perched groundwater zones;

(iii) Identification and characterization of areas of recharge and discharge;

(iv) An analysis of any topographic or geomorphic features that might influence the groundwater flow system; and

(v) A description of the stratigraphic units including:

a) Hydraulic conductivity;

b) An interpretation of hydraulic interconnections between saturated zones, including any perched zones; and

c) Attenuation capacity and mechanisms of the soils (e.g., ion exchange capacity, organic carbon content, mineral content, etc.);

(c) Using a topographic map as a base, and at least two approximately perpendicular geologic cross-sections for each SWMU and the surrounding area, provide a description of the extent (depth, thickness, lateral extent) of each geologic unit including:

(i) Generalized soil (based on testing, grain size, water content, Atterburg limits, etc.) and rock profiles;

(ii) Encountered features such as faults, fractures, voids, stratum changes, lenses, pinch out zones, etc.;

(iii) Location and type of sampling including blow counts, percent recovery, etc.;

(iv) Location and type of in-situ testing performed (pressuremeter, packer permeability testing, slug tests, pump tests, etc.); and

(v) Groundwater elevation and/or potentiometric elevation;

(d) A description of the Facility site flow system including:

(i) Water-level contour and/or potentiometric maps;

(ii) The vertical and horizontal components of flow;

(iii) Any temporal changes in water levels or hydraulic gradients, for example, due to tidal or seasonal influences;

(iv) Active and inactive local water supply and production wells with an approximate schedule of pumping; and

(v) Manmade hydraulic structures (pipelines, french drains, ditches, unlined ponds, septic tanks, NPDES outfalls, retention ponds, etc.).

(2) Soils

The Permittee shall conduct a program to evaluate the soil conditions at the Facility. The program shall provide the following information:

(a) Where remediation by removal of soils is the only corrective measure option, provide map(s) and perpendicular cross sections showing:

(i) The extent of contamination;

(ii) Depth to groundwater; and

(iii) The consistency and distribution of soils (using the Unified Soil Classification System (USCS) (ASTM D 2487));

(b) Where remediation by removal is the likely option but it is necessary to determine the extent of migration (for example, to assess the mobility of wastes from an unlined surface impoundment or landfill) provide the following in addition to the requirements immediately above:

(i) Depth to bedrock and the characteristics of the bedrock including discontinuities such as faults, fissures, joints, fractures, sinkholes, etc.;

(ii) A detailed soil survey conducted according to USDA Soil Conservation Service (SCS) procedures including:

a) USDA Textural Soil Classification and soil profiles showing stratifications or zones which may affect or direct the subsurface flow;

b) Hydraulic conductivity and the SCS hydrologic group classification, A, B, C or D;

c) Relative permeability (only if the waste may have changed the soil's hydraulic conductivity, such as concentrated organics);

d) Storage capacity;

e) Shrink-swell potential (where extreme dry weather could lead to the formation of cracks);

f) Potential for contaminant transport via erosion, using the Universal Soil Loss Equation;

g) Soil sorptive capacity;

h) Cation exchange capacity;

i) Soil organic content; and

j) Soil pH;

(iii) The following contaminant characteristics must be included:

a) Physical state;

b) Viscosity;

c) pH;

d) pKa;

e) Density;

f) Water solubility;

g) Henry's Law Constant;

h) K_{ow};

i) Biodegradability; and

j) Rates of hydrolysis, photolysis and oxidation;

(c) When in-situ soil treatment will likely be the remediation, the following additional information must be provided:

(i) Bulk density;

(ii) Porosity;

(iii) Grain size distribution;

(iv) Mineral content;

(v) Soil moisture profile;

(vi) Unsaturated hydraulic conductivity;

(vii) Effect of stratification on unsaturated flow; and

(viii) Infiltration and evapotranspiration.

(3) Surface Water and Sediment

The Permittee shall conduct a program to characterize the intermittent streams at the boundaries of the Facility, and at the Middle Patuxent River, which are in the vicinity of the Facility. Such characterization shall include, but not be limited to:

(a) Description of the temporal and permanent surface water bodies including:

(i) For lakes and ponds: location, elevation, surface area, inflow, outflow, depth, temperature stratification, and volume;

(ii) For streams, ditches, and channels: location, elevation, flow, velocity, depth, width, tidal and seasonal fluctuations, and flooding tendencies (i.e., 100-year event);

(iii) Drainage patterns; and

(iv) Evaporation rate;

(b) Description of the chemistry of the natural surface water and sediments. This includes determining the pH, total dissolved solids, total suspended solids, biochemical oxygen demand, alkalinity, conductivity, dissolved oxygen profiles, nutrients (ammonia, nitrate/nitrite nitrogen, phosphate), chemical oxygen demand, total organic carbon, specific contaminant

concentrations, etc.;

(c) Description of sediment characteristics including:

(i) Deposition area;

(ii) Thickness profile; and

(iii) Physical and chemical parameters (e.g., grain size, density, organic carbon content, ion exchange capacity, pH, etc.).

b. Source Characterization Investigation

The Permittee shall collect analytical data to supplement and update any description prepared pursuant to the Verification Investigation of the SWMUs subject of a RFI. The data shall completely characterize the wastes and the areas where wastes have been placed, including: type; quantity; physical form; disposition (containment or nature of deposits); and Facility characteristics affecting release (e.g., Facility security, and engineered barriers). This shall include quantification of the following specific characteristics at each source area:

(1) Unit/Disposal Area Characteristics:

(a) Location of unit/disposal area;

(b) Type of unit/disposal area;

(c) Design features;

(d) Operating practices (past and present);

(e) Period of operation;

(f) Age of unit/disposal area;

(g) General physical conditions; and

(h) Method used to close the unit/disposal area.

(2) Waste Characteristics:

(a) Type of waste placed in the unit, including but not limited to: Hazardous classification (e.g., flammable, reactive, corrosive, oxidizing, or reducing agent); quantity; and chemical composition.

(b) Physical and chemical characteristics, including but not limited to: 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; and vapor pressure.

(c) Migration and dispersal characteristics of the waste, including but not limited to: sorption; biodegradability, bioconcentration, biotransformation; photodegradation rates; hydrolysis rates; and chemical transformations.

The Permittee shall document the procedures used in making the above characterizations.

c. Contamination Characterization Investigation

The Permittee shall collect analytical data on groundwater, soils, surface water, sediment, and subsurface gas contamination in the vicinity of 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. The Permittee shall address the following types of contamination at the Facility:

(1) Groundwater Contamination

The Permittee shall conduct a groundwater investigation to characterize any plumes of contamination at the Facility. This investigation shall provide, at a minimum, the following information:

(a) A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the Facility;

(b) The horizontal and vertical direction of contamination movement;

(c) The velocity of contaminant movement;

(d) The horizontal and vertical concentration profiles of hazardous constituents in the plume(s);

(e) An evaluation of factors influencing the plume movement; and

(f) An extrapolation of future contaminant movement.

(g) Each RFI Plan shall include the locations, design and installation procedures for any additional groundwater

monitoring wells required to complete the monitoring well network at each area as necessary to meet the RFI objectives. These wells may be used in conjunction with existing wells in the area. All information required of the new wells shall also be required of the existing wells. The monitoring well network shall meet the following requirements:

(i) The upgradient wells must be capable of yielding samples that are representative of background water quality in the uppermost aquifer and are not affected by any solid waste management unit. The number and location of the wells must be sufficient to characterize the spatial variability of background water;

(ii) The downgradient wells must be capable of immediately detecting any statistically significant amounts of hazardous waste or hazardous constituents that migrate from each solid waste management unit into the groundwater; and

(iii) The monitoring system shall be designed to operate for a period of long-term duration.

When developing this information, the Permittee shall refer to the Technical Enforcement Guidance Document (EPA, September, 1986) to determine methods and materials that are acceptable to EPA.

(h) Each RFI Plan shall provide a description of the groundwater monitoring wells including the following information:

(i) A description and map of well locations, including a survey of each well's surface reference point and the elevation of the top of its casing;

(ii) Size and depth of each well;

(iii) Description of well intake design, including screen slot size and length, filter pack materials and method of filter pack emplacement;

(iv) Type of well casing and screen materials. The choice of well materials shall be made in light of the parameters to be monitored and the nature of the leachate that could potentially

migrate from the facility; The well materials shall: (1) minimize the potential of absorption of constituents from the samples; and (2) maintain their integrity for the life of the system.

(v) Description of methods used to seal the well from the surface and prevent downward migration of contaminants through the well annulus; and

(vi) Description of the methods and procedures used to develop the well.

(i) The Permittee shall select a sampling regime and conduct sampling and analysis activities capable of yielding representative samples. The sampling program shall include, at a minimum, the following elements:

(i) A list of parameters capable of detecting releases of hazardous waste or hazardous constituents into groundwater. The parameters shall be representative of hazardous constituents at least as mobile as the most mobile hazardous constituent that may be present after considering:

a) The types, quantities, and concentrations of hazardous constituents in wastes managed at the SWMU. Incidental constituents which may be released into the unit area from process areas shall be included in this list of analyses;

b) The mobility, stability, and persistence of hazardous waste constituents or their reaction products in the unsaturated zone beneath the waste management area;

c) The detection ability of the indicator parameters, waste constituents of reactive products in groundwater;

d) The concentration of and the natural variation (known or suspected) of the proposed monitoring parameters in background media; and

e) The list must include the basis for selecting each proposed indicator parameter, including any analysis or calculations performed. The basis for selection shall, where possible, include

chemical analysis of the unit's waste and/or leachate as appropriate. The list shall also include parameters to characterize the site-specific chemistry of groundwater at the site including, but not limited to, the major anions and cations that make up the bulk of dissolved solids in water (i.e., Cl^{-}, Fe^{+3}, Mn^{+2}, Na^{+}, $(SO_4)^{-2}$, Ca^{+2}, Mg^{+2}, K^{+}, NO^{-3}, PO^{-3}, silicate, and ammonium).

The Permittee shall document, in the RFI Report submitted pursuant to condition 3 of this Attachment, the procedures used to characterize contaminant plume(s), for example, geophysics, modeling, pump tests, slug tests, nested piezometers, etc.

(2) Soil Contamination

The Permittee 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 soil contamination investigation shall include:

(a) A description of the vertical and horizontal extent of contamination;

(b) A description of contaminant and soil chemical properties within the contaminant source area and plume. This includes contaminant solubility, speciation, adsorption, leachability, cation exchange capacity, biodegradability, hydrolysis, photolysis, oxidation, and other factors that might affect contaminant migration and transformation;

(c) Specific contaminant concentrations;

(d) The velocity and direction of contaminant movement; and

(e) An extrapolation of future contaminant movement.

The Permittee shall document, in the RFI Report submitted pursuant to condition 3 of this Attachment, the procedures used in making the above characterizations and determinations of future contaminant movement.

(3) Surface Water and Sediment Contamination

The Permittee shall conduct a surface water investigation

to characterize contamination in the intermittent streams located at the boundaries of the property, and at the Middle Patuxent River, resulting from contaminant releases at the Facility.

The investigation shall generate, at a minimum, the following information:

(a) 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;

(b) The horizontal and vertical direction of contaminant movement;

(c) The contaminant velocity;

(d) An evaluation of the physical, biological, and chemical factors influencing contaminant movement;

(e) An extrapolation of future contaminant movement; and

(f) A description of the chemistry of the contaminated surface waters and sediments. This includes determining the pH, total dissolved solids, specific contaminant concentrations, etc.

The Permittee shall document, in the RFI Report submitted pursuant to condition 3 of this Attachment, the procedures used in making the above characterizations.

(4) Subsurface Gas Contamination

The Permittee shall conduct an investigation to characterize subsurface gases emitted from buried hazardous waste or hazardous constituents. This investigation shall generate, at a minimum the following information:

(a) A description of the horizontal and vertical extent of subsurface gases migration;

(b) The chemical composition of the gases being emitted;

(c) The rate, amount, and density of the gases being emitted; and

(d) Horizontal and vertical concentration profiles of the subsurface gases emitted.

The Permittee shall document, in the RFI Report submitted pursuant to condition 3 of this Attachment, the procedures

used in making the above characterizations.

d. Potential Receptors Investigation

The Permittee shall collect data describing the human populations and environmental systems that may be exposed to releases of hazardous waste or hazardous constituents from the Facility. Chemical analysis of biological samples may be required. Data on observable effects in ecosystems may also be required.

(1) The following characteristics shall be identified:

(a) Local uses and possible future uses of groundwater:

(i) Type of use (e.g., drinking water source: municipal or residential, agricultural, domestic/non-potable, and industrial); and

(ii) Location of groundwater users, including wells and discharge areas;

(b) Local uses and possible future uses of surface waters draining the Facility:

(i) Domestic and municipal (e.g., potable and lawn/garden watering);

(ii) Recreational (e.g., swimming, fishing);

(iii) Agricultural;

(iv) Industrial; and

(v) Environmental (e.g., fish and wildlife propagation);

(c) Human use of or access to the Facility and adjacent lands, including, but not limited to:

(i) Recreation;

(ii) Hunting;

(iii) Residential;

(iv) Commercial;

(v) Zoning; and

(vi) Relationship between population locations and prevailing wind direction;

(d) A description of the biota in surface water bodies on, adjacent to, or affected by the Facility;

(e) A description of the ecology overlying and adjacent to the Facility;

(f) A demographic profile of the people who use or have access to the Facility and adjacent land, including, but not limited to: age, sex, and sensitive subgroups; and

(g) A description of any endangered or threatened species near the Facility.

(h) Laboratory and Bench Scale Studies

If specifically required at any time during the RFI, the Permittee shall conduct laboratory and/or bench scale studies to determine the applicability of corrective measure technology or technologies to facility conditions. The Permittee shall analyze the technologies, based on literature review, vendor contracts, and past experience to determine the testing requirements.

The Permittee shall develop a testing plan identifying the type(s) and goal(s) of the study(ies), the level of effort needed, and the procedures to be used for data management and interpretation.

Upon completion of the testing, the Permittee shall evaluate the testing results to assess the technology or technologies with respect to the site-specific questions identified in the test plan.

The Permittee shall prepare a report summarizing the testing program and its results, both positive and negative.

3. RCRA Facility Investigation Report

The RCRA Facility Investigation Report shall include an analysis and summary of all Facility investigations and the results of such investigations.

a. Data Analysis

The Permittee shall analyze all Facility investigation data outlined in permit condition II.D., RCRA Facility Investigation, and prepare a report on the type and extent of contamination at the Facility, including sources and migration pathways. The

report shall describe the extent of contamination (qualitative/quantitative) in relation to background levels indicative of the area.

b. Media Cleanup Standards

The Permittee shall identify the following cleanup standards:

(1) Groundwater Cleanup Standards

The Permittee shall provide information to support selection/development of Groundwater Cleanup Standards for all of the hazardous constituents found in the groundwater during the RCRA Facility Investigation.

(a) The Groundwater Cleanup Standards shall consist of:

(i) The Maximum Contaminant Level (MCL) for any constituents with an EPA promulgated Maximum Contaminant Level (MCL), if the background level of the constituent is below the value of the EPA approved MCL; or

(ii) The background level of that constituent in the groundwater; or

(iii) A standard established according to the criteria for Other Media Cleanup Standards.

(2) Other Media Cleanup Standards

The Permittee shall identify concentration levels in the affected media which protect human health and the environment.

Unless a lower concentration level is deemed necessary to protect environmental receptors, cleanup standards shall be established as follows:

(a) For any known or suspected carcinogens classified by EPA's weight of evidence classification as an A, B1 or B2 carcinogen, cleanup standards shall be established at concentration levels which represent an excess upperbound lifetime risk to an individual of 1×10^{-6}, or, if the Permittee demonstrates to EPA's satisfaction that another level is appropriate, at another risk level within the range of 10^{-4} to 10^{-7};

(b) For systemic toxicants, cleanup standards shall represent concentration levels to which the human population (including sensitive subgroups) could be exposed on a daily basis without appreciable risk of

deleterious effect during a lifetime.

c. The Permittee shall recommend which SWMUs, or groups of SWMUs require a Corrective Measures Study. The Permittee shall also identify those corrective action alternative(s) the Permittee intends to investigate further. The Permittee may either investigate several alternatives or focus on a limited number of alternatives. A schedule for the expeditious completion of the Corrective Measures Study shall be included.

CORRECTIVE MEASURES STUDY ATTACHMENT D

The purpose of a Corrective Measures Study (CMS) is to develop and evaluate remedial alternative(s) and to recommend the remedy(ies) to be taken. The Permittee may elect either to screen a number of potential remedies prior to evaluating a smaller number of potential remedies or delete the screening step and proceed with evaluation of the expected remedy(ies), including any specified by EPA.

The Corrective Measures Study shall consist of:

1. Screening of Potential Remedies:

   Should the Permittee elect to screen a number of potential remedies, any potential remedy specified in EPA's approval of the RFI Report shall also be screened.

   a. The characteristics which shall be used to screen inapplicable remedies or technologies include, but are not limited to:

      (1) Site and Media Characteristics

      Site and media data shall be reviewed to identify conditions that may limit or promote the use of certain technologies. The use of technologies which are clearly precluded by site or media characteristics shall be eliminated from further consideration. The Permittee shall document the reasons for eliminating any technology;

      (2) Waste Characteristics

      Potential remedies clearly limited by the waste characteristics should be eliminated from consideration. The Permittee shall document the reasons for eliminating any technology; and

      (3) Technology Limitations

      During the screening process, the level of technological development, performance record, and inherent construction, operation, and maintenance problems should be identified for each technology considered. Technologies that are unreliable, perform poorly, or are not fully demonstrated may be eliminated in the screening process. The Permittee shall document the reasons for eliminating any technology.

   b. The Permittee shall select remedy(ies) based on the above screening, together with any remedy(ies) specified by EPA, for further evaluation. Should an EPA-specified potential remedy(ies) prove infeasible based on the above screening,

the Permittee may request that the alternative(s) be dropped from further investigation. However, until approved, the request shall not stay the conditions of this permit.

2. Evaluation of Potential Remedies

The Permittee shall evaluate the selected potential remedy(ies), including any specified by EPA.

The evaluation shall include a description of each potential remedy measure alternative which shall include, but is not limited to: Preliminary process flow sheets; preliminary sizing and type of construction for buildings and structures; and rough quantities of utilities required. Each potential remedy shall be evaluated with respect to the following criteria:

a. Technical

(1) Evaluation of the performance, reliability, ease of implementation, and potential impacts of the remedy, including safety impacts, cross media impacts, and control of exposure to any residual contamination;

(2) Assessment of the effectiveness of potential remedies in achieving adequate control of source and cleanup of the hazardous waste (including hazardous constituents) released from solid waste management units;

(3) Assessment of the time required to begin and complete the remedy;

(4) Estimation of the costs of remedy implementation; and

(5) Assessment of institutional requirements, such as state or local permit requirements, or other environmental or public health requirements which may substantially affect implementation of the remedy(ies).

b. Environmental: An evaluation of the facility conditions and pathways of contamination actually addressed by each potential remedy. The evaluation shall include the short-term and long-term beneficial and adverse effects, any adverse effects on environmentally sensitive areas, and an analysis of measures to mitigate such adverse effects.

c. Human health: The potential remedy(ies) shall be evaluated with respect to mitigation of short- and long-term potential exposure to any residual contamination and protection of human health, both during and after implementation.

d. Institutional: The Permittee shall evaluate the effects of federal, State, and local environmental and public health standards, regulations, guidance, advisories, ordinances, or

b. Recommended objectives for corrective action for each SWMU, or group of SWMUs. These objectives shall be based on public health and environmental criteria, information gathered during the RCRA Facility Investigation, EPA guidance, and the requirements of any applicable federal statutes or regulations;

c. The Permittee shall justify and recommend a remedy(ies) using technical, human health, and environmental criteria. These recommendations shall include summary tables which allow the alternative(s) to be understood easily. Trade-offs among health risks, environmental effects, and other pertinent factors among the alternatives evaluated shall be highlighted. Information on all evaluated potential remedy(ies) shall be presented; and

d. The Report shall, at a minimum, include:

(1) A description of the facility, site topographic map(s) and preliminary layouts;

(2) For the selected remedy(ies) include:

(a) Performance expectations, i.e., the selected remedy is expected to achieve the Media Cleanup Standards in the approved RCRA Facility Investigation Report;

(b) Preliminary design criteria and rationale;

(c) General operation and maintenance requirements;

(d) Long-term monitoring requirements;

(e) Design and Implementation Precautions:

(i) Special technical problems;

(ii) Additional engineering data required;

(iii) Permits and regulatory requirements;

(iv) Access, easements, right-of-way;

(v) Health and safety requirements; and

(vi) Community relations activities; and

(f) Cost Estimates and Schedules:

(i) Capital cost estimate;

community relations, including the requirements for construction and operating permits on the design, operation, and timing of the remedy(ies).

3. Cost Estimate

The Permittee shall develop a cost estimate for the remedy(ies) and for each phase or segment of the remedy(ies) including:

a. Capital costs consisting of direct (construction) and indirect (non-construction and overhead) costs; and

b. Post-construction costs, including operation and maintenance) necessary to ensure continued effectiveness of the alternative(s).

4. Interim Reporting

The Permittee shall submit bi-monthly progress reports containing:

a. A description and estimate of the percentage of the CMS completed;

b. Summaries of all findings;

c. Summaries of all contacts with representatives of the local community, public interest groups, or State government during the reporting period;

d. Summaries of all problems or potential problems encountered during the reporting period;

e. Actions being taken to rectify problems;

f. Changes in personnel during the reporting period; and

g. Projected work for the next reporting period.

5. Final Report

According to the approved schedule, the Permittee shall submit to EPA for approval and to MDE a Corrective Measures Study Report. The report shall include:

a. An updated description of conditions at the Facility and the nature and extent of the contamination as documented by the RCRA Facility Investigation Report. The Permittee shall update the information with respect to any response activities or interim measures which have or are being implemented at the Facility;

(ii) Operation and maintenance cost estimate; and

(iii) Project schedule (design, construction, operation).

e. Upon review of the Corrective Measures Study Report, the Regional Administrator may require the Permittee to evaluate further, and report upon, one or more additional remedies, or develop particular elements of one or more proposed remedies. Such further requirements will, if necessary, be incorporated into this permit via 40 C.F.R. §§ 270.41 or 270.42.

ATTACHMENT E

WASTE MINIMIZATION GUIDANCE DOCUMENTS AND SOURCES

Waste Minimization Guidance Documents and Sources

Guidance Documents

a. U.S. EPA. June 12, 1989. "Draft Guidance to Hazardous Waste Generators on the Elements of a Waste Minimization Program". Federal Register (54FR25056-7);

b. U.S. EPA. April 1988. "The EPA Manual for Waste Minimization Opportunity Assessment". Hazardous Waste Engineering Research Laboratory, EPA 600/2-88/025;

c. U.S. EPA. October 1987. "Waste Minimization: Environmental Quality with Economic Benefits". EPA/530-SW-87-026;

d. U.S.Congress, September 1986. Office of Technology Assessment. "Serious Reduction of Hazardous Waste". OTA-ITE-317.

e. U.S. EPA. August 1989. "Waste Minimization in Metal Parts Cleaning". EPA/530-SW-89-049.

Sources of Information

a. The Pollution Prevention Information Clearinghouse (PPIC)

- mail - Pollution Prevention Information Clearinghouse
  Science Applications International Center.
  8400 Westpark Drive
  McLean, Virginia 22102
- hotline - a toll free telephone service
  (800) 424-9346
- a hard copy reference library containing the most current pollution prevention information
- EIES - electronic information exchange system
- personal computer - IBM PC or compatible, contact the PPIC Technical Support Office (703) 821-4800

b. Pennsylvania Center for Hazardous Materials Research
320 William Pitt Way
Pittsburgh, Pennsylvania 15238.
(412) 826-5320

c. Pennsylvania Technical Assistance Program
501F. Orvis Keller Building
University Park, PA 16802
(814) 865-0427

d. Recycle Net Bulletin Board - a free, privately operated information center.
(609) 641-9411

I. MANAGEMENT INITIATIVE PROGRAM

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

A. Employee Training

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

1. Occupational health and plant safety,

2. Company regulatory compliance requirements, and

3. A statement of the company's approach to waste minimization and/or it's waste minimization plan.

B. Incentives

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

1. Providing incentives for the development of useful waste minimization ideas,

2. Providing recognition and financial awards for outstanding waste minimization programs, practices and/or suggestions, and

3. Implementing or revising the operational supervisory structure and/or management procedures.

C. Waste Audits

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

1. Identification of hazardous substances in waste and the sources of these substances,

2. Prioritation of various waste reduction actions to be undertaken,

3. Evaluation of some technically, economically, and ecologically feasible approaches to waste minimization,

4. Development of an economic comparison of waste minimization and waste management options, and

5. Evaluation of waste minimization modification results.

II. WASTE MINIMIZATION OPTION PROGRAM

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

A. Reduction Options

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

1. Good operating practices

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

a. Material handling improvements,

b. Scheduling improvements,

c. Spill and leak prevention,

d. Preventive maintenance,

e. Corrective maintenance,

f. Material/waste tracking or inventory control,

g. Communication documentation, and

h. Waste stream segregation according to toxicity, type of contaminant and physical state.

2. Material substitution practices

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

3. Technological modification practices

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

a. Processes,

b. Equipment,

c. Process automation,

d. Operation settings, including, but not limited to flow rates, temperatures, pressures, and/or residence times,

e. Water conservation, and

f. Energy conservation,

B. Recycling options

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

1. Use and reuse practices

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

2. Reclamation practices

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

C. Treatment options

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

D. Waste exchange options

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