RCRA Permit Renewal Application

Volume 1 of 3

Sunoco, Inc., (R&M)
Haverhill, Ohio
EPA ID #OHD005108477

Prepared by:

URS
13825 Sunrise Valley Drive, Suite 250
Herndon, Virginia 20171

May 2011
MEMORANDUM

To: Haverhill Chemicals

From: (Reviewer); Ohio EPA Legal Office. 

Sam Wilson

Date: 7/21/15

These files were reviewed to determine whether records contained herein are confidential or otherwise exempt from the disclosure obligations of Ohio Revised Code (ORC) 149.43.

☑ All files are public

No records were removed based on this review.

☐ Some files are not public

Records were removed or redacted for the reasons given below:


☐ Confidential Law Enforcement Investigatory Records, ORC 149.43(A)(1)(h).


☐ Release Otherwise Prohibited by Law, (i.e. trade secret, infrastructure and security records, etc.), ORC 149.43(A)(1)(v).

☐ Other Specified Reason: 

☐ All files are confidential

Should you have any questions regarding this issue, please contact Ohio EPA’s Office of Legal Services.

(This memorandum is to remain visibly attached to this file.)

50 West Town Street • Suite 700 • P.O. Box 1049 • Columbus, OH 43216-1049
www.epa.ohio.gov • (614) 644-3020 • (614) 644-3184 (fax)
RCRA Permit Renewal Application

Volume 1 of 2

Sunoco, Inc., (R&M)
Haverhill, Ohio
EPA ID #OHD005108477

Prepared by:

URS
13825 Sunrise Valley Drive, Suite 250
Herndon, Virginia 20171

May 2011
April 29, 2011

Mr. Jeremy A Carroll, P.E., Manager
Division of Hazardous Waste Management
Ohio Environmental Protection Agency
Lazarus Government Center
50 West Town Street, Suite 700
Columbus, OH 43215

Mr. Scott Bergreen
Division of Hazardous Waste Management
Ohio Environmental Protection Agency
Southeast District Office
2195 Front Street
Logan, Ohio 43138

Subject: Sunoco, Inc. (R&M) Haverhill Plant
EPA ID#: OHD 005 108 477
RCRA Permit—Hazardous Waste Facility Installation and Operation Part B Permit
Renewal Application

Dear Sirs:

Enclosed please find a Part B Permit Application for Sunoco, Inc. (R&M)(Owner/Operator) Haverhill, Ohio plant. The facility intends to continue hazardous waste activities at the site. This information is required by Ohio Administrative Code 3745-50-40 (D). A permit fee of 1,500 dollars is being submitted to the Office of Fiscal Administration under separate cover.

Please call Jason Patrick at 740/533-5267 if you have any questions regarding this submittal.

Sincerely,

[Signature]
Kevin Soucy
Facilities Manager
Sunoco, Inc.(R&M), Haverhill

cc:
Mr. Rick Stewart, Ohio EPA, Logan, Ohio (without attachments)
Mr. Jason Patrick (without attachments)
Mr. David Kurland (without attachments)
September 15, 2015

Jeremy A. Carroll, P.E. Manager
Ohio Environmental Protection Agency
Division of Materials and Waste Management
Engineering, Remediation and Authorizations Section
P.O. Box 1049
Columbus, Ohio 43216-1049

Subject: Haverhill Chemicals LLC, Haverhill, Ohio Facility
EPA ID# OHD 005 108 477
Facility Ownership Change

Dear Mr. Carroll,

The Haverhill Chemicals LLC, Haverhill, Ohio facility currently operates under an Ohio EPA RCRA permit that became effective on December 16, 2011 and will expire on December 16, 2021.

Haverhill Chemicals LLC plans to sell the Haverhill facility to ALTIVIA Petrochemicals, LLC. The attached Part A forms (EPA Form 8700-12, 8700-13 A/B, and 8700-23), relevant permit application pages, a letter notifying the transferee of permit OHD 005 108 477 and a written agreement specifying the transfer date of permit responsibility comprise a Class 1A permit modification request for the change of ownership, according to OAC 3745-50-52(C).

Please contact Jason Patrick at Haverhill at (740) 533-5267 if you have any questions regarding this submittal.

Sincerely,

Paul Deputy
CFO
Haverhill Chemicals LLC

cc: Jae Lee, EPA Region 5
Jeremy Carroll, Ohio EPA, Columbus
Rich Stewart, Ohio EPA, SEDO

Attachment
September 15, 2015

Jeremy A. Carroll, P.E. Manager
Ohio Environmental Protection Agency
Division of Materials and Waste Management
Engineering, Remediation and Authorizations Section
P.O. Box 1049
Columbus, Ohio 43216-1049

Re: Haverhill Chemicals LLC, Haverhill OH
EPA ID# OHD 005 108 477
Change of Facility Ownership

To whom it may concern:

Haverhill Chemicals, LLC ("Haverhill"), plans to sell its chemical manufacturing facility located in Haverhill, Ohio to ALTIVIA Petrochemicals ("ALTIVIA"). This transaction is scheduled to close on or about October 1, 2015.

The Haverhill facility is subject to Ohio Hazardous Waste Installation and Operation Permit EPA ID# OHD 005 108 477. ALTIVIA will assume complete responsibility for the permit terms and obligations after the transaction closes on or about October 1, 2015. Except for the change in ownership, no modification of the permit is required at this time.

If you have any questions, please feel free to contact me at Jason Patrick at (740) 532-3420.

Sincerely,

Haverhill Chemicals, LLC

[Signature]
Name: Paul Deputty
Title: Chief Financial Officer

ALTIVIA Petrochemicals

[Signature]
Name: Fred Stahelin
Title: Chief Financial Officer

cc: Jae Lee, EPA Region 5
    Rich Stewart, Ohio EPA SEDO
United States Environmental Protection Agency
RCRA SUBTITLE C SITE IDENTIFICATION FORM

<table>
<thead>
<tr>
<th>Reason for Submittal:</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ To provide an Initial Notification (first time submitting site identification information / to obtain an EPA ID number for this location)</td>
</tr>
<tr>
<td>☑ To provide a Subsequent Notification (to update site identification information for this location)</td>
</tr>
<tr>
<td>☐ As a component of a First RCRA Hazardous Waste Part A Permit Application</td>
</tr>
<tr>
<td>☐ As a component of a Revised RCRA Hazardous Waste Part A Permit Application (Amendment #_______)</td>
</tr>
<tr>
<td>☐ As a component of the Hazardous Waste Report (if marked, see sub-bullet below)</td>
</tr>
<tr>
<td>☐ Site was a TSD facility and/or generator of &gt;1,000 kg of hazardous waste, &gt;1 kg of acute hazardous waste, or &gt;100 kg of acute hazardous waste spill cleanup in one or more months of the report year (or State equivalent LGS regulations)</td>
</tr>
</tbody>
</table>

2. Site EPA ID Number

| EPA ID Number | 0 0 9 0 0 4 7 7 |

3. Site Name

| Name: | Altivia Petrochemicals, LLC |

4. Site Location Information

| Street Address: | 1019 Haverhill Ohio Furnace Road, P.O. Box 180 (Lat 38d 35' 36s, Long 82d 49' 08s) |
| City, Town, or Village: | Haverhill |
| State: | Ohio |
| Country: | USA |
| Zip Code: | 45636 |

5. Site Land Type

| ☑ Private |

6. NAICS Code(s) for the Site (at least 5-digit codes)

| A. | 3 2 5 1 0 |

7. Site Mailing Address

| Street or P.O. Box: | 1019 Haverhill Ohio Furnace Road, P.O. Box 180 |
| City, Town, or Village: | Haverhill |
| State: | Ohio |
| Country: | USA |
| Zip Code: | 45636 |

8. Site Contact Person

| First Name: | Jason |
| MI: | Last: Patrick |
| Title: | ESH&S Manager |
| Phone: | (740) 532-3420 |
| Email: | |
| Ext.: | |
| Fax: | NA |

9. Legal Owner and Operator of the Site

A. Name of Site's Legal Owner: Altivia Petrochemicals, LLC

| Owner Type: | ☑ Private |
| City or P.O. Box: | 1100 Louisiana St, Suite 4800 |
| State: | Texas |
| Country: | USA |
| Phone: | (713) 656-900 |
| Zip Code: | 77002 |

B. Name of Site's Operator: Altivia Petrochemicals, LLC

| Operator Type: | ☑ Private |
| City, Town, or Village: | Houston |
| State: | Texas |
| Country: | USA |
| Phone: | (713) 656-900 |
| Zip Code: | 77002 |

Date Became Owner: 10/1/2015
Date Became Operator: 10/1/2011
### A. Hazardous Waste Activities; Complete all parts 1-10.

1. **Generator of Hazardous Waste**
   - If "Yes," mark only one of the following – a, b, or c.
     - a. LOG: Generates, in any calendar month, 1,000 kg/mo (2,200 lbs/mo) or more of hazardous waste; or generates, in any calendar month, or accumulates at any time, more than 1 kg/mo (2.2 lbs/mo) of acute hazardous waste; or generates, in any calendar month, or accumulates at any time, more than 100 kg/mo (220 lbs/mo) of acute hazardous spill cleanup material.
     - b. SQG: 100 to 1,000 kg/mo (220 – 2,200 lbs/mo) of non-acute hazardous waste.
     - c. CESQG: Less than 100 kg/mo (220 lbs/mo) of non-acute hazardous waste.

   If "Yes" above, indicate other generator activities in 2-10.

2. **Short-Term Generator** (generate from a short-term or one-time event and not from on-going processes). If "Yes," provide an explanation in the Comments section.

3. **United States Importer of Hazardous Waste**

4. **Mixed Waste (hazardous and radioactive) Generator**

5. **Transporter of Hazardous Waste**
   - If "Yes," mark all that apply.
     - a. Transporter
     - b. Transfer Facility (at your site)

6. **Treater, Storer, or Disposer of Hazardous Waste**
   - Note: A hazardous waste Part B permit is required for these activities.

7. **Recycler of Hazardous Waste**

8. **Exempt Boiler and/or Industrial Furnace**
   - If "Yes," mark all that apply.
     - a. Small Quantity On-site Burner Exemption
     - b. Smelting, Melting, and Refining Furnace Exemption

9. **Underground Injection Control**

10. **Receives Hazardous Waste from Off-site**

### B. Universal Waste Activities; Complete all parts 1-2.

1. **Large Quantity Handler of Universal Waste** (you accumulate 5,000 kg or more) [refer to your State regulations to determine what is regulated]. Indicate types of universal waste managed at your site. If "Yes," mark all that apply.
   - a. Batteries
   - b. Pesticides
   - c. Mercury containing equipment
   - d. Lamps
   - e. Other (specify) __________________
   - f. Other (specify) __________________
   - g. Other (specify) __________________

2. **Destination Facility for Universal Waste**
   - Note: A hazardous waste permit may be required for this activity.

### C. Used Oil Activities; Complete all parts 1-4.

1. **Used Oil Transporter**
   - If "Yes," mark all that apply.
     - a. Transporter
     - b. Transfer Facility (at your site)

2. **Used Oil Processor and/or Re-refiner**
   - If "Yes," mark all that apply.
     - a. Processor
     - b. Re-refiner

3. **Off-Specification Used Oil Burner**

4. **Used Oil Fuel Marketer**
   - If "Yes," mark all that apply.
     - a. Marketer Who Directs Shipment of Off-Specification Used Oil to Off-Specification Used Oil Burner
     - b. Marketer Who First Claims the Used Oil Meets the Specifications
D. Eligible Academic Entities with Laboratories—Notification for opting into or withdrawing from managing laboratory hazardous wastes pursuant to 40 CFR Part 262 Subpart K

- You can ONLY Opt into Subpart K if:
  - you are at least one of the following: a college or university; a teaching hospital that is owned by or has a formal affiliation agreement with a college or university; or a non-profit research institute that is owned by or has a formal affiliation agreement with a college or university; AND
  - you have checked with your State to determine if 40 CFR Part 262 Subpart K is effective in your state

Y □ N ✅ 1. Opting into or currently operating under 40 CFR Part 262 Subpart K for the management of hazardous wastes in laboratories

See the Item-by-Item Instructions for definitions of types of eligible academic entities. Mark all that apply:

- [ ] a. College or University
- [ ] b. Teaching Hospital that is owned by or has a formal written affiliation agreement with a college or university
- [ ] c. Non-profit Institute that is owned by or has a formal written affiliation agreement with a college or university

Y □ N ✅ 2. Withdrawing from 40 CFR Part 262 Subpart K for the management of hazardous wastes in laboratories

11. Description of Hazardous Waste

A. Waste Codes for Federally Regulated Hazardous Wastes. Please list the waste codes of the Federal hazardous wastes handled at your site. List them in the order they are presented in the regulations (e.g., D001, D003, F007, U112). Use an additional page if more spaces are needed.

<table>
<thead>
<tr>
<th>D001</th>
<th>D002</th>
<th>D007</th>
<th>D008</th>
<th>D009</th>
<th>D018</th>
<th>D035</th>
</tr>
</thead>
<tbody>
<tr>
<td>F002</td>
<td>F003</td>
<td>KO22</td>
<td>U002</td>
<td>U005</td>
<td>U188</td>
<td>U210</td>
</tr>
<tr>
<td>U220</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B. Waste Codes for State-Regulated (i.e., non-Federal) Hazardous Wastes. Please list the waste codes of the State-Regulated hazardous wastes handled at your site. List them in the order they are presented in the regulations. Use an additional page if more spaces are needed.

<table>
<thead>
<tr>
<th>D001</th>
<th>D002</th>
<th>D007</th>
<th>D008</th>
<th>D009</th>
<th>D018</th>
<th>D035</th>
</tr>
</thead>
<tbody>
<tr>
<td>F002</td>
<td>F003</td>
<td>KO22</td>
<td>U002</td>
<td>U005</td>
<td>U188</td>
<td>U210</td>
</tr>
<tr>
<td>U220</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

☐ N ☑ Y Are you notifying under 40 CFR 280.42 that you will begin managing, are managing, or will stop managing hazardous secondary material under 40 CFR 281.2(a)(2)(i), 40 CFR 281.4(a)(23), (24), or (25)?

If "Yes," you must fill out the Addendum to the Site Identification Form: Notification for Managing Hazardous Secondary Material.

13. Comments

[Blank space for comments]

14. Certification. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations. For the RCRA Hazardous Waste Part A Permit Application, all owner(s) and operator(s) must sign (see 40 CFR 270.10(b) and 270.11).

<table>
<thead>
<tr>
<th>Signature of legal owner, operator, or an authorized representative</th>
<th>Name and Official Title (type or print)</th>
<th>Date Signed (mm/dd/yyyy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fred Stehelin</td>
<td>Transferee: Fred Stehelin, CFO</td>
<td>09/15/15</td>
</tr>
<tr>
<td>Paul Deputy</td>
<td>Transferor: Paul Deputy, CFO</td>
<td>09/14/15</td>
</tr>
</tbody>
</table>
CERTIFICATION

This Permit Application is signed below in accordance with the requirements of OAC Rule 3745-50-42:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

[Signature]
Transferor

[Signature]
Date
United States Environmental Protection Agency
HARDOUS WASTE PERMIT INFORMATION FORM

1. Facility Permit Contact

<table>
<thead>
<tr>
<th>First Name: Stephen</th>
<th>MI: C.</th>
<th>Last Name: Isaacs, Jr.</th>
</tr>
</thead>
</table>

Contact Title: Site Manager

Phone: (740) 532-3420

2. Facility Permit Contact Mailing Address

Street or P.O. Box: P.O. Box 180

City, Town, or Village: Haverhill

State: Ohio

Country: USA

Zip Code: 45636

3. Operator Mailing Address and Telephone Number

Street or P.O. Box: 16800 Imperial Valley Drive, Suite 499

City, Town, or Village: Houston

State: Texas

Phone: (281) 618-1331

Country: USA

Zip Code: 77060

4. Facility Existence Date

Facility Existence Date (mm/dd/yyyy): 10/01/1969

5. Other Environmental Permits

<table>
<thead>
<tr>
<th>Facility Type (Enter code)</th>
<th>Permit Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>01F0009*LD</td>
<td>NPDES Permit</td>
</tr>
<tr>
<td>P</td>
<td>0773000080</td>
<td>Title V Permit</td>
</tr>
<tr>
<td>R</td>
<td>04730251</td>
<td>Ohio EPA HWFB</td>
</tr>
<tr>
<td>U</td>
<td>75754312</td>
<td>UIC Closure</td>
</tr>
<tr>
<td>R</td>
<td>OHD008477</td>
<td>US EPA HW Management Permit</td>
</tr>
</tbody>
</table>

6. Nature of Business:

The Haverhill plant, a chemical production facility, has multiple process areas that convert organic chemical feedstocks into bulk industrial chemicals. The primary process is the production of phenol and acetone from cumene. Other products include alpha-methyl styrene, and bisphenol A.
7. Process Codes and Design Capacities – Enter information in the Section on Form Page 3

A. PROCESS CODE – Enter the code from the list of process codes below that best describes each process to be used at the facility. If more lines are needed, attach a separate sheet of paper with the additional information. For “other” processes (i.e., D99, S99, T04 and X99), describe the process (including its design capacity) in the space provided in Item 8.

B. PROCESS DESIGN CAPACITY – For each code entered in Item 7.A; enter the capacity of the process.

1. AMOUNT – Enter the amount. In a case where design capacity is not applicable (such as in a closure/post-closure or enforcement action) enter the total amount of waste for that process.

2. UNIT OF MEASURE – For each amount entered in Item 7.B(1), enter the code in Item 7.B(2) from the list of unit of measure codes below that describes the unit of measure used. Select only from the units of measure in this list.

C. PROCESS TOTAL NUMBER OF UNITS – Enter the total number of units for each corresponding process code.

<table>
<thead>
<tr>
<th>Process Code</th>
<th>Process</th>
<th>Appropriate Unit Measure for Process Design Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Disposal</td>
<td></td>
</tr>
<tr>
<td>D79</td>
<td>Underground Injection</td>
<td>Gallons; Liters; Gallons Per Day; or Liters Per Day</td>
</tr>
<tr>
<td></td>
<td>Well Disposal</td>
<td></td>
</tr>
<tr>
<td>D80</td>
<td>Landfill</td>
<td>Acre-feet; Hectares-meter; Acres; Cubic Meters; Hectares; Cubic Yards</td>
</tr>
<tr>
<td>D81</td>
<td>Land Treatment</td>
<td>Acres or Hectares</td>
</tr>
<tr>
<td>D82</td>
<td>Ocean Disposal</td>
<td>Gallons Per Day or Liters Per Day</td>
</tr>
<tr>
<td>D83</td>
<td>Surface Impoundment</td>
<td>Gallons; Liters; Cubic Meters; or Cubic Yards</td>
</tr>
<tr>
<td>D99</td>
<td>Other Disposal</td>
<td>Any Unit of Measure Listed Below</td>
</tr>
<tr>
<td></td>
<td>Storage</td>
<td></td>
</tr>
<tr>
<td>S01</td>
<td>Container</td>
<td>Gallons; Liters; Cubic Meters; or Cubic Yards</td>
</tr>
<tr>
<td>S02</td>
<td>Tank Storage</td>
<td>Gallons; Liters; Cubic Meters; or Cubic Yards</td>
</tr>
<tr>
<td>S03</td>
<td>Waste Pile</td>
<td>Cubic Yards or Cubic Meters</td>
</tr>
<tr>
<td>S04</td>
<td>Surface Impoundment</td>
<td>Gallons; Liters; Cubic Meters; or Cubic Yards</td>
</tr>
<tr>
<td>S05</td>
<td>Drip Pad</td>
<td>Gallons; Liters; Cubic Meters; Hectares; or Cubic Yards</td>
</tr>
<tr>
<td>S06</td>
<td>Containment Building Storage</td>
<td>Cubic Yards or Cubic Meters</td>
</tr>
<tr>
<td>S99</td>
<td>Other Storage</td>
<td>Any Unit of Measure Listed Below</td>
</tr>
<tr>
<td></td>
<td>Treatment</td>
<td></td>
</tr>
<tr>
<td>T01</td>
<td>Tank Treatment</td>
<td>Gallons Per Day; Liters Per Day</td>
</tr>
<tr>
<td>T02</td>
<td>Surface Impoundment</td>
<td>Gallons Per Day; Liters Per Day</td>
</tr>
<tr>
<td>T03</td>
<td>Incinerator</td>
<td>Short Tons Per Hour; Metric Tons Per Hour; Gallons Per Hour; Liters Per Hour; BTUs Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Gallons Per Day; Liters Per Day; Metric Tons Per Day; or Million BTU Per Hour</td>
</tr>
<tr>
<td>T04</td>
<td>Other Treatment</td>
<td>Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Short Tons Per Day; BTUs Per Hour; Gallons Per Day; Liters Per Hour; or Million BTU Per Hour</td>
</tr>
<tr>
<td>T80</td>
<td>Boiler</td>
<td>Gallons; Liters; Gallons Per Hour; Liters Per Hour; BTUs Per Hour; Million BTU Per Hour</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Process Code</th>
<th>Process</th>
<th>Appropriate Unit Measure for Process Design Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Treatment (Continued)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(for T81 – T94)</td>
<td></td>
</tr>
<tr>
<td>T81</td>
<td>Cement Kiln</td>
<td>Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day</td>
</tr>
<tr>
<td>T82</td>
<td>Lime Kiln</td>
<td>Metric Tons Per Hour; Short Tons Per Day; BTUs Per Hour; Liters Per Hour; Kilograms Per Hour; or Million BTU Per Hour</td>
</tr>
<tr>
<td>T83</td>
<td>Aggregate Kiln</td>
<td></td>
</tr>
<tr>
<td>T84</td>
<td>Phosphate Kiln</td>
<td></td>
</tr>
<tr>
<td>T85</td>
<td>Coke Oven</td>
<td></td>
</tr>
<tr>
<td>T86</td>
<td>Blast Furnace</td>
<td></td>
</tr>
<tr>
<td>T87</td>
<td>Smelting, Melting, or Refining Furnace</td>
<td>Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Liters Per Day; or Million BTU Per Hour</td>
</tr>
<tr>
<td>T88</td>
<td>Titanium Dioxide Chloride Oxidation Reactor</td>
<td>Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Liters Per Day; or Million BTU Per Hour</td>
</tr>
<tr>
<td>T89</td>
<td>Methane Reforming Furnace</td>
<td></td>
</tr>
<tr>
<td>T90</td>
<td>Pulping Liquor Recovery Furnace</td>
<td></td>
</tr>
<tr>
<td>T91</td>
<td>Combustion Device Used in the Recovery of Sulfur Values from Spent Sulfuric Acid</td>
<td>Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Liters Per Day; or Million BTU Per Hour</td>
</tr>
<tr>
<td>T92</td>
<td>Halogen Acid Furnaces</td>
<td></td>
</tr>
<tr>
<td>T93</td>
<td>Other Industrial Furnaces Listed in 40 CFR 260.10</td>
<td>Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Liters Per Day; or Million BTU Per Hour</td>
</tr>
<tr>
<td>T94</td>
<td>Containment Building Treatment</td>
<td>Cubic Yards; Cubic Meters; Short Tons Per Hour; Gallons Per Day; Liters Per Hour; BTUs Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Metric Tons Per Day; Liters Per Day; or Million BTU Per Hour</td>
</tr>
</tbody>
</table>

Miscellaneous (Subpart X)

<table>
<thead>
<tr>
<th>Process Code</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>X01</td>
<td>Open Burning/Open Detonation</td>
</tr>
<tr>
<td>X02</td>
<td>Mechanical Processing</td>
</tr>
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<td>X04</td>
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<tr>
<td>X99</td>
<td>Other Subpart X</td>
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<td>Gallons</td>
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<td>Gallons Per Hour</td>
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<td>U</td>
<td>Metric Tons Per Hour</td>
<td>W</td>
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<td>Liters Per Hour</td>
<td>L</td>
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<td>S</td>
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<tr>
<td>Liters Per Day</td>
<td>H</td>
<td>Pounds Per Hour</td>
<td>J</td>
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<tr>
<td>Gallons Per Day</td>
<td>Y</td>
<td>Kilograms Per Hour</td>
<td>X</td>
</tr>
<tr>
<td>Gallons Per Hour</td>
<td>E</td>
<td>Million BTU Per Hour</td>
<td>X</td>
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### Process Codes and Design Capacities (Continued)

**EXAMPLE FOR COMPLETING Item 7 (shown in line number X-1 below):** A facility has a storage tank, which can hold 533.788 gallons.

<table>
<thead>
<tr>
<th>Line Number</th>
<th>A. Process Code (From list above)</th>
<th>B. PROCESS DESIGN CAPACITY</th>
<th>C. Process Total Number of Units</th>
<th>For Official Use Only</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td>(1) Amount (Specify)</td>
<td>(2) Unit of Measure</td>
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<td>X 1</td>
<td>1 S 0 2</td>
<td>533.788</td>
<td>G</td>
<td>001</td>
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<tr>
<td>1</td>
<td>1 S 0 2</td>
<td>200,000</td>
<td>G</td>
<td>001</td>
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<td>2</td>
<td>2 S 0 2</td>
<td>250,000</td>
<td>G</td>
<td>001</td>
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<td>3</td>
<td>3 S 0 2</td>
<td>200,000</td>
<td>G</td>
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<tr>
<td>4</td>
<td>4 T 8 0</td>
<td>380,000,000</td>
<td>I</td>
<td>002</td>
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</tr>
<tr>
<td>1 3</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

*Note: If you need to list more than 13 process codes, attach an additional sheet(s) with the information in the same format as above. Number the line sequentially, taking into account any lines that will be used for "other" process (i.e., D99, S99, T04, and X99) in Item 8.*

### 8. Other Processes (Follow instructions from Item 7 for D99, S99, T04, and X99 process codes)

<table>
<thead>
<tr>
<th>Line Number (Enter #s in sequence with Item 7)</th>
<th>A. Process Code (From list above)</th>
<th>B. PROCESS DESIGN CAPACITY</th>
<th>C. Process Total Number of Units</th>
<th>For Official Use Only</th>
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</thead>
<tbody>
<tr>
<td>X 2</td>
<td>2 T 0 4</td>
<td>100.00</td>
<td>U</td>
<td>001</td>
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</table>
9. Description of Hazardous Wastes - Enter Information in the Sections on Form 5

A. EPA HAZARDOUS WASTE NUMBER – Enter the four-digit number from 40 CFR, Part 261 Subpart D of each listed hazardous waste you will handle. For hazardous wastes which are not listed in 40 CFR, Part 261 Subpart D, enter the four-digit number(s) from 40 CFR Part 261, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY – For each listed waste entered in Item 9.A, estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in Item 9.A, estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE – For each quantity entered in Item 9.B, enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

<table>
<thead>
<tr>
<th>ENGLISH UNIT OF MEASURE</th>
<th>CODE</th>
<th>METRIC UNIT OF MEASURE</th>
<th>CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>POUNDS</td>
<td>P</td>
<td>KILOGRAMS</td>
<td>K</td>
</tr>
<tr>
<td>TONS</td>
<td>T</td>
<td>METRIC TONS</td>
<td>M</td>
</tr>
</tbody>
</table>

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure, taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:
   For listed hazardous waste: For each listed hazardous waste entered in Item 9.A, select the code(s) from the list of process codes contained in Items 7.A and 8.A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all listed hazardous wastes.

   For non-listed waste: For each characteristic or toxic contaminant entered in Item 9.A, select the code(s) from the list of process codes contained in Items 7.A and 8.A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.

   NOTE: THREE SPACES ARE PROVIDED FOR ENTERING PROCESS CODES. IF MORE ARE NEEDED:
   1. Enter the first two as described above.
   2. Enter "000" in the extreme right box of Item 9.D(1).
   3. Use additional sheet, enter line number from previous sheet, and enter additional code(s) in Item 9.E.

2. PROCESS DESCRIPTION: If code is not listed for a process that will be used, describe the process in Item 9.D(2) or in Item 9.E(2).

   NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER – Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:
   1. Select one of the EPA Hazardous Waste Numbers and enter it in Item 9.A. On the same line complete Items 9.B, 9.C, and 9.D by estimating the total annual quantity of the waste and describing all the processes to be used to store, treat, and/or dispose of the waste.
   2. In Item 9.A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In Item 9.D.2 on that line enter "included with above" and make no other entries on that line.
   3. Repeat step 2 for each EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING Item 9 (shown in line numbers X-1, X-2, X-3, and X-4 below) – A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operations. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

<table>
<thead>
<tr>
<th>Line Number</th>
<th>A. EPA Hazardous Waste No.</th>
<th>B. Estimated Annual Qty of Waste</th>
<th>C. Unit of Measure</th>
<th>D. PROCESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>X 1</td>
<td>K 0 5 4</td>
<td>900</td>
<td>P</td>
<td>T 0 3 D 8 0</td>
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<td>D 0 0 2</td>
<td>400</td>
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<td>X 3</td>
<td>D 0 0 1</td>
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</tr>
<tr>
<td>X 4</td>
<td>D 0 0 2</td>
<td></td>
<td></td>
<td>Included With Above</td>
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</table>
### Description of Hazardous Wastes (Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)

<table>
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<tr>
<td>1</td>
<td>K 0 2 2</td>
<td>36,490</td>
<td>T S 0 2 T 8 0</td>
<td>Distillation bottom tars from the production of phenol burned as fuel. Amount includes non-haz. bisphenol-A.</td>
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<td>6</td>
<td>D 0 0 1</td>
<td>10,370</td>
<td>T S 0 2 T 8 0</td>
<td>Light hydrocarbon burned as fuel.</td>
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</table>
### 9. Description of Hazardous Wastes (Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)

<table>
<thead>
<tr>
<th>Line Number</th>
<th>A. EPA Hazardous Waste No. (Enter code)</th>
<th>B. Estimated Annual Qty of Waste</th>
<th>C. Unit of Measure (Enter code)</th>
<th>D. PROCESSES</th>
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<td>(1) PROCESS CODES (Enter Code)</td>
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<td>(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)</td>
</tr>
</tbody>
</table>
10. **Map**

Attach to this application a topographical map, or other equivalent map, of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers, and other surface water bodies in this map area. See instructions for precise requirements.

11. **Facility Drawing**

All existing facilities must include a scale drawing of the facility (see instructions for more detail).

12. **Photographs**

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment, and disposal areas; and sites of future storage, treatment, or disposal areas (see instructions for more detail).

13. **Comments**

Maps, facility drawings, and photographs recently submitted with permit renewal application.
Tank 2003-F
(Section XII, Line 3)
Tank 2104-F
(Section XII, Line 1)

Tank 2105-F
(Section XII, Line 2)
Process Code T80
Equipment #2001-UE
View looking north
SECTION B

FACILITY DESCRIPTION
Transfer of Ownership
Supplement Insert

ALTIVIA Petrochemicals LLC, is replacing Haverhill Chemicals LLC throughout the application.
## SECTION B. FACILITY DESCRIPTION

### TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Page</th>
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<tr>
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<td>SECTION B. FACILITY DESCRIPTION</td>
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<td>B-1b Waste Management Activities</td>
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<td>TOPOGRAPHIC MAP</td>
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<td>B-2a General Map Requirements: OAC 3745-50-44</td>
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<td>B-2b Additional Map Requirements for Land Disposal Facilities:</td>
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<td>B-3a Seismic Standard: OAC 3745-50-44, 3745-54-18</td>
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<td>B-3b Floodplain Standard</td>
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<td>TRAFFIC INFORMATION: OAC 3745-50-44</td>
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### SECTION B. FACILITY DESCRIPTION

#### LIST OF TABLES

<table>
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<tbody>
<tr>
<td>B-1</td>
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<tr>
<td>PRINCIPAL RAW MATERIALS AND COMMERCIAL CHEMICAL PRODUCTS</td>
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<tr>
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<td>B-5</td>
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<td>MAP INFORMATION</td>
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</table>
SECTION B. FACILITY DESCRIPTION

LIST OF EXHIBITS

Exhibit B-1  Location Map
Exhibit B-2  Site Plan
Exhibit B-3  RCRA Permitted Units
Exhibit B-4  Phenol Production Process Flow Diagram
Exhibit B-5  BPA Process Flow Diagram
Exhibit B-6  Current Biowastewater Treatment Process Flow Diagram
Exhibit B-7  Topographic Map 1000-Foot Facility Boundary and Windrose
Exhibit B-8  Surrounding Land Use and Property Line
Exhibit B-9  Floodplain Map
Exhibit B-10  Water Well Locations
Exhibit B-11  Subsurface Conduit Locations
Exhibit B-12  Pavement Design Typical Cross-Section
SECTION B. FACILITY DESCRIPTION

The information provided in this section includes descriptions and illustrations of the Haverhill Plant's production processes (phenol and Bisphenol A). Please be informed that the Haverhill Plant has gone to great lengths to maintain the confidentiality of the process information and has limited disclosure even among its own employees and representatives. The plant believes that the production process information contained in this section provides sufficient detail for a thorough understanding of the specific process information related to the management of hazardous waste at the plant.

Also contained in this section are the uses of the land surrounding the facility, zoning information, surface waters, drainage, and floodplain information. Traffic patterns are discussed at the end of this section. Additionally, details on topographical, geological, and meteorological features of the facility are provided. More complete details on the specific hazardous waste activities for Haverhill can be found in the appropriate sections of this permit application.

B-1 GENERAL DESCRIPTION: OAC 3745-50-44

The Haverhill Plant is a chemical production facility located in southern Ohio along the Ohio River bordering Kentucky (see Exhibit B-1, Location Map). The property comprises 600 acres, and the active portion of the site occupies approximately 60 acres. The plant operates 24 hours per day, 7 days a week, and employs approximately 300 people, of which approximately 250 are plant employees. Additional pertinent information is as follows:

Facility Address:    ALTIVIA PETROCHEMICALS
                    1019 Haverhill-Ohio Furnace Road
                    Haverhill, Ohio 45636

Facility Owner:     ALTIVIA PETROCHEMICALS
                    1100 Louisiana St. Suite 4800
                    Houston, TX 77002

Facility Operator:  ALTIVIA PETROCHEMICALS
                    1100 Louisiana St. Suite 4800
                    Houston, TX 77002

Facility Contact:   Jason Patrick, Environmental Manager

Telephone Number:   (740) 533-5267
The plant is seeking a RCRA Permit renewal for the tank storage of hazardous wastes generated during production processes.

The site plan provided as Exhibit B-2 displays the location of the facility’s hazardous waste management units. This exhibit does not present all process equipment at the facility; however, process equipment for various units is outlined in this section. Exhibit B-3 lists the RCRA permitted units, along with their operational status. It should be noted that several exhibits incorporated throughout this permit application present the name and logo of USS Chemicals, Aristech Chemical Corporation, or Sunoco Chemicals, who have been the previous/current owners and operators of the plant.

The plant operates two steam boilers that burn hazardous waste (K022 and D001) fuels that are generated on-site for energy recovery. Both boilers operate under federal and Ohio EPA RCRA permits. Boiler UE burns only light hydrocarbon waste fuel. Boiler UC can simultaneously burn HHC and LHC fuels with minimal or no natural gas feed. In 2009, Haverhill notified Ohio EPA that the boilers comply with 40 CFR 63, Subpart EEE (The HWC MACT Standards). In accordance with OAC 3745-266-100(B), Haverhill is removing the operating limits of the boilers from the RCRA permit. Only the following sections of RCRA regulations will continue to apply to the hazardous waste burning boilers: Contingency Planning, Closure, Post-Closure, Standards for Direct Transfer, and Standards for Regulation of Residues.

Additionally, the plant historically operated two UIC-regulated injection wells (three wells were installed) but closure of these three wells was completed in 1996; a Phenol Wastewater Treatment System (PWWTS) that Ohio EPA approved as RCRA closed in 2000; and two BPA lagoons that Ohio EPA approved as RCRA closed in 2002. The plant also operated two additional utility steam boilers: 2001-UA and 2001-UB that were regulated under the BIF Rule; Ohio EPA approved the RCRA closure of these boilers in June 2012. The plant also operates a less-than 90 day waste accumulation tank, 2108-F; a less-than 90 day hazardous waste container storage area, BD-908; and a biological wastewater treatment system to process non-RCRA wastewaters from the production units.

**B-1a Process Descriptions**

The facility produces industrial organic chemicals. The facility consists of separate units that are physically separated but functionally integrated. The production units consist of phenol units and a Bisphenol A unit. Table B-1 lists the principal raw materials and commercial chemical products for each unit.
TABLE B-1. PRINCIPAL RAW MATERIALS AND COMMERCIAL CHEMICAL PRODUCTS

<table>
<thead>
<tr>
<th>Unit</th>
<th>Raw Material</th>
<th>Commercial Chemical Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenol</td>
<td>cumene</td>
<td>phenol, acetone, alphamethyl styrene (AMS)</td>
</tr>
<tr>
<td>Bisphenol A</td>
<td>phenol and acetone</td>
<td>Bisphenol A (two commercial grades)</td>
</tr>
</tbody>
</table>

Raw materials are received via barge, railcar, and tank-truck. Commercial chemical products are stored in aboveground storage tanks, silos, and warehouses. Products are shipped using barge, railcar, bulk, and tank-truck.

The phenol operations begin with the air oxidation of cumene into cumene hydroperoxide (CHP) followed by stripping off the excess cumene. Next, the CHP is directed to the “cleaver” where the CHP is split into crude phenol and acetone using sulfuric acid. From the cleaver, the process mixture is neutralized and the crude phenol, acetone, and AMS are distilled and refined into the commercial chemical products. During the distillation and refining steps, light hydrocarbon impurities (RCRA characteristic hazardous waste D001) and a residual heavy hydrocarbon waste (RCRA listed waste K022) are continuously purged from the process to the aboveground waste fuel storage tanks. This material is fed to the boilers for energy recovery. Exhibit B-4 presents the phenol unit operation process flow diagrams.

Air emissions from the cumene oxidation section are directed to a thermal oxidizer. Major process vents in the distillation and refining sections are controlled using ammonia chilled condensers. Process wastewater is pretreated then directed to the wastewater storage tanks prior to on-site biological treatment and discharge to the Ohio River.

The Bisphenol A (BPA) process consists of the following operations: reaction, HCL recovery, processing, and phenol recovery. In the reaction step, phenol and acetone are reacted using HCL as a catalyst in a series of stirred tank reactors to form a mixture of BPA, phenol, HCL, and water. The aqueous HCL is recovered and recycled to the reaction area. The acidic wastewater is neutralized, then pumped to the phenol wastewater storage tanks. Next, the crude BPA-phenol is purified by two processing steps: crystallization and filtration. Excess phenol is recovered for reuse. During phenol recovery, a heavy hydrocarbon organic nonhazardous waste is generated and pumped to the heavy hydrocarbon waste fuel storage tanks. Exhibit B-5 presents the BPA unit operation process flow diagrams.
The facility is subject to RCRA corrective action and has submitted an RFI Work Plan to U.S. EPA for review and approval as described in Section J.

Major air emission sources include utility boilers, process heaters, process vessels, storage tanks, and material handling activities (barge, tank-truck, and rail-car). Air emission controls include a thermal oxidizer, ammonia condensers, closed vent systems with fume scrubbers, and internal floating roofs for tanks storing volatile organic liquids. In addition, the facility maintains a leak detection and repair program regulated under RCRA subpart BB and CC that is included in the Federal RCRA permit.

Plantwide RCRA hazardous contaminated trash and debris are collected from various satellite accumulation areas throughout the plant. Drummed wastes are managed in less than 90-day drum storage areas.

**B-1b Waste Management Activities**

**B-1b(1) Tank Systems**

The facility operates three existing hazardous waste storage tank systems to be permitted. The three tanks systems (as defined in 40 CFR 264.190, OAC 3745-55-90) are as follows:

<table>
<thead>
<tr>
<th>I.D. #</th>
<th>Capacity</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>2104-F</td>
<td>200,000 gallons</td>
<td>Phenol Distillation Column Bottoms (K022)</td>
</tr>
<tr>
<td>2105-F</td>
<td>250,000 gallons</td>
<td>Phenol Distillation Column Bottoms (K022)</td>
</tr>
<tr>
<td>2003-F</td>
<td>200,000 gallons</td>
<td>Light Hydrocarbon Waste (D001)</td>
</tr>
</tbody>
</table>

All three tanks manage byproduct hazardous waste prior to burning in the plant’s utility boilers. Further details on the process description are provided in Section D.
B-2  **TOPOGRAPHIC MAP**

B-2a  **General Map Requirements: OAC 3745-50-44**

The following maps are being submitted in order to comply with the map requirements of 270.14(b)(19), OAC 3745-50-44. These maps are:

- Exhibit B-1  Location Map
- Exhibit B-7  Topographic Map 1,000 Foot Facility Boundary and Windrose
- Exhibit B-8  Surrounding Land Use and Property Line
- Exhibit B-9  Floodplain Map
- Exhibit B-10  Water Well Locations
- Exhibit B-11  Subsurface Conduit Locations
- Exhibit B-2  Traffic Flow

Table B-2 provides an index for required map information.

B-2b  **Additional Map Requirements for Land Disposal Facilities: OAC 3745-50-44, 3745-54-95, 3745-54-97**

The plant is not a RCRA-regulated land disposal facility. The requirements of this section do not apply.

<table>
<thead>
<tr>
<th>Information</th>
<th>Exhibit Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>General location of the facility</td>
<td>B-1</td>
</tr>
<tr>
<td>Topographic map (1&quot; = 200')</td>
<td>B-7</td>
</tr>
<tr>
<td>Contours indicating surface water flow</td>
<td>B-7</td>
</tr>
<tr>
<td>Legal boundaries of the facility</td>
<td>B-1, -8</td>
</tr>
<tr>
<td>Location of access control</td>
<td>B-2</td>
</tr>
<tr>
<td>Buildings and structures</td>
<td>B-2</td>
</tr>
<tr>
<td>Water wells</td>
<td>B-10</td>
</tr>
<tr>
<td>Subsurface conduit</td>
<td>B-11</td>
</tr>
<tr>
<td>Surrounding land use</td>
<td>B-8</td>
</tr>
<tr>
<td>100-year floodplain area</td>
<td>B-9</td>
</tr>
<tr>
<td>Windrose</td>
<td>B-7</td>
</tr>
<tr>
<td>Traffic patterns</td>
<td>B-2</td>
</tr>
</tbody>
</table>
B-3 LOCATION INFORMATION: OAC 3745-50-44

B-3a Seismic Standard: OAC 3745-50-44, 3745-54-18
The plant is not a new facility. The requirements of this section do not apply. Additionally, the facility is located in Scioto County, Ohio, which is not one of the political jurisdictions listed in 40 CFR 264 Appendix VI.

B-3b Floodplain Standard
The Haverhill Plant does not lie within a 100-year floodplain. The limits of the 100-year floodplain of the Ohio River are shown in Exhibit B-9.

These limits were obtained from the FEMA National Flood Insurance Program maps for Haverhill, Ohio.

B-4 TRAFFIC INFORMATION: OAC 3745-50-44
Facility roads are shown on the Site Plan in Exhibit B-2. Exhibit B-2 also presents the direction of traffic flow (and thus traffic patterns), the most heavily used roads with respect to volume and traffic, and control devices (stop signs). Paved roads as well as gravel composite roads also are noted in this exhibit. Typically, roadways consist of a 20-foot-wide wearing course with 2 ft-6 in. shoulders on each side. None of the roads on site are designated as “One Way.” Stop signs are posted at intersections, and the posted speed limit is 15 miles per hour. Pedestrian and railroad crossings signs are posted where appropriate. During a typical 24-hour period, approximately 80 passenger cars (primarily employees), 30 tractor-trailers/tank trucks, and 25 service/delivery trucks enter and leave the plant. These vehicles are associated primarily with production and other plant operational activities -- not hazardous wastes.

The principal method of transporting hazardous waste on site is via aboveground pipeline. Typically licensed haulers transport two to three truckloads of hazardous waste in containers or in bulk over facility roads each month, and a tanker truck of non-hazardous oil recovered on a regular basis. These wastes are transported off site to licensed/permited disposal facilities and/or reclaimers.

The facility roads were designed and constructed in the early 1960s. Roads have been maintained and are in good condition. Original road wearing surfaces were either asphaltic.
concrete (2 inches thick) or water bound macadam (6 inches thick). A typical cross-section of the design pavement is presented in Exhibit B-12. Bearing capacity and required strength calculations are also included in Exhibit B-12. Facility roads have a subgrade strength equal to 7,000 psi.
EXHIBIT B-1

LOCATION MAP
EXHIBIT B-2

SITE PLAN
EXHIBIT B-8

SURROUNDING LAND USE AND PROPERTY LINE
EXHIBIT B-3

RCRA PERMITTED UNITS
## Exhibit B-3
**RCRA PERMITTED UNITS**

<table>
<thead>
<tr>
<th>Unit No.</th>
<th>Name or Contents</th>
<th>Operational Status</th>
<th>Function</th>
<th>Status Under RCRA</th>
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</thead>
<tbody>
<tr>
<td>2104-F</td>
<td>K022 Waste Fuel Storage Tank</td>
<td>Active</td>
<td>Storage</td>
<td>RCRA Regulated</td>
</tr>
<tr>
<td>2105-F</td>
<td>K022 Waste Fuel Storage Tank</td>
<td>Active</td>
<td>Storage</td>
<td>RCRA Regulated</td>
</tr>
<tr>
<td>2003-F</td>
<td>D001 Waste Fuel Storage Tank</td>
<td>Active</td>
<td>Storage</td>
<td>RCRA Regulated</td>
</tr>
<tr>
<td>2001-UC</td>
<td>Utility Boiler</td>
<td>Active</td>
<td>Energy Recovery</td>
<td>RCRA Regulated</td>
</tr>
<tr>
<td>2001-UE</td>
<td>Utility Boiler</td>
<td>Active</td>
<td>Energy Recovery</td>
<td>RCRA Regulated</td>
</tr>
</tbody>
</table>
EXHIBIT B-4

PHENOL PRODUCTION PROCESS FLOW DIAGRAM
EXHIBIT B-5

BPA PROCESS FLOW DIAGRAM
EXHIBIT B-6

CURRENT BIOWASTEWATER TREATMENT PROCESS FLOW DIAGRAM
EXHIBIT B-7

TOPOGRAPHIC MAP 1000-FOOT FACILITY BOUNDARY AND WINDROSE
EXHIBIT B-9
FLOODPLAIN MAP
EXHIBIT B-10

WATER WELL LOCATIONS

Haverhill received the following drawing from Ohio DNR in June 2011. Haverhill’s records indicate the well location shown south-west of and closest to the facility may actually represent up to 15 wells. Haverhill has closure reports for at least 9 of these wells. Haverhill is continuing to investigate the status of this well location with Ohio DNR and will submit an updated map when the matter is resolved.
EXHIBIT B-11

SUBSURFACE CONDUIT LOCATIONS
EXHIBIT B-12

PAVEMENT DESIGN TYPICAL CROSS-SECTION
EXHIBIT B-12

PAVEMENT DESIGN TYPICAL CROSS-SECTION
NOTE: FOR TYPE II PAVEMENT OMIT 2" ASPHALTIC CONC. SURFACE.

3" CROWN
6" COMPACTED WATER BOUND MACADAM BASE IN (2) 3" LAYERS
2" ASPHALTIC CONC.

SYMM. ABOUT

10' TYP.

2-6° SHOULDER FOR SIDE SLOPE DITCH
6° OF SUBGRADE COMPACTED TO 95% MAX. DENSITY
1'-6" MIN.
1/2

NOTE: ALL ROADS SHOWN TO BE TYPE I PAVEMENT UNLESS OTHERWISE NOTED

PAVEMENT DESIGN
TYPICAL CROSS-SECTION
N.T.S.

OHIO EPA. DHWM
OCT 29 2001
00080
Pavement Bearing Capacity

Source: Ohio Dept. of Transportation
Division of Highways
Pavement Design Manual

Fig 8-5 shows the asphalt design; assume asphalt is flexible pavement; then for Type I & II roads the strength of the subgrade controls bearing capacity.

Soil Characterization

From well installation logs:
0-6' = Medium stiff to stiff, sandy to clayey Silt
From Figure 1301-1; Classification by Visual Inspection

Group Index = 8

Subgrade Strength:

From Figure 1301-3, using GI = 8
- Soil Support Value (SSV) = 4.8
- California Bearing Ratio (CBR) = 7

CBR = 7 is equivalent to 7000 psi

Subgrade strength = 7000 psi

Required Subgrade Strength

Assume trucks weigh 80 kips; Harman legal limit
Critical track is tri-axle; assume weight on two rear axles
80k distributed over 8 tires = 10,000 lbs/tire
Assume tire is 10" wide w/10" track
Maximun pressure = 10,000 lbs/100" = 100 psi
7000 psi strength > 100 psi; required
SOIL SUPPORT VALUE (SSV)

Example: G.I. of 6 = CBR of 6 (rounded off) = SSV of 4.6 = K of 155

- AASHTO Classes A-1, A-2 & A-3 lie below 0. SSV=6-10; K=200+.

- Usual range of AASHTO Classes.

- 5-1/2 Lb. hammer, 12" drop, 4 layers, 45 blows per layer, compacted at optimum moisture as determined by AASHTO T-99.

OHIO EPA DHWM

CORRELATION CHART FOR SUBGRADE STRENGTHS

OCT 29 2001
### Legend and Classification of Soils for Highway Investigations

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Group Designation</th>
<th>Pass. #10</th>
<th>Pass. #40</th>
<th>Pass. #200</th>
<th>Liquid Limit (LL)</th>
<th>Plasticity Index (PI)</th>
<th>Group Index Max.</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-1a</td>
<td>Gravel and/or Stone Fragments</td>
<td>H.R.B.</td>
<td>50 Max</td>
<td>30 Max</td>
<td>15 Max</td>
<td>6 Max</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-1b</td>
<td>Gravel and/or Stone Fragments with Sand</td>
<td>O.H.O.</td>
<td>50 Max</td>
<td>25 Max</td>
<td>6 Max</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-2</td>
<td>Fine Sand</td>
<td></td>
<td>51 Min</td>
<td>10 Max</td>
<td>NON-PLASTIC</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-3a</td>
<td>Coarse and Fine Sand</td>
<td></td>
<td>30 Max</td>
<td>6 Max</td>
<td>0</td>
<td>MIN OF 50% COMBINED COARSE AND FINE SAND SIZES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-2-4</td>
<td>Gravel and/or Stone Fragments with Sand &amp; Silt</td>
<td></td>
<td>36 Min</td>
<td>40 Max</td>
<td>10 Max</td>
<td>8</td>
<td>LESS THAN 50% SILT SIZES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-2-5</td>
<td>Gravel and/or Stone Fragments with Sand, Silt &amp; Clay</td>
<td></td>
<td>35 Max</td>
<td>40 Max</td>
<td>11 Min</td>
<td>0</td>
<td>50% OR MORE SILT SIZES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-4a</td>
<td>Sandy Silt</td>
<td></td>
<td>36 Min</td>
<td>40 Max</td>
<td>10 Max</td>
<td>8</td>
<td>50% OR MORE SILT SIZES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-4b</td>
<td>Silt</td>
<td></td>
<td>50 Min</td>
<td>40 Max</td>
<td>10 Max</td>
<td>8</td>
<td>50% OR MORE SILT SIZES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-5</td>
<td>Elastic Silt &amp; Clay with or without organic material</td>
<td></td>
<td>36 Min</td>
<td>41 Min</td>
<td>10 Max</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-6a</td>
<td>Silty Clay</td>
<td></td>
<td>36 Min</td>
<td>40 Max</td>
<td>11 - 15</td>
<td>10</td>
<td>50% OR MORE SILT SIZES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-6b</td>
<td>Clay</td>
<td></td>
<td>36 Min</td>
<td>41 Min</td>
<td>16 Min</td>
<td>15</td>
<td>50% OR MORE SILT SIZES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-7</td>
<td>Top Soil</td>
<td></td>
<td>36 Min</td>
<td>41 Min</td>
<td>1LL-30</td>
<td>20</td>
<td>50% OR MORE SILT SIZES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-8</td>
<td>BERM Material</td>
<td></td>
<td>36 Min</td>
<td>41 Min</td>
<td>1LL-30</td>
<td>20</td>
<td>50% OR MORE SILT SIZES</td>
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<td></td>
</tr>
<tr>
<td>A-97</td>
<td>Cinders with or without soil</td>
<td></td>
<td>36 Min</td>
<td>41 Min</td>
<td>1LL-30</td>
<td>20</td>
<td>50% OR MORE SILT SIZES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-98</td>
<td>Rock-soil mixture</td>
<td></td>
<td>36 Min</td>
<td>41 Min</td>
<td>1LL-30</td>
<td>20</td>
<td>50% OR MORE SILT SIZES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-10</td>
<td>Peat or Organic Material</td>
<td></td>
<td>36 Min</td>
<td>41 Min</td>
<td>1LL-30</td>
<td>20</td>
<td>50% OR MORE SILT SIZES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-11</td>
<td>Coal or Coal Blossom</td>
<td></td>
<td>36 Min</td>
<td>41 Min</td>
<td>1LL-30</td>
<td>20</td>
<td>50% OR MORE SILT SIZES</td>
<td></td>
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<tr>
<td>A-12</td>
<td>Limestone</td>
<td></td>
<td>36 Min</td>
<td>41 Min</td>
<td>1LL-30</td>
<td>20</td>
<td>50% OR MORE SILT SIZES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-13</td>
<td>Sandstone</td>
<td></td>
<td>36 Min</td>
<td>41 Min</td>
<td>1LL-30</td>
<td>20</td>
<td>50% OR MORE SILT SIZES</td>
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<tr>
<td>A-14</td>
<td>Shale</td>
<td></td>
<td>36 Min</td>
<td>41 Min</td>
<td>1LL-30</td>
<td>20</td>
<td>50% OR MORE SILT SIZES</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Classification Procedure**

With the required test data, proceed from top to bottom on above chart and correct group will be found by process of elimination. The first group from the top into which test data fits is the correct classification.

**Abbreviations & Symbols**

- **H.R.B.** - Highway Research Board
- **<** - Less than or equal to
- **>** - Greater than

**Classification by Visual Inspection**

60-100% larger than 3 ins
SECTION C

WASTE CHARACTERISTICS AND WASTE ANALYSIS PLAN
# SECTION C. WASTE CHARACTERISTICS AND WASTE ANALYSIS PLAN

## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>SECTION C. WASTE CHARACTERISTICS AND WASTE ANALYSIS PLAN</td>
<td>C-1</td>
</tr>
<tr>
<td>C-1 CHEMICAL AND PHYSICAL ANALYSIS: OAC 745-50-44(a)(3), 3745-54-13</td>
<td>C-1</td>
</tr>
<tr>
<td>C-1a Containerized Waste: OAC 3745-50-44(c)(1)</td>
<td>C-2</td>
</tr>
<tr>
<td>C-1b Waste in Tank Systems: OAC 3745-55-92</td>
<td>C-2</td>
</tr>
<tr>
<td>C-1c Waste in Piles: OAC 3745-56-50</td>
<td>C-7</td>
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<tr>
<td>C-1d Landfilled Wastes: OAC 3745-57-14</td>
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<tr>
<td>C-1e Waste Incinerated and Wastes Used in Performance Tests: OAC 3745-50-62</td>
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<tr>
<td>C-1f Waste to be Land Treated: OAC 3745-50-44(c)(5), 3745-56-71, 3745-51- Appendix VIII</td>
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<tr>
<td>C-1g Waste in Miscellaneous Treatment Units: OAC 3745-50-44(c)(9)</td>
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<td>C-2 WASTE ANALYSIS PLAN: OAC 3745-50-44, 3745-50-43, 3745-59-07</td>
<td>C-7</td>
</tr>
<tr>
<td>C-2a Parameters and Rationale: OAC 3745-54-13</td>
<td>C-7</td>
</tr>
<tr>
<td>C-2b Test Methods: OAC 3745-54-13</td>
<td>C-7</td>
</tr>
<tr>
<td>C-2c Sampling Methods: OAC 3745-54-13, OAC 3745-51-20</td>
<td>C-10</td>
</tr>
<tr>
<td>C-2d Frequency of Analysis: OAC 3745-54-13</td>
<td>C-12</td>
</tr>
<tr>
<td>C-2e Additional Requirements for Waste Generated Off Site: OAC 3745-54-13</td>
<td>C-12</td>
</tr>
<tr>
<td>C-2f Additional Requirements for Ignitable, Reactive or Incompatible Wastes: OAC 3745-54-13, 3745-54-13</td>
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</tr>
<tr>
<td>C-3a Waste Characteristics: OAC 3745-54-13, 3745-59-07, 3745-59 30 through 35, 3745-59 41 through 43</td>
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<tr>
<td>C-3b Notification and Certification Requirements: OAC 3745-59-07</td>
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<tr>
<td>C-3c Additional Requirements Pertaining to Storage of Restricted Wastes: OAC 3745-59-50</td>
<td>C-13</td>
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<td>C-4 WASTE ANALYSIS FOR BIF RULE COMPLIANCE</td>
<td>C-13</td>
</tr>
</tbody>
</table>
## SECTION C. WASTE CHARACTERISTICS AND WASTE ANALYSIS PLAN

### LIST OF TABLES

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-1</td>
<td>WASTESTREAM IDENTIFICATION, DESCRIPTION, AND CHARACTERISTICS</td>
<td>C-4</td>
</tr>
<tr>
<td>C-2</td>
<td>HAZARDOUS WASTE FUEL ANALYTICAL RESULTS</td>
<td>C-5</td>
</tr>
<tr>
<td>C-3</td>
<td>WASTE ANALYSES PARAMETERS AND RATIONALES</td>
<td>C-8</td>
</tr>
<tr>
<td>C-4</td>
<td>ANALYTICAL METHODS</td>
<td>C-9</td>
</tr>
<tr>
<td>C-5</td>
<td>SAMPLING METHODS AND LOCATIONS</td>
<td>C-11</td>
</tr>
</tbody>
</table>
SECTION C. WASTE CHARACTERISTICS AND WASTE ANALYSIS PLAN

LIST OF EXHIBITS

<table>
<thead>
<tr>
<th>Exhibit C-1</th>
<th>Tank Systems 2104-F and 2105-F Waste Flow Diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exhibit C-2</td>
<td>Tank System 2003-F Waste Flow Diagram</td>
</tr>
<tr>
<td>Exhibit C-3</td>
<td>Analytical Data for Tank Systems</td>
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</table>
SECTION C. WASTE CHARACTERISTICS AND WASTE ANALYSIS PLAN

C-1 CHEMICAL AND PHYSICAL ANALYSIS: OAC 745-50-44(a)(3), 3745-54-13

Section C defines waste characteristics and the waste analysis plan (WAP) for the Haverhill Plant and is designed to meet the requirements of OAC 3745-54-13.

The plant is a chemical processing plant with phenol and Bisphenol A (BPA) production units.

The phenol units produce phenol, acetone, and alpha-methylstyrene (AMS). The BPA unit produces both epoxy grade and polycarbonate grade Bisphenol A. Details of the production operations are provided in Section B.

Various hazardous wastes are generated on site. These wastes may be handled in several ways as outlined below:

- Shipped off site for treatment, storage, and disposal in DOT-approved containers (e.g., 55-gallon drums, roll-off boxes, bulk tank trucks, railcars, barges, etc.) and analyzed in accordance with pertinent requirements.
- Handled on site by accumulation, storage, treatment, and disposal including:
  - Less-than-90-day container accumulation, which is exempt from RCRA permitting by OAC 3745-52-34; all containerized wastes are ultimately shipped off site for treatment, storage, and disposal.
  - Less-than-90-day accumulation in tanks, exempt from RCRA permitting by OAC 3745-52-34.
  - Tank treatment, exempt from RCRA permitting by OAC 3745-54-01 prior to wastewater treatment.
  - Tank storage, subject to RCRA permitting by OAC 3745-54, prior to energy recovery in the on-site industrial boilers subject to OAC 3745-58.

The waste managed on site within RCRA-permitted treatment, storage, and disposal units includes:

- Wastes pumped to the on-site industrial boilers for heat recovery include:
  Heavy Hydrocarbon Process Streams
  - Phenol distillation column bottoms (K022); and
  - BPA purification system column bottoms (nonhazardous).
Light Hydrocarbon Process Streams

- Phenol process spent emission scrubber fluid (D001);
- AMS distillation column bottoms (D001); and
- Purification system light hydrocarbons (D001).

Exhibits C-1 and C-2 present the movement of the waste streams from generation to storage prior to being burned in the industrial boilers.

Wastes that are shipped off site for treatment and disposal are stored for less than 90 days prior to shipment. Contaminated debris includes construction materials (e.g., insulation, wood, etc.) that may come in contact with hazardous wastes. Contaminated soils from a spill or release are removed and placed in containers for shipment off site. Spent filters from process operations are changed out and placed in drums for disposal. Tank sludges are collected during tank maintenance and placed in drums (or other acceptable containers.) Off-specification products may be shipped off site for treatment and disposal, if they are not recycled back into their respective processes. Both liquid and solid hazardous wastes are generated by the laboratory. The liquid wastes include F002, F003, D001, D002, D038, U188, U002, U055, U220, and K022 listed hazardous wastes codes, which are sent off site for incineration. Materials contaminated by hazardous wastes are segregated by placing them in properly labeled DOT-approved containers prior to shipment for disposal off site.

Additionally, wastewaters from the various production operations are treated prior to discharge under the plant's NPDES permit. These include:

- Phenol process wastewater (nonhazardous)
- BPA process wastewater (nonhazardous).

C-1a Containerized Waste: OAC 3745-50-44(c)(1)

Hazardous wastes are stored on site in containers for less than 90 days and are not regulated under this permit. The containers are properly labeled and DOT-approved. The wastes are analyzed in accordance with OAC 3745-51.

C-1b Waste in Tank Systems: OAC 3745-55-92

The Haverhill Plant stores hazardous waste generated from on-site processes that have recoverable heat value in permitted Tanks 2104-F, 2105-F, and 2003-F, and in the less-than-90-
day tank 2108-F, shown on the site plan in Exhibit B-2. All wastes stored in these tank systems are generated on site and fed to the plant’s utility boilers for energy recovery. Further details on those operations are provided in Section D.

Two basic types of wastes are managed in the tank systems. Tank 2003-F manages light hydrocarbons that exhibit the characteristics of ignitability (D001). Tanks 2104-F, 2105-F, and 2108-F store heavy hydrocarbon waste fuels that are either process-listed hazardous waste (K022) or nonhazardous waste.

Specific waste streams that enter tank systems 2104-F, 2105-F, 2108-F, and 2003-F are described in Table C-1. Exhibit C-3 presents representative analytical data for the waste stored in the tank systems. Hazardous characteristics of these wastestreams also are presented in this table. Characteristics for the combined wastestream stored in each tank system are presented in Table C-2. Table C-1 presents major constituents. Table C-2 presents analytical data showing all constituents detected.

The analyses for Tank System 2003-F (Light Ends) and 2104-F/2105-F (Heavy Ends) are different because the heavy ends K022 distillation tars are sent off-site, on occasion, disposal (for energy recovery) while the light ends are monitored in-house to monitor process conditions.
<table>
<thead>
<tr>
<th>Waste</th>
<th>Code</th>
<th>Tanks</th>
<th>Description</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>HHC Waste Streams</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phenol Distillation</td>
<td>K022</td>
<td>2104-F/2015-F/2108-F</td>
<td>Black, viscous, tar-like heavy hydrocarbons waste stream that is a listed hazardous waste.</td>
<td>Specific gravity&lt;br&gt;Flashpoint (°F)&lt;br&gt;Heating Value (BTU/lb)&lt;br&gt;% Weight Ash&lt;br&gt;Major Constituents</td>
</tr>
<tr>
<td>Column Bottoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPA Purification System</td>
<td>NH</td>
<td>2104-F/2105-F/2108-F</td>
<td>Black, viscous, tar-like heavy hydrocarbon waste stream that is not a listed waste and does not exhibit any RCRA hazardous waste characteristics.</td>
<td>Heating Value (BTU/lb&lt;br&gt;% Weight Ash&lt;br&gt;Major Constituents</td>
</tr>
<tr>
<td>Column Bottoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LHC Waste Streams</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phenol process spent emission</td>
<td>D001</td>
<td>2003-F</td>
<td>Dark organic light hydrocarbon liquid exhibiting the RCRA hazardous characteristics of ignitability</td>
<td>Specific Gravity&lt;br&gt;Flashpoint (°F)&lt;br&gt;Major Constituents</td>
</tr>
<tr>
<td>emission scrubber fluid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AMS Distillation Column</td>
<td>D001</td>
<td>2003-F</td>
<td>Dark organic light hydrocarbon liquid wastestream that exhibits the RCRA hazardous characteristic of ignitability.</td>
<td>Heating Value (BTU/lb&lt;br&gt;% Weight Ash&lt;br&gt;Major Constituents</td>
</tr>
<tr>
<td>Bottoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purification system light</td>
<td>D001</td>
<td>2003-F</td>
<td>Yellow organic light hydrocarbon liquid exhibiting the RCRA hazardous characteristics of ignitability</td>
<td>Heating Value (BTU/lb&lt;br&gt;% Weight Ash&lt;br&gt;Flashpoint (°F)&lt;br&gt;Major Constituents</td>
</tr>
<tr>
<td>hydrocarbons</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parameters</td>
<td>Constituent</td>
<td>Units</td>
<td>LHC</td>
<td>HHC</td>
</tr>
<tr>
<td>-------------------------</td>
<td>------------------------</td>
<td>-------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Physical/Chemical</td>
<td>Heat Content</td>
<td>Btu/lb</td>
<td>16,456</td>
<td>15,816</td>
</tr>
<tr>
<td></td>
<td>Density</td>
<td>g/ml</td>
<td>0.906</td>
<td>1.12</td>
</tr>
<tr>
<td></td>
<td>Ash</td>
<td>%w/w</td>
<td>&lt; 0.10</td>
<td>0.06</td>
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<tr>
<td>Metals and Chlorine</td>
<td>Antimony</td>
<td>ppm</td>
<td>&lt; 1.0</td>
<td>&lt; 1.0</td>
</tr>
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<td></td>
<td>Arsenic</td>
<td>ppm</td>
<td>&lt; 0.5</td>
<td>&lt; 0.5</td>
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<tr>
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<td>Barium</td>
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<td>&lt; 1.0</td>
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<td>Beryllium</td>
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<td>&lt; 0.1</td>
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<td></td>
<td>Cadmium</td>
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<td>&lt; 0.1</td>
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<td>Chromium</td>
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<td>0.3</td>
</tr>
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<td>Lead</td>
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<td>&lt; 1.0</td>
</tr>
<tr>
<td></td>
<td>Mercury</td>
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<td>&lt; 0.1</td>
</tr>
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<td>Silver</td>
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<td></td>
<td>Thallium</td>
<td>ppm</td>
<td>&lt; 1.0</td>
<td>&lt; 1.0</td>
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<td></td>
<td>Total Chlorine/Chloride</td>
<td>ppm</td>
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<td>231</td>
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<td>Volatile Organics</td>
<td>Acetone</td>
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<td>98,749</td>
<td>NA</td>
</tr>
<tr>
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<td>Benzene</td>
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<td>1,597</td>
<td>ext: &lt;100b</td>
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<tr>
<td></td>
<td>n-Butylbenzene</td>
<td>ppm</td>
<td>308</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>sec-Butylbenzene</td>
<td>ppm</td>
<td>11,089</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>tert-Butylbenzene</td>
<td>ppm</td>
<td>659</td>
<td>NA</td>
</tr>
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<td>Ethylbenzene</td>
<td>ppm</td>
<td>49,154</td>
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<td>Isopropylbenzene</td>
<td>ppm</td>
<td>505,151</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>p-Isopropyltoluene</td>
<td>ppm</td>
<td>233</td>
<td>NA</td>
</tr>
<tr>
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<td>Methylene Chloride</td>
<td>ppm</td>
<td>295</td>
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</tr>
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<td>n-Propylbenzene</td>
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<td>842</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Styrene</td>
<td>ppm</td>
<td>4,077</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Tetrachloroethene</td>
<td>ppm</td>
<td>71</td>
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<td>Toluene</td>
<td>ppm</td>
<td>26,711</td>
<td>ext: &lt;100b</td>
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<td>1,2,4-Trimethylbenzene</td>
<td>ppm</td>
<td>138</td>
<td>NA</td>
</tr>
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<td></td>
<td>m- &amp; p-Xylene</td>
<td>ppm</td>
<td>233</td>
<td>NA</td>
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<tr>
<td>Semivolatile Organics</td>
<td>Acetophenone</td>
<td>ppm</td>
<td>ext: 10,000b</td>
<td>ext: 160,000b</td>
</tr>
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<td>Aniline</td>
<td>ppm</td>
<td>NA</td>
<td>ext: 33,000b</td>
</tr>
<tr>
<td></td>
<td>bis(2-Chloroethyl) Ether</td>
<td>ppm</td>
<td>NA</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>bis(2-Chloroisopropyl) Ether</td>
<td>ppm</td>
<td>NA</td>
<td>1,997</td>
</tr>
<tr>
<td></td>
<td>para-para bis-phenol A</td>
<td>ppm</td>
<td>NA</td>
<td>ext: 77,000b</td>
</tr>
<tr>
<td></td>
<td>ortho-para bis-phenol A</td>
<td>ppm</td>
<td>NA</td>
<td>ext: 77,000b</td>
</tr>
<tr>
<td></td>
<td>p-Chloro-m-Cresol</td>
<td>ppm</td>
<td>NA</td>
<td>293</td>
</tr>
<tr>
<td></td>
<td>1,2-Dichlorobenzene</td>
<td>ppm</td>
<td>NA</td>
<td>87</td>
</tr>
<tr>
<td></td>
<td>1,3-Dichlorobenzene</td>
<td>ppm</td>
<td>NA</td>
<td>83</td>
</tr>
<tr>
<td></td>
<td>1,4-Dichlorobenzene</td>
<td>ppm</td>
<td>NA</td>
<td>80</td>
</tr>
<tr>
<td>Parameters</td>
<td>Constituent</td>
<td>Units</td>
<td>LHC</td>
<td>HHC</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-------------------------</td>
<td>-------</td>
<td>-----</td>
<td>------</td>
</tr>
<tr>
<td>Semivolatile Organics</td>
<td>2,4-Dimethylphenol</td>
<td>ppm</td>
<td>NA</td>
<td>50</td>
</tr>
<tr>
<td>(continued)</td>
<td>2,4-Dinitrotoluene</td>
<td>ppm</td>
<td>NA</td>
<td>180</td>
</tr>
<tr>
<td></td>
<td>Diphenylamine</td>
<td>ppm</td>
<td>NA</td>
<td>ext: 25,000&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>2-Methylphenol</td>
<td>ppm</td>
<td>NA</td>
<td>283</td>
</tr>
<tr>
<td></td>
<td>α-Methyl Styrene</td>
<td>ppm</td>
<td>ext: 2,000&lt;sup&gt;b&lt;/sup&gt;</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>3-Nitroaniline</td>
<td>ppm</td>
<td>NA</td>
<td>213</td>
</tr>
<tr>
<td></td>
<td>4-Nitrophenol</td>
<td>ppm</td>
<td>NA</td>
<td>257</td>
</tr>
<tr>
<td></td>
<td>n-Nitrosodiphenylamine</td>
<td>ppm</td>
<td>NA</td>
<td>43,833</td>
</tr>
<tr>
<td></td>
<td>Pentachlorophenol</td>
<td>ppm</td>
<td>NA</td>
<td>353</td>
</tr>
<tr>
<td></td>
<td>Phenol</td>
<td>ppm</td>
<td>ext: 12,500&lt;sup&gt;b&lt;/sup&gt;</td>
<td>8,267</td>
</tr>
<tr>
<td></td>
<td>Phenolic Polymers</td>
<td>ppm</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>1,2,4-Trichlorobenzene</td>
<td>ppm</td>
<td>NA</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>Cumyl Phenol</td>
<td>ppm</td>
<td>NA</td>
<td>ext: 160,000&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>a</sup>Data presented are the average of run-specific data collected during the 1998 compliance tests. The organic compounds listed were detected in at least one test run unless otherwise noted.

<sup>b</sup>Concentrations for these constituents are based on process knowledge.

NA = Not Analyzed.
C-1c  Waste in Piles: OAC 3745-56-50  
There are no waste piles at the Haverhill Plant.

C-1d  Landfilled Wastes: OAC 3745-57-14  
There are no landfills at the Haverhill Plant.

C-1e  Waste Incinerated and Wastes Used in Performance Tests: OAC 3745-50-62  
There are no incinerators at the Haverhill Plant.

C-If  Waste to be Land Treated: OAC 3745-50-44(c)(5), 3745-56-71, 3745-51- Appendix VIII  
There are no RCRA land treatment units at the Haverhill Plant.

C-1g  Waste in Miscellaneous Treatment Units: OAC 3745-50-44(c)(9)  
There are no miscellaneous treatment units at the Haverhill Plant.

C-2  WASTE ANALYSIS PLAN: OAC 3745-50-44, 3745-50-43, 3745-59-07  
The waste analysis plan describes the methodology and procedures that will be used to accurately characterize the physical and chemical properties of each hazardous waste stream generated at the facility in order to effectively treat and store the waste. The waste analysis plan establishes procedures on how the waste will be sampled, what analytical parameters will be tested, and the test method to be employed.

These procedures are provided in Tables C-3 through C-5. In addition, this plan specifies that annual analysis of the waste streams will be performed. This frequency was determined to be sufficient since the waste streams generated at the site are consistent in composition.

C-2a  Parameters and Rationale: OAC 3745-54-13  
For each hazardous waste, Table C-3 gives the parameters to be tested as well as the rationale for testing.

C-2b  Test Methods: OAC 3745-54-13  
Table C-4 presents the analytical methods to be used to test for each of the parameters specified in Table C-3.
<table>
<thead>
<tr>
<th>Waste</th>
<th>Parameter</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenol Distillation Column Bottoms</td>
<td>Ash content</td>
<td>Measure of suitability for use as a boiler fuel</td>
</tr>
<tr>
<td></td>
<td>Heating value</td>
<td>Measure of suitability for use as a boiler fuel</td>
</tr>
<tr>
<td></td>
<td>Flash point</td>
<td>Measure of ignitability characteristic</td>
</tr>
<tr>
<td></td>
<td>Specific gravity</td>
<td>Use in checking structural compatibility of storage tank and identifying changes in the wastestream</td>
</tr>
<tr>
<td></td>
<td>Compatibility</td>
<td>Used to ensure waste to waste compatibility</td>
</tr>
<tr>
<td>BPA Purification System Column Bottoms</td>
<td>Ash content</td>
<td>Measure of suitability for use as a boiler fuel</td>
</tr>
<tr>
<td></td>
<td>Heating value</td>
<td>Measure of suitability for use as a boiler fuel</td>
</tr>
<tr>
<td></td>
<td>Flash point</td>
<td>Measure of ignitability characteristic</td>
</tr>
<tr>
<td></td>
<td>Specific gravity</td>
<td>Use in checking structural compatibility of storage tank and identifying changes in the wastestream</td>
</tr>
<tr>
<td></td>
<td>Compatibility</td>
<td>Used to ensure waste to waste compatibility</td>
</tr>
<tr>
<td>Purification system light Hydrocarbons</td>
<td>TC Volatiles</td>
<td>Determine if material is characteristically hazardous.</td>
</tr>
<tr>
<td></td>
<td>Ash content</td>
<td>Measure of suitability for use as a boiler fuel</td>
</tr>
<tr>
<td></td>
<td>Heating value</td>
<td>Measure of suitability for use as a recycled boiler fuel</td>
</tr>
<tr>
<td></td>
<td>Flash point</td>
<td>Measure of ignitability characteristic</td>
</tr>
<tr>
<td></td>
<td>Specific gravity</td>
<td>Use in checking structural compatibility of storage tank and identifying changes in the wastestream</td>
</tr>
<tr>
<td></td>
<td>Compatibility</td>
<td>Used to ensure waste to waste compatibility</td>
</tr>
<tr>
<td>Phenol process spent emission scrubber fluid</td>
<td>TC Volatiles</td>
<td>Determine if material is characteristically hazardous.</td>
</tr>
<tr>
<td></td>
<td>Heating value</td>
<td>Measure of suitability for use as a recycled boiler fuel</td>
</tr>
<tr>
<td></td>
<td>Flash point</td>
<td>Measure of ignitability characteristic</td>
</tr>
<tr>
<td>AMS Distillation Column Bottoms</td>
<td>TC Volatiles</td>
<td>Determine if material is characteristically hazardous.</td>
</tr>
<tr>
<td></td>
<td>Ash content</td>
<td>Measure of suitability for use as a boiler fuel</td>
</tr>
<tr>
<td></td>
<td>Heating value</td>
<td>Measure of suitability for use as a recycled boiler fuel</td>
</tr>
<tr>
<td></td>
<td>Flash point</td>
<td>Measure of ignitability characteristic</td>
</tr>
<tr>
<td></td>
<td>Specific gravity</td>
<td>Use in checking structural compatibility of storage tank and identifying changes in the wastestream</td>
</tr>
<tr>
<td></td>
<td>Compatibility</td>
<td>Used to ensure waste to waste compatibility</td>
</tr>
<tr>
<td>Off-Specification for Off-Site Shipment</td>
<td>TCLP or Process Knowledge</td>
<td>Determine whether land disposal restricted</td>
</tr>
</tbody>
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# TABLE C-4. ANALYTICAL METHODS

<table>
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<tr>
<th>Parameter</th>
<th>Preparation</th>
<th>Analysis SW-846 Reference</th>
<th>Other Reference</th>
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</thead>
<tbody>
<tr>
<td>TCLP - Metals</td>
<td>SW-846 13114</td>
<td>Method 3010A/6010B</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Method 7470A (HG only)</td>
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</tr>
<tr>
<td>Specific Gravity5</td>
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<td>--</td>
<td>ASTM D4052 or D1217</td>
</tr>
<tr>
<td>Ash Content</td>
<td>--</td>
<td>--</td>
<td>ASTM D482 or ASTM 3174</td>
</tr>
<tr>
<td>Heating Value</td>
<td>--</td>
<td>--</td>
<td>ASTM D40</td>
</tr>
<tr>
<td>Flash Point</td>
<td>--</td>
<td>Method 1010</td>
<td>--</td>
</tr>
<tr>
<td>Compatibility</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Chloride</td>
<td>SW-846 9075 or ASTM D4208</td>
<td>Method 9075 (XRF) or 9056 (IC)</td>
<td>ASTM D4208 (SIE)</td>
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</table>

## METALS

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<th>Analysis SW-846 Reference</th>
</tr>
</thead>
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<tr>
<td>AS (Arsenic)</td>
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<td>Method 6010B</td>
</tr>
<tr>
<td>CD (Cadmium)</td>
<td>SW-846 3051 or 3052</td>
<td>Method 6010B</td>
</tr>
<tr>
<td>CR (Chromium)</td>
<td>SW-846 3051 or 3052</td>
<td>Method 6010B</td>
</tr>
<tr>
<td>PB (Lead)</td>
<td>SW-846 3051 or 3052</td>
<td>Method 6010B</td>
</tr>
</tbody>
</table>

---

1 One or more of the methods are used in a modified, amended, revised, or updated form in accordance with the following quotations from the Federal Register, February 8, 1990, pages 4440-4445, EPA Proposed Rules - Preamble to SW-846 3rd edition:

This notice, or the subsequent final rule, should not be constructed to require the use of SW-846, Third Edition methods except where specifically prescribed by regulation.

Except for those situations where the RCRA regulations specify use of a particular method, it is appropriate for the chemist to use judgment, tempered by experience, in selecting an appropriate set of methods from SW-846 or the scientific literature for preparing and analyzing a given sample.

Implicit in the preceding argument is the fact that SW-846 was designed largely for use in showing that a waste does not contain certain hazardous constituents or characteristics. In that regard, many SW-846 sample preparation methods are designed around trace analysis rather than the percent level determinations often required for concentrated wastes. These methods, however, might be suitable for percent level determination analysis when appropriately modified by the analyst.


3 Methods are from American Society for Testing and Materials.


5 Samples of LHC and HHC are typically analyzed for specific gravity on a quarterly basis.
C-2c  Sampling Methods: OAC 3745-54-13, OAC 3745-51-20

To ensure the integrity and representativeness of each sample, SW-846 sampling and decontamination procedures are employed. The phenol bottoms sample is hot when taken, and therefore is in the liquid phase. Splash shields, gloves and pyrex glass special equipment are used to obtain the phenol bottoms, light hydrocarbon samples, and soured compressor oil. These samples are taken directly from the drain pipe on the pump associated with the tank (column).

The sampling methods and sampling locations for each hazardous waste stream are given in Table C-5.
<table>
<thead>
<tr>
<th>Waste</th>
<th>Sample Container</th>
<th>Sample Type</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenol Distillation Column Bottoms</td>
<td>Glass</td>
<td>Grab</td>
<td>Sample from wash system vaporizer discharge pump. This is a representative sample of the phenol bottoms because the waste has been circulated through the recycle lines and thoroughly mixed.</td>
</tr>
<tr>
<td>BPA Purification System Column Bottoms</td>
<td>Glass</td>
<td>Grab</td>
<td>Sample from column bottoms discharge pump.</td>
</tr>
<tr>
<td>Purification system Light Hydrocarbons</td>
<td>Glass</td>
<td>Grab</td>
<td>Sample is taken from the recirculated reflux line in the discharge side of the reflux pump. This assures the waste was thoroughly mixed.</td>
</tr>
<tr>
<td>Phenol Process Spent Emission Scrubber Fluid</td>
<td>Glass</td>
<td>Grab</td>
<td>Sample is taken from the recirculated recycle line in the discharge side of the recycle pump. This assures the waste was thoroughly mixed.</td>
</tr>
<tr>
<td>AMS Distillation Column Bottoms</td>
<td>Glass</td>
<td>Grab</td>
<td>Sample from column bottoms discharge pump.</td>
</tr>
</tbody>
</table>
C-2d  **Frequency of Analysis: OAC 3745-54-13**

Hazardous wastes stored at the Haverhill Plant will be re-analyzed on an annual basis, or after any process change that could significantly alter waste properties. Tables C-3 through C-5 present the wastes to be tested, the sampling method, the parameters chosen for analysis, the rationale for their selection, and the analytical methods to be used.

C-2e  **Additional Requirements for Waste Generated Off Site: OAC 3745-54-13**

Not applicable; the Haverhill Plant will not accept any waste generated off site.

C-2f  **Additional Requirements for Ignitable, Reactive or Incompatible Wastes: OAC 3745-54-13, 3745-54-13**

There are no reactive or incompatible wastes stored in units requesting permits. The only ignitable waste stored is in Tank 2003-F. There are no wastestreams that could possibly enter this tank that would cause any of the ignition, reactivity, or incompatibility hazards as explained in OAC 3745-54-17. This is based on engineering literature and practical operating experience. The prevention procedures for nonchemical ignition are detailed in Section F-5.


C-3a  **Waste Characteristics: OAC 3745-54-13, 3745-59-07, 3745-59 30 through 35, 3745-59 41 through 43**

As characterized by the analytical results in Table C-2 and by process knowledge, hazardous wastes stored in the boiler fuel tank systems at the Haverhill facility are restricted from land disposal, as specified in OAC 3745-59. Any waste, including any tank sludges or residues, that does not meet any of the criteria for use as a boiler fuel as previously defined in Section C-1, and that contains substances restricted from land disposal, will be shipped off site with all the proper land disposal restriction notifications (Section C-3b).

Boiler feed wastes contain first third waste (e.g., K022) for which a standard has been set. Refer to Sections C-3(a), (b), and (c) for characterization handling methods and notifications/certifications and storage requirements.
C-3b Notification and Certification Requirements: OAC 3745-59-07

Proper notification and certification requirements will be used for a land disposal restricted waste generated on site and shipped off site according to OAC 3745-59-07. The notification will include the following:

- EPA hazardous waste code
- Manifest number
- Waste analysis data; if previously submitted, however, the data will be incorporated by reference
- Applicable treatment standards.

The facility maintains, for at least five years, documentation associated with notification and certification of land disposal restricted waste. These records are maintained at the facility.

C-3c Additional Requirements Pertaining to Storage of Restricted Wastes: OAC 3745-59-50

The Haverhill Plant stores hazardous wastes that are restricted from land disposal in accordance with OAC 3745-59-50. These wastes are stored on site in tanks or containers for the sole purpose of accumulating sufficient quantities of hazardous waste necessary to facilitate proper recovery, treatment, or disposal. Operational records are maintained to identify the contents of the tank, the quantity of each hazardous waste stream entering the tank, and the date of accumulation. These records are maintained at the facility.

Information on the tank contents, quantity of waste received, and date of accumulation for each of the tanks is kept in operating records maintained at the facility.

C-4 WASTE ANALYSIS FOR BIF RULE COMPLIANCE

In the past, the plant operated four hazardous waste burning boilers in compliance with 40 CFR 266, Subpart H: The BIF Rule. Waste analysis to demonstrate compliance with the BIF Rule was described in Section C-4. In 2009, Haverhill notified EPA that the boilers comply with 40 CFR 63, Subpart EEE (The HWC MACT Standards) including waste analysis requirements. Therefore, waste analysis associated with the boilers has been removed from this plan.
EXHIBIT C-1

TANK SYSTEMS 2104-F AND 2105-F WASTE FLOW DIAGRAM
ATTACHMENT A
Heavy Hydrocarbon Flow Diagram

Phenol Distillation Column Bottoms (K022)

BPA Purification System Column Bottoms (non-hazardous)

2104-F

2108-F

2105-F

Facility Boiler 2001-UC

TANK SYSTEMS 2104-F AND 2105-F FLOW DIAGRAM

Exhibit C-1
Heavy Hydrocarbon Flow Diagram
EXHIBIT C-2

TANK SYSTEM 2003-F WASTE FLOW DIAGRAM
ATTACHMENT B
Light Hydrocarbon Flow Diagram

Phenol Process
Spent Emission
Scrubber Fluid
(D001)

AMS Distillation
Column Bottoms
(D001)

Purification System
Light Hydrocarbons
(D001)

2003-F

Facility Boilers
2001-UC
2001-UE

TANK SYSTEM 2003-F FLOW DIAGRAM

Exhibit C-2
Light Hydrocarbon Flow Diagram

Ohio EPA DMWM DEC 16 2011 00076
EXHIBIT C-3

ANALYTICAL DATA FOR TANK SYSTEMS
LABORATORY REPORT

Client
Sunoco Chemical
P.O. Box 180
Haverhill, Ohio 45630-0180

Order Number
0605897

Project Number
Tri Chemicals

Issued
Monday, July 03, 2006

Total Number of Pages
7

Approved By:

Bassam Youssef
Laboratory Manager

NELAC Accreditation #E87688
A2LA ISO/IEC 17025 Accreditation #0724.01
Sample Summary

Client: Sunoco Chemical
Order Number: 0605897

<table>
<thead>
<tr>
<th>Laboratory ID</th>
<th>Client ID</th>
<th>Matrix</th>
<th>Sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>0605897-01</td>
<td>LHC</td>
<td>Liquid</td>
<td>6/7/2006</td>
</tr>
<tr>
<td>0605897-03</td>
<td>HHC</td>
<td>Liquid</td>
<td>6/7/2006</td>
</tr>
</tbody>
</table>
Report Narrative

Client: Sunoco Chemical
Order Number: 0605897

Solid sample results are reported on a wet weight basis except as noted. No problems were encountered during analysis of this order number, except as noted.

* Exceeded calibration range.

The test results meet the requirements of the NELAC and A2LA standards, except where noted. The information contained in this analytical report is the sole property of Summit Environmental Technologies, Inc. and that of the client. It cannot be reproduced in any form without the consent of Summit Environmental Technologies, Inc. or the client for which this report was issued. The results contained in this report are only representative of the samples received. Conditions can vary at different times and at different sampling conditions. Summit Environmental Technologies, Inc. is not responsible for use or interpretation of the data included herein.
November 09, 2005

Client: Sunoco Chemical
Address: P.O. Box 180
        Haverhill, Ohio 45630-0180

Date Collected: 10/20/2005
Date Received: 10/21/2005
Project #: N/A
Client ID #: 2003 F LHC
Laboratory ID #: 0509625-01
Analysis: VOC Analysis (Method 624)
Method: 624
Matrix: Liquid
Date of Analysis: 10/21/2005
Analyst: MO

VOC Analysis (Method 624)

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<tr>
<th>Parameter</th>
<th>Reporting Limit (ug/l)</th>
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<td>Alpha-methyl styrene</td>
<td>25000.0</td>
<td>474,500,000.0*</td>
</tr>
</tbody>
</table>

*Exceeded calibration range.
LABORATORY REPORT

April 20, 2006

Client: Sunoco Chemical
Address: P.O. Box 180
         Haverhill, Ohio 45630-0180

Date Collected: 4/10/2006
Date Received: 4/11/2006
Project #: N/A
Client ID #: 2003F
Laboratory ID #: 0603662-02
Analysis: Sunoco(PollutantList)
Method: SW-846
Matrix: Liquid
Date of Analysis: 4/14/2006
Analyzer: MS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Reporting Limit (mg/L)</th>
<th>Results (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methanol</td>
<td>2000.0</td>
<td>BRL</td>
</tr>
<tr>
<td>Acetone</td>
<td>250.0</td>
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<tr>
<td>Benzene</td>
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<td>1703.0</td>
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<tr>
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<td>BRL</td>
</tr>
<tr>
<td>o-Toluidine</td>
<td>100.0</td>
<td>BRL</td>
</tr>
<tr>
<td>7,12-Dimethylbenz(a)anthracene</td>
<td>100.0</td>
<td>BRL</td>
</tr>
<tr>
<td>Styrene</td>
<td>50.0</td>
<td>1515.0</td>
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<tr>
<td>N-propylibenzene</td>
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<td>mesityl Oxide</td>
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<tr>
<td>Benzog,h,i)perylene</td>
<td>100.0</td>
<td>BRL</td>
</tr>
<tr>
<td>Mercury</td>
<td>0.020</td>
<td>BRL</td>
</tr>
<tr>
<td>Lead</td>
<td>0.50</td>
<td>BRL</td>
</tr>
</tbody>
</table>

Ohio EPA DM411 DEC 16 2011

Laboratory Manager: [Signature]
# Laboratory Report

**April 20, 2006**

Client: Sunoco Chemical  
Address: P.O. Box 180  
Haverhill, Ohio 45630-0180

Date Collected: 4/10/2006  
Date Received: 4/11/2006  
Project #: N/A  
Client ID #: 2104F  
Laboratory ID #: 0603662-01  
Analysis: Sunoco(PollutantList)  
Method: SW-846  
Matrix: Liquid  
Date of Analysis: 4/17/2006  
Analyt.: MS

### Sunoco(PollutantList)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Reporting Limit (mg/L)</th>
<th>Results (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Methanol</td>
<td>2000.0</td>
<td>BRL</td>
</tr>
<tr>
<td>Acetone</td>
<td>250.0</td>
<td>BRL</td>
</tr>
<tr>
<td>Benzene</td>
<td>50.0</td>
<td>BRL</td>
</tr>
<tr>
<td>Toluene</td>
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<td>260.0</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>50.0</td>
<td>2553.0</td>
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<tr>
<td>Cumene</td>
<td>50.0</td>
<td>3592.0</td>
</tr>
<tr>
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<td>1667.0</td>
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<td>Butylbenzene</td>
<td>50.0</td>
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<tr>
<td>Phenol</td>
<td>100.0</td>
<td>48398.0</td>
</tr>
<tr>
<td>Acetophenone</td>
<td>100.0</td>
<td>43519.0</td>
</tr>
<tr>
<td>Bisphenol A</td>
<td>100.0</td>
<td>33588.0</td>
</tr>
<tr>
<td>☐ o-Toluidine</td>
<td>100.0</td>
<td>BRL</td>
</tr>
<tr>
<td>☐ 1,12-Dimethylbenz(a)anthracene</td>
<td>100.0</td>
<td>BRL</td>
</tr>
<tr>
<td>Styrene</td>
<td>50.0</td>
<td>BRL</td>
</tr>
<tr>
<td>N-propylbenzene</td>
<td>50.0</td>
<td>57.0</td>
</tr>
<tr>
<td>☐ mesityl Oxide</td>
<td>50.0</td>
<td>690.0</td>
</tr>
<tr>
<td>☐ Benzo(g,h,i)perylene</td>
<td>100.0</td>
<td>BRL</td>
</tr>
<tr>
<td>Mercury</td>
<td>0.020</td>
<td>BRL</td>
</tr>
<tr>
<td>Lead</td>
<td>0.50</td>
<td>BRL</td>
</tr>
</tbody>
</table>

Laboratory Manager: [Signature]  
Ohio EPA DMWM DEC 16 2011

Web Site: www.ne lak.com
July 03, 2006

Client: Sunoco Chemical  
Address: P.O. Box 180  
Haverhill, Ohio 45630-0180

Date Collected: 6/7/2006  
Date Received: 6/7/2006  
Project #: Tri Chemicals  
Client ID #: LHC  
Laboratory ID #: 0605897-01  
Analysis: Sunoco(S-VOCList)8270  
Method: 8270  
Matrix: Liquid  
Date of Analysis: 6/21/2006  
Analyst: MS

**Sunoco(S-VOCList)8270**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Reporting Limit (mg/L)</th>
<th>Results (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dicumyl Peroxide</td>
<td>10000.0</td>
<td>28619.0</td>
</tr>
<tr>
<td>Cumene hydroperoxide</td>
<td>10000.0</td>
<td>19520.0</td>
</tr>
<tr>
<td>Picoline</td>
<td>10000.0</td>
<td>BRL</td>
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<tr>
<td>o-Toluidine</td>
<td>10000.0</td>
<td>BRL</td>
</tr>
<tr>
<td>Acetophenone</td>
<td>10000.0</td>
<td>BRL</td>
</tr>
<tr>
<td>Diphenylamine</td>
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<td>BRL</td>
</tr>
<tr>
<td>4-Cumylphenol</td>
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<td>BRL</td>
</tr>
<tr>
<td>Bisphenol A</td>
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<td>BRL</td>
</tr>
<tr>
<td>1,12-Benzperylene</td>
<td>10000.0</td>
<td>BRL</td>
</tr>
<tr>
<td>Phenol</td>
<td>10000.0</td>
<td>BRL</td>
</tr>
<tr>
<td>7,12-Dimethylbenz(a)anthracene</td>
<td>10000.0</td>
<td>BRL</td>
</tr>
<tr>
<td>Benzo(g,h,i)perylene</td>
<td>10000.0</td>
<td>BRL</td>
</tr>
<tr>
<td>Toluene-2,4-diisocyanate</td>
<td>10000.0</td>
<td>BRL</td>
</tr>
</tbody>
</table>
July 03, 2006

Client: Sunoco Chemical
Address: P.O. Box 180
        Haverhill, Ohio 45630-0180.

Date Collected: 6/7/2006
Date Received: 6/7/2006
Project #: Tri Chemicals
Client ID #: LHC
Laboratory ID #: 0605897-01
Analysis: Sunoco(VOCList)8260
Method: 8260
Matrix: Liquid
Date of Analysis: 6/30/2006
Analyst: MO

### Sunoco(VOCList)8260

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Reporting Limit (mg/l)</th>
<th>Results (mg/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl Acetate</td>
<td>500.0</td>
<td>BRL</td>
</tr>
<tr>
<td>Amyl acetate</td>
<td>500.0</td>
<td>BRL</td>
</tr>
<tr>
<td>Mesityl Oxide</td>
<td>500.0</td>
<td>BRL</td>
</tr>
<tr>
<td>Alpha Methyl Styrene</td>
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<td>327600.0 *</td>
</tr>
<tr>
<td>Acetone</td>
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</tr>
<tr>
<td>Benzene</td>
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<td>Toluene</td>
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<td>Ethylbenzene</td>
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<tr>
<td>Cumene</td>
<td>500.0</td>
<td>BRL</td>
</tr>
<tr>
<td>Butylbenzene</td>
<td>500.0</td>
<td>BRL</td>
</tr>
</tbody>
</table>
**Summit Environmental Technologies, Inc.**

*Analytical Laboratories*

July 03, 2006

Client: Sunoco Chemical  
Address: P.O. Box 180  
Haverhill, Ohio 45630-0180

Date Collected: 6/7/2006  
Date Received: 6/21/2006  
Project #: Tri Chemicals  
Client ID #: HHC  
Laboratory ID #: 0605897-03  
Analysis: Sunoco(S-VOCList)8270  
Method: 8270  
Matrix: Liquid  
Date of Analysis: 6/21/2006  
Analyst: MS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Reporting Limit (mg/L)</th>
<th>Results (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dicumyl Peroxide</td>
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<td>Cumene hydroperoxide</td>
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</tr>
<tr>
<td>Picoline</td>
<td>10000.0</td>
<td>BRL</td>
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<tr>
<td>o-Toluidine</td>
<td>10000.0</td>
<td>BRL</td>
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<td>Acetophenone</td>
<td>10000.0</td>
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<td>10000.0</td>
<td>BRL</td>
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<tr>
<td>Bisphenol A</td>
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<tr>
<td>1,12-Benzperylenne</td>
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<td>BRL</td>
</tr>
<tr>
<td>Phenol</td>
<td>10000.0</td>
<td>29827.0</td>
</tr>
<tr>
<td>7,12-Dimethylbenz(a)anthracene</td>
<td>10000.0</td>
<td>BRL</td>
</tr>
<tr>
<td>Benzo(g.h.i)perylenne</td>
<td>10000.0</td>
<td>BRL</td>
</tr>
<tr>
<td>Toluene-2,4-diisocyanate</td>
<td>10000.0</td>
<td>BRL</td>
</tr>
</tbody>
</table>
July 03, 2006

Client: Sunoco Chemical  
Address: P.O. Box 180  
         Haverhill, Ohio 45630-0180

Date Collected: 6/7/2006
Date Received: 6/7/2006
Project #: Tri Chemicals
Client ID #: HHC
Laboratory ID #: 0605897-03
Analysis: Sunoco(VOCList)#260
Method: 8260
Matrix: Liquid
Date of Analysis: 6/28/2006
Analyst: MO

### Sunoco(VOCList)#260

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<tr>
<td>Isopropyl Acetate</td>
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</tr>
<tr>
<td>Amyl acetate</td>
<td>250.0</td>
<td>BRL</td>
</tr>
<tr>
<td>mesityl Oxide</td>
<td>250.0</td>
<td>BRL</td>
</tr>
<tr>
<td>Alpha Methyl Styrene</td>
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<td>2260.0</td>
</tr>
<tr>
<td>Acetone</td>
<td>5000.0</td>
<td>BRL</td>
</tr>
<tr>
<td>Benzene</td>
<td>250.0</td>
<td>BRL</td>
</tr>
<tr>
<td>Toluene</td>
<td>250.0</td>
<td>260.0</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>250.0</td>
<td>1320.0</td>
</tr>
<tr>
<td>Cumene</td>
<td>250.0</td>
<td>BRL</td>
</tr>
<tr>
<td>Butylbenzene</td>
<td>250.0</td>
<td>BRL</td>
</tr>
</tbody>
</table>
Summit Environmental Technologies, Inc.
Cooler Receipt Form

Client: ________________
Order Number: 0685897
Date Received: 6/7/07
Time Received: 3:00 PM
Number of Coolers/Boxes/Envelopes: ________________
Logged In by: JM
Shipper (circle): FED EX, UPS, DHL, Airborne, US Postal, Courier, Walk-in, Pickup, Other: ________________
Packaging (circle): Peanuts, Bubble Wrap, Paper, Foam, None, Other: ________________
Tape on cooler/box: Y N N/A
Custody Seals intact: Y N N/A
C-O-C in plastic: Y N N/A
Ice / Blue ice present: Y N N/A
Temperature: 10°C N/A
C-O-C filled out properly: Y N N/A
Samples in separate bags: Y N N/A
Sample containers intact: Y N N/A
Sample label(s) complete (ID, date, time, etc.): Y N N/A
Label(s) agree with C-O-C: Y N N/A
Correct containers used: Y N N/A
Samples preserved properly: Y N N/A
Sufficient sample received: Y N N/A
Bubbles present in 40 mL vials: Y N N/A

*If no, list broken sample(s): ________________

Was client contacted about samples: Y N
Will client send new samples: Y N

Client contact: ________________
Date/Time: ________________

Comments: ________________

00088
**Client Name:** Ewing Chemical  
**Project Name:** TRI Chemicals  
**Client Address:**

**Client Phone No.:** 740-592-5469  
**Client Fax No.:** 740-593-5376  
**Contact Person:** Carl Henderson  
**Sampled by:**

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<th>Time Collected</th>
<th>Grab</th>
<th>Matrix Sampled</th>
<th>TL/SL/IQ</th>
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<td>L</td>
<td>y*</td>
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<td>x</td>
<td>x</td>
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<td>2</td>
<td>HHC</td>
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**Relinquished by:** 
- **Date:** 12-06-2001  
- **Time:** 6:10  
- **Received by:** Brian Detten  
- **Date:** 6-16-02  
- **Time:** 16:10  

**Received in lab by:**  
- **Date:** 6-7-02  
- **Time:** 5:00

**Notes/Comments:**

White and yellow pages should accompany samples to the laboratory. The client retains the pink page.
SECTION D
PROCESS INFORMATION
## SECTION D. PROCESS INFORMATION

### TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>SECTION D. PROCESS INFORMATION</td>
<td>..................................................</td>
</tr>
<tr>
<td>D-1 CONTAINERS: OAC 3745-50-44(c)(1), 3745-55-70 through 78</td>
<td>..................................................</td>
</tr>
<tr>
<td>D-2 TANK SYSTEMS: OAC 3745-50-44(c)(2), 3745-55-91 through 94</td>
<td>..................................................</td>
</tr>
<tr>
<td>D-2a Tank Systems Description: OAC 3745-55-44, 3745-55-94</td>
<td>..................................................</td>
</tr>
<tr>
<td>D-2a(1) Dimensions and Capacity of Each Tank: OAC 3745-50-44(c)(2)</td>
<td>..................................................</td>
</tr>
<tr>
<td>D-2a(2) Description of Feed Systems, Safety Cutoffs, Bypass Systems, and Pressure Controls: OAC 3745-50-44(c)(2), 3745-55-94</td>
<td>..................................................</td>
</tr>
<tr>
<td>D-2a(3) Diagram of Piping, Instrumentation and Process Flow: OAC 3745-50-44(c)(2)</td>
<td>..................................................</td>
</tr>
<tr>
<td>D-2a(4) Ignitable, Reactive, and Incompatible Wastes: OAC 3745-50-44(c)(2), OAC 3745-54-17, 3745-55-98, 3745-55-99</td>
<td>..................................................</td>
</tr>
<tr>
<td>D-2a(5) External Corrosion Protection</td>
<td>..................................................</td>
</tr>
<tr>
<td>D-2b Existing Tank System: OAC 3745-55-91, 3745-50-44(c)(2)</td>
<td>..................................................</td>
</tr>
<tr>
<td>D-2c New Tank Systems: OAC 3745-55-92, 3745-50-44(c)(2)</td>
<td>..................................................</td>
</tr>
<tr>
<td>D-2d Containment and Detection of Releases: OAC 3745-55-93</td>
<td>..................................................</td>
</tr>
<tr>
<td>D-2d(1) Plans and Description of Design, Construction and Operation of Secondary Containment Systems: OAC 3745-55-93, 3745-55-92(c)(2)</td>
<td>..................................................</td>
</tr>
<tr>
<td>D-2d(2) Requirements for Tank Systems Until Secondary Containment is Implemented: OAC 3745-55-93</td>
<td>..................................................</td>
</tr>
<tr>
<td>D-2d(3) Variance from Secondary Containment Requirements: OAC 3745-55-93, 3745-50-44(c)(2)</td>
<td>..................................................</td>
</tr>
<tr>
<td>D-2e Controls and Practices to Prevent Spills and Overflows: OAC 3745-55-94, 3745-55-94, 3745-50-44(c)(2)</td>
<td>..................................................</td>
</tr>
<tr>
<td>D-3 WASTE PILES: OAC 3745-50-44(c)(4), 3745-56-50 through 60</td>
<td>..................................................</td>
</tr>
<tr>
<td>D-4 SURFACE IMPOUNDMENTS</td>
<td>..................................................</td>
</tr>
<tr>
<td>D-5 INCINERATORS: OAC 3745-50-44(c)(8), 3745-57-40 through 51</td>
<td>..................................................</td>
</tr>
<tr>
<td>D-6 LANDFILLS: OAC 3745-50-44(c)(7), 3745-57-02 through 18</td>
<td>..................................................</td>
</tr>
<tr>
<td>D-7 LAND TREATMENT: OAC 3745-50-44(c)(5), 3745-56-70 through 83</td>
<td>..................................................</td>
</tr>
<tr>
<td>D-8 MISCELLANEOUS UNITS: OAC 3745-57-91, 3745-50-44(c)(9)</td>
<td>..................................................</td>
</tr>
</tbody>
</table>
D-9  BOILERS AND INDUSTRIAL FURNACES BURNING HAZARDOUS WASTE
   [OAC RULE 3745-50-44(C)(9)] ............................................................... D-10
   D-9a  Direct Transfer ................................................................. D-11
   D-9b  Residues ........................................................................ D-11
SECTION D. PROCESS INFORMATION

LIST OF TABLES

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-1</td>
<td>D-3</td>
</tr>
<tr>
<td>TANK SYSTEM DIMENSIONS AND CAPACITIES</td>
<td></td>
</tr>
<tr>
<td>D-2</td>
<td>D-4</td>
</tr>
<tr>
<td>TANK SYSTEM ALARMS</td>
<td></td>
</tr>
<tr>
<td>D-3</td>
<td>D-5</td>
</tr>
<tr>
<td>TANK SYSTEM OPERATING INFORMATION</td>
<td></td>
</tr>
<tr>
<td>D-4</td>
<td>D-6</td>
</tr>
<tr>
<td>INSTALLATION DATES OF TANKS</td>
<td></td>
</tr>
<tr>
<td>D-5</td>
<td>D-7</td>
</tr>
<tr>
<td>TANK CAPACITIES VERSUS CONTAINMENT CAPACITIES</td>
<td></td>
</tr>
</tbody>
</table>
SECTION D. PROCESS INFORMATION

LIST OF EXHIBITS

<table>
<thead>
<tr>
<th>Exhibit D-1</th>
<th>Tank Systems 2104-F and 2105-F Flow Diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exhibit D-2</td>
<td>Tank System 2003-F Flow Diagram</td>
</tr>
<tr>
<td>Exhibit D-3</td>
<td>Batch Flow Process Diagram Tanks 2104-F and 2105-F</td>
</tr>
<tr>
<td>Exhibit D-4</td>
<td>PID - Tanks 2104-F and 2105-F</td>
</tr>
<tr>
<td>Exhibit D-5</td>
<td>PID - Tank 2003-F</td>
</tr>
<tr>
<td>Exhibit D-6</td>
<td>Containment Coating Specification</td>
</tr>
</tbody>
</table>
SECTION D. PROCESS INFORMATION

LIST OF ATTACHMENTS

Attachment D-1 Tank Technical Data Sheets
Attachment D-2 Tanks 2104-F and 2105-F Design Drawings
Attachment D-3 Tank 2003-F Design Drawings
Attachment D-4 Secondary Containment Capacity Calculations
Attachment D-5 Tank Assessments (2104-F, 2105-F, and 2003-F)
Attachment D-6 Tank Assessments (2108-F)
SECTION D. PROCESS INFORMATION

This section provides details on the regulated units identified in this permit application.

D-1 CONTAINERS: OAC 3745-50-44(c)(1), 3745-55-70 through 78
Containers are used to accumulate hazardous wastes on site for 90 days or less. Therefore, as provided in OAC 3745-52-34, container handling/storage areas are not identified as permitted units.

D-2 TANK SYSTEMS: OAC 3745-50-44(c)(2), 3745-55-91 through 94

D-2a Tank Systems Description: OAC 3745-55-44, 3745-55-94
As noted in Section B of this permit application, the facility has three existing hazardous waste storage tank systems to be permitted under OEPA’s RCRA program. The three tank systems (OAC 3745-55-90) are as follows:

<table>
<thead>
<tr>
<th>I.D. #</th>
<th>Capacity</th>
<th>Contents</th>
<th>Estimated Annual Quantity of Waste Report and Part A</th>
</tr>
</thead>
<tbody>
<tr>
<td>2104-F</td>
<td>200,000 gallons</td>
<td>Phenol Distillation Column Bottoms (K022)</td>
<td>(1)</td>
</tr>
<tr>
<td>2105-F</td>
<td>250,000 gallons</td>
<td>Phenol Distillation Column Bottoms (K022)</td>
<td>(1)</td>
</tr>
<tr>
<td>2003-F</td>
<td>200,000 gallons</td>
<td>Light Hydrocarbon Waste (D001,)</td>
<td>10,370 tons</td>
</tr>
</tbody>
</table>

(1) As listed in the Part A Application, the quantity of K022 waste stored in 2104-F and 2105-F is 36,490 tons.

Technical data sheets for these tanks are provided in Attachment D-1.

Tank Systems 2104-F and 2105-F
Tanks 2104-F and 2105-F are accumulation/storage tanks for K022 listed hazardous waste fuels. The accumulated hazardous waste fuels are fed to the Utility boilers for energy recovery. The tank systems consist of two adjacent steel tanks and three discharge pumps. The locations of the
tanks are shown in Exhibit B-2. Technical Data Sheets are located in Attachment D-1. Exhibit D-1 presents the process flow diagram for these tanks. Tank design drawings are provided in Attachment D-2.

The tanks receive distillation column bottoms (K022) generated from the phenol unit. The waste is received via overhead and ground-level piping that extends from the point of generation to Tanks 2104-F and 2105-F.

The wastes that are pumped to the on-site industrial boilers for heat recovery include:

- Phenol distillation column bottoms (K022); and
- BPA purification system column bottoms (nonhazardous).

**Tank System 2003-F**

Tank System 2003-F consists of an aboveground stainless steel tank, two discharge pumps, and associated piping. The tank is used to accumulate/store hazardous waste fuels prior to feeding to Utility boilers. Tank 2003-F is located adjacent to Tanks 2104-F and 2105-F, as shown in Exhibit B-2. A Technical Data Sheet is provided in Attachment D-1. Tank design drawings are provided in Attachment D-3. Exhibit D-2 presents a process flow diagram for this tank system.

Tank 2003-F receives several light hydrocarbon process waste streams. They are:

- Phenol process spent emission scrubber fluid (D001);
- AMS distillation column bottoms (D001); and
- Purification system light hydrocarbons (D001).

As shown in Exhibit D-2, the incoming waste streams to 2003-F are ignitable (D001). Aboveground piping is used to transport the waste fuels from the point of generation in the phenol unit to Tank 2003-F. The 2003-F tank dike area is paved with concrete. Surface drainage from the dike area is collected, tested, and manually drained for further processing in biological treatment or to the stormwater ditch system.

Feed pumps are used to feed the contents of Tank 2003-F to the Utility boilers. These pumps are located directly south of Tank 2003-F within a separate concrete secondary containment area.
D-2a(1) Dimensions and Capacity of Each Tank: OAC 3745-50-44(c)(2)
Tank system dimensions and capacities are presented in Table D-1 for tanks 2104-F, 2105-F, and 2003-F.

<table>
<thead>
<tr>
<th>Tank Number</th>
<th>Dimensions</th>
<th>Design Shell Thickness</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2104-F</td>
<td>32'8&quot; ID × 32'0&quot; height</td>
<td>0.4375 in.</td>
<td>200,000 gallons</td>
</tr>
<tr>
<td>2105-F</td>
<td>36'4&quot; ID × 32'3&quot; height</td>
<td>0.1875 in.</td>
<td>250,000 gallons</td>
</tr>
<tr>
<td>2003-F</td>
<td>32'8&quot; ID × 32'0&quot; height</td>
<td>0.1875 in.</td>
<td>200,000 gallons</td>
</tr>
</tbody>
</table>

D-2a(2) Description of Feed Systems, Safety Cutoffs, Bypass Systems, and Pressure Controls: OAC 3745-50-44(c)(2), 3745-55-94

The following information is provided in response to OAC 3745-50-44(c)(2), and to demonstrate compliance with the requirements of OAC 3745-55-94.

Table D-2 presents a listing of tanks and associated high level alarms.
TABLE D-2. TANK SYSTEM ALARMS

<table>
<thead>
<tr>
<th>Tank</th>
<th>Alarm</th>
</tr>
</thead>
<tbody>
<tr>
<td>2104-F</td>
<td>L12104F</td>
</tr>
<tr>
<td>2105-F</td>
<td>L12105F</td>
</tr>
<tr>
<td>2003-F</td>
<td>HL2003F</td>
</tr>
</tbody>
</table>

**Tanks 2104-F and 2105-F**

These tanks share common pumps and piping systems. Wastes are accumulated in either tank to maintain a working volume of 50-60 percent capacity. Most HHC waste streams stored in 2104-F and 2105-F are normally generated on a continuous basis in the production units. Haverhill stores and feeds these waste streams to the boilers on a batch basis, using 2104-F and 2105-F in conjunction with the 90-day accumulation tank 2108-F. In general, one tank will receive and accumulate as a batch all HHC wastes generated by the facility. One of the other tanks will serve as a feed tank for the boilers. The third tank will be used for temporary storage of HHC wastes that are generated after a complete batch is accumulated and while the sampling and analysis is occurring. Exhibit D-3 presents the batch flow process for these tanks. To prevent overfilling, continuous internal levels are maintained. Because the tank can only be filled via known capacity pumping, the continuous monitoring ensures that the tank is not overfilled. High level alarms have been installed on these tanks. Both tanks are equipped with a closed vent vapor collection system. Since either tank can be used, a tank can be bypassed if necessary. Emergency and spill control procedures are described in Sections F and G of this permit application.

**Tank 2003-F**

The liquid level in Tank 2003-F is maintained in the range of 50-60 percent capacity under typical operations. The waste fuels are then fed to the boilers by manually controlling the discharge pumps. The tank is equipped with an external level gauge, which is monitored at least twice in every 24 hour period, and a high level alarm to prevent overfilling. The tank is operated at atmospheric pressure and does not include pressure controls, bypass systems, or safety cutoffs. Because the tank can only be filled via known capacity pumping, however, the noted frequent monitoring ensures that the tank is not overfilled. The tank is equipped with an internal floating roof. This minimizes atmospheric venting. Emergency and spill control procedures are described in Sections F and G of this permit application.
D-2a(3)  **Diagram of Piping, Instrumentation and Process Flow: OAC 3745-50-44(c)(2)**

In response to OAC 3745-50-44, piping and instrumentation diagrams for Tanks 2104-F, 2105-F, and 2003-F and associated pumps are provided in Exhibits D-4 and D-5. In addition, simplified conceptual process flow diagrams are provided in Exhibits D-1, D-2, and D-3. A description of each inflow waste stream is provided in Section D-2a of this permit application.

D-2a(4)  **Ignitable, Reactive, and Incompatible Wastes: OAC 3745-50-44(c)(2), OAC 3745-54-17, 3745-55-98, 3745-55-99**

The required information is presented in Table D-3 for tanks 2104-F, 2105-F, and 2003-F. The aboveground storage tanks are located at least 50 feet from the property line, in accordance with National Fire Protection Association buffer zone requirements. Ignitable wastes are handled so that they do not:

1) Become subject to extreme heat or pressure, fire or explosion, or a violent reaction. The tanks are vented and kept at atmospheric temperature to minimize the potential for pressure build up. Smoking and open flames are prohibited near the waste tanks.

2) Produce uncontrolled toxic mists, fumes, dusts, or gases in quantities sufficient to threaten human health.

3) Produce uncontrolled fires or gases in quantities sufficient to pose a risk of fire or explosion. “No Smoking” signs are posted in areas where wastes are handled or stored.

Additionally, Section F-5 provides detailed information concerning the prevention of reaction of ignitable, reactive and incompatible waste.

### TABLE D-3. TANK SYSTEM OPERATING INFORMATION

<table>
<thead>
<tr>
<th>Tank</th>
<th>Operating Pressure</th>
<th>Operating Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>2104-F</td>
<td>Atmospheric</td>
<td>&lt;234°F</td>
</tr>
<tr>
<td>2105-F</td>
<td>Atmospheric</td>
<td>&lt;234°F</td>
</tr>
<tr>
<td>2003-F</td>
<td>Atmospheric</td>
<td>Ambient</td>
</tr>
</tbody>
</table>

As provided in OAC 3745-55-98, the ignitable wastes stored in these tanks are managed (i.e., through procedures, practices, and facilities) to protect them from any material or condition that may cause them to ignite. The procedures/practices are described in Sections F and G.
D-2a(5) **External Corrosion Protection**
Both heavy ends tanks (2104-F and 2105-F) have been painted to prevent corrosion of the tank surfaces. These tanks will be inspected per the API 653 Standards as required by OAC 3745-55-92. Corrosion protection will be applied as necessary based on the results of the API 653 inspections. 2003-F is constructed of stainless steel and will not be painted. All the hazardous wastes tanks at the facility are inspected daily for signs of wear, corrosion, or leakage.

D-2b **Existing Tank System: OAC 3745-55-91, 3745-50-44(c)(2)**
Table D-4 identifies the year of installation for each tank system. Based on the date of installation, existing tank systems include 2104-F, 2105-F, and 2003-F. All of these existing tank systems have secondary containment meeting the requirements of OAC 3745-55-93. A written assessment of their integrity is included as Attachment D-5. Section D-2d of this permit application provides a detailed description of the secondary containment areas.

<table>
<thead>
<tr>
<th>Tank</th>
<th>Year Installed</th>
</tr>
</thead>
<tbody>
<tr>
<td>2104-F</td>
<td>1968</td>
</tr>
<tr>
<td>2105-F</td>
<td>1968</td>
</tr>
<tr>
<td>2003-F</td>
<td>1968*</td>
</tr>
</tbody>
</table>

*Tank 2003-F was originally put in service in 1968. This tank was replaced with a new tank in 2006.

D-2c **New Tank Systems: OAC 3745-55-92, 3745-50-44(c)(2)**
New tank systems require certified assessments prior to being placed into service.

D-2d **Containment and Detection of Releases: OAC 3745-55-93**
In compliance with the requirements of OAC 3745-55-93, secondary containment has been provided for Tanks 2104-F, 2105-F, and 2003-F.


D-2d(l)(a) **Tank Age Determination: OAC 3745-55-93, 3745-55-92(c)(2)**
Secondary containment, as required in OAC 3745-55-93, has been provided for the storage tanks
identified in this permit application. Therefore, compliance with the intent of tank age
determination has been achieved.

D-2d(l)(b) and (c) Requirements of Secondary Containment and
Leak Detection: OAC 3745-55-93, 3745-55-92(c)(2)

In response to OAC 3745-55-92(c)(2), the design drawings for secondary containment and leak
detection are provided in Attachments D-2 and D-3 for the tank systems. These secondary
containment and leak detection systems comply with the requirement of OAC 3745-55-93.
Additionally, Attachment D-6 presents the tank assessment for Tank 2108-F that was installed
within the secondary containment of Tanks 2104-F and 2105-F. This assessment presents
information showing that the addition of 2108-F maintains the integrity of the containment pad.

For Tanks 2104-F, 2105-F, and 2003-F, the secondary containment system consists of exterior
diked areas that are paved with concrete and coated with a material compatible with the wastes
stored.

Exhibit D-6 presents the specifications of this coating. Expansion joints within the concrete area
include rubber water stops. In addition, each of these tanks is constructed with a double bottom
plate for leak detection and collection (valved drain system).

Therefore, releases from any part of the tank will be visually detected within the secondary
containment area.

The secondary containment facilities for each storage tank are designed with capacities greater
than that of the tanks. Table D-5 presents a comparison of tank capacities versus secondary
capacities. Secondary containment calculations are presented in Attachment D-4 for 2104-F,
2105-F, and 2003-F.

<table>
<thead>
<tr>
<th>Tank</th>
<th>Tank Capacity (gallons)</th>
<th>Secondary Containment Capacity (gallons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2104-F</td>
<td>200,000</td>
<td>1,049,302</td>
</tr>
<tr>
<td>2105-F</td>
<td>250,000</td>
<td>1,049,302</td>
</tr>
<tr>
<td>2003-F</td>
<td>200,000</td>
<td>482,849</td>
</tr>
</tbody>
</table>
The diked secondary containment areas prevent surface water run-on from outside the secondary containment area. In the secondary calculations, precipitation data from a 25-year, 24-hour rainfall event was obtained from the U.S. Department of Commerce, Weather Bureau Technical Report No. 40, Rainfall Atlas of the United States.

D-2d(1)(d) Secondary Containment for Ancillary Equipment: OAC 3745 55-93, 3745-55-92(c)(2)

In compliance with the requirements OAC 3745 55-93, all pumps associated with hazardous waste tanks to be permitted are contained within secondary containment areas surrounding the tanks, or in separate curbed containment areas. All associated piping has welded or welded-flange connections that are either within secondary containment areas, or (principally) are inspected daily. In accordance with the provisions of OAC 3745-55-93, daily visual inspection of aboveground welded piping is an acceptable substitute for secondary containment of aboveground piping. Details on inspection procedures that comply with the requirements of OAC 3745-55-94 and 3745-55-95 are provided in Section F of this permit application.

Following are discussions of the ancillary equipment associated with each tank.

Tank Systems 2104-F and 2105-F

These two tanks have common ancillary equipment. Ancillary equipment includes inflow pumps discharge pumps; and associated valves and piping. The piping that extends between pumps and between Tanks 2104-F and 2105-F is inspected daily in accordance with the requirements of OAC 3745-55-93, 3745-55-94, and 3745-55-95. The piping system is a welded/welded flange system. A roof has been erected over the pumps and all associated equipment to divert precipitation away from these facilities. A design drawing for the roof is provided in Attachment D-2.

Discharge pumps are located within the Utility boiler pump pad, which consists of coated concrete paving and curbing. The concrete is coated with an industrial sealant resistant to the waste. In addition, these pumps are located within inner curbed areas that have been cleaned and coated with the same sealant. Piping, which has welded, screwed, and/or welded-flange connections, extending between the pumps and the Utility boilers are inspected daily. A structure is present to divert precipitation away from these pumps. Secondary containment and precipitation diversion structures exist around and over the injector ends of the boilers. Design drawings are provided in Attachment D-2.
All remaining ancillary equipment, including valves used to alternate flow between the tanks, is located within the diked areas of Tanks 2104-F and 2105-F within the concrete containment pad and is inspected daily.

**Tank System 2003-F**

The ancillary equipment associated with Tank 2003-F includes discharge pumps and associated valves and piping.

The inflow piping for Tank 2003-F at the point of generation is located within the phenol production area, which provides secondary containment. Piping, which has welded, screwed, and/or welded-flange connections, extends between these pumps and Tank 2003-F. In accordance with 40 CFR 264.193(f), OAC 3745-55-93, these pumps are provided with containment to prevent releases to the plant's stormwater collection system. In accordance with 40 CFR 264.194 and 264.195, OAC 3745-55-94 and 3745-55-95, the piping and valves are visually inspected daily.

Discharge pumps are located within the Utility boiler pump pad, which consists of coated concrete paving and curbing. The concrete is coated with an industrial sealant resistant to the waste. Aboveground piping extends between the pumps and the Utility boilers. This piping has welded, screwed, and/or welded-flange pipe connections, and is visually inspected daily (per 40 CFR 264.194 and 264.195, OAC 3745-55-94 and 3745-55-95). A precipitation diversion structure is located over the discharge pumps. Design drawings for the roof are provided in Attachment D-3.

**D-2d(2) Requirements for Tank Systems Until Secondary Containment is Implemented: OAC 3745-55-93**

As previously stated, the storage tank systems identified as permitted units have secondary containment that complies with OAC 3745-55-93.
D-2d(3) Variance from Secondary Containment Requirements: OAC 3745-55-93, 3745-50-44(c)(2)

There are no variances [as available under OAC 3745-50-44(c)(2) and 3745-55-93] requested from secondary containment requirements.

D-2e Controls and Practices to Prevent Spills and Overflows: OAC 3745-55-94, 3745-55-94, 3745-50-44(c)(2)

Section D-2a(2) describes the controls and practices to prevent spills and overflows.

D-3 WASTE PILES: OAC 3745-50-44(c)(4), 3745-56-50 through 60

This plant has no waste piles as defined in OAC 3745-56-50 through 3745-56-60 and 3745-50-44(c)(4).

D-4 SURFACE IMPOUNDMENTS

This facility does not use surface impoundments (as described in OAC 3745-55-20 through 3745-55-33) to treat, store, or dispose of hazardous waste.

D-5 INCINERATORS: OAC 3745-50-44(c)(8), 3745-57-40 through 51

This plant does not operate a hazardous waste incinerator as described in OAC 3745-57-40 through 3745-57-51 and 3745-50-44(c)(8).

D-6 LANDFILLS: OAC 3745-50-44(c)(7), 3745-57-02 through 18

This plant does not own or operate a landfill [as described in OAC 3745-57-01 through 3745-57-18 and OAC 3745-50-44(c)(7)] to dispose of hazardous waste.

D-7 LAND TREATMENT: OAC 3745-50-44(c)(5), 3745-56-70 through 83

This plant does not own or operate facilities [as described in OAC 3745-56-70 through 3745-56-83 and 3745-50-44(c)(5)] that treat or dispose of hazardous waste in treatment units.

D-8 MISCELLANEOUS UNITS: OAC 3745-57-91, 3745-50-44(c)(9)

This plant does not own or operate facilities [as described in OAC 3745-57-90 through 3745-57-93 and 3745-50-44(c)(9)] that treat, store, or dispose of hazardous waste in miscellaneous units.

D-9 BOILERS AND INDUSTRIAL FURNACES BURNING HAZARDOUS WASTE [OAC RULE 3745-50-44(C)(9)]

In 2009, Haverhill notified Ohio EPA that the boilers comply with 40 CFR 63, Subpart EEE (The HWC MACT Standards). In accordance with OAC 3745-266-100(B), Haverhill is removing the
operating limits of the boilers from the RCRA Permit. Only the following sections of RCRA regulations will continue to apply to the hazardous waste burning boilers: Contingency Planning, Closure, Post-Closure, Standards for Direct Transfer, and Standards for Regulation of Residues.

**D-9a  Direct Transfer**

The plant does not employ direct transfer for feeding materials to the boilers. All hazardous waste feed to the boilers comes from on-site storage tanks.

**D-9b  Residues**

Utility boiler deposit is generated periodically during boiler clean-out. The plant has collected samples of this material during past boiler clean-out episodes. Historically, this material has exhibited the RCRA characteristic of toxicity for chromium (D007) and is therefore managed as a residue, derived from the combustion of a RCRA-listed hazardous waste (K022). The utility boiler deposit is accumulated on site for less than 90 days and sent to an approved, off-site RCRA Subtitle C Facility for treatment and disposal. To maintain an ongoing characterization, a random grab sample of this material is collected when the boiler is down for inspection and maintenance and then analyzed for TCLP metals. (The preceding information is contained in the Waste Analysis Plan.)
EXHIBIT D-1

TANK SYSTEMS 2104-F AND 2105-F FLOW DIAGRAM
ATTACHMENT A
Heavy Hydrocarbon Flow Diagram

Phenol Distillation Column Bottoms
(K022)

BPA Purification System Column Bottoms
(non-hazardous)

2104-F

2108-F

2105-F

Facility Boiler 2001-UC

TANK SYSTEMS 2104-F AND 2105-F FLOW DIAGRAM

Exhibit D-1
Heavy Hydrocarbon Flow Diagram
EXHIBIT D-2

TANK SYSTEM 2003-F FLOW DIAGRAM
ATTACHMENT B
Light Hydrocarbon Flow Diagram

Phenol Process Spent Emission Scrubber Fluid (D001)
AMS Distillation Column Bottoms (D001)
Purification System Light Hydrocarbons (D001)

TANK SYSTEM 2003-F FLOW DIAGRAM

Exhibit D-2
Light Hydrocarbon Flow Diagram
EXHIBIT D-3

BATCH FLOW PROCESS DIAGRAM TANKS 2104-F AND 2105-F
Exhibit D-3

BATCH FLOW PROCESS DIAGRAM TANKS 2104-F AND 2105-F
EXHIBIT D-4

PID – TANKS 2104-F AND 2105-F
EXHIBIT D-4

PID – TANKS 2104-F AND 2105-F

(Note: Only Drawing #13-00-0170 was changed for Revision 2, March, 2014)
EXHIBIT D-5

PID – TANK 2003-F
EXHIBIT D-6

CONTAINMENT COATING SPECIFICATION
HIGH PERFORMANCE CRACK BRIDGING CONTAINMENT LINING

**CHEMICAL RESISTANCE**

Elasti-Liner® I is recommended for effective 72 hour spill containment of many industrial chemicals, examples are listed below.

<table>
<thead>
<tr>
<th>ACIDS</th>
<th>ALKALINES</th>
<th>SOLVENTS, CHEMICALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-50% Acrylic</td>
<td>All Plating &amp; Anodizing solutions</td>
<td>All Alcohols</td>
</tr>
<tr>
<td>1-50% Acetic</td>
<td>All Pulp Liquors</td>
<td>Animal &amp; Mineral Oils</td>
</tr>
<tr>
<td>Anodizing solutions</td>
<td>1-10% Ammonium Fluoride</td>
<td>Ethylene Glycol</td>
</tr>
<tr>
<td>Chrome Plating solutions</td>
<td>1-20% Ammonium Hydroxide</td>
<td>Fuel Oils</td>
</tr>
<tr>
<td>1-37% Chronic</td>
<td>Cadmium Cyanide Plating solution</td>
<td>Jet Fuel, SP-10</td>
</tr>
<tr>
<td>1-37% Hydrochloric</td>
<td>1-15% Calc. Hypochlorite</td>
<td>Lubricating Oils</td>
</tr>
<tr>
<td>1-20% Hydrofluoric</td>
<td>1-45% Potassium Hydroxide</td>
<td>Sour Crude Oils</td>
</tr>
<tr>
<td>1-40% Nitric</td>
<td>1-50% Sodium Hydroxide</td>
<td></td>
</tr>
<tr>
<td>1-85% Phosphoric</td>
<td>1-15% Sodium Hypochlorite</td>
<td></td>
</tr>
<tr>
<td>1-75% Sulfuric</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MAXIMUM SERVICE TEMPERATURE**

Elasti-Liner® I in 72 hour containment of aqueous chemicals or splash & spill: 130°F; Intermittent immersion: 200°F. In solvents and other non-aqueous chemicals immersion or splash & spill: ambient temperature.

**RESISTANCE TO WEATHERING**

All Elasti-Liner® products are specially formulated to resist color fade and will not chalk when used outdoors in ultraviolet light. However, over time, the color may lose some of its luster. These events will not adversely affect the overall performance of the coating system in chemical containment applications. Unlike other less capable polymers, Elasti-Liner® will not continue to cure and age over time thus retaining its excellent chemical resistance and crack bridging capability.

**TYPICAL PROPERTIES**

<table>
<thead>
<tr>
<th>Elasti-Liner® I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solids Content</td>
</tr>
<tr>
<td>Volatile Organic Content</td>
</tr>
<tr>
<td>Flash Point: (Penney-Martens Closed Cup)</td>
</tr>
<tr>
<td>Hardener Part B &gt; 155°F</td>
</tr>
<tr>
<td>Viscosity: @ 75°F (mixed)</td>
</tr>
<tr>
<td>Weight/Gallon</td>
</tr>
<tr>
<td>Thinner</td>
</tr>
<tr>
<td>Coverage, (practical, includes 10% loss)</td>
</tr>
<tr>
<td>System Thickness</td>
</tr>
<tr>
<td>Color</td>
</tr>
</tbody>
</table>

**PHYSICAL PROPERTIES - FULLY CURED SYSTEM**

<table>
<thead>
<tr>
<th>Elasti-Liner® I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile Strength at break (ASTM D-412)</td>
</tr>
<tr>
<td>Tensile Strength at 50% Elongation (ASTM D-412)</td>
</tr>
<tr>
<td>Elongation at break: (ASTM D-412)</td>
</tr>
<tr>
<td>Bond Strength to Concrete (ASTM D-1002)</td>
</tr>
<tr>
<td>Shore &quot;A&quot; Hardness (ASTM D-2240)</td>
</tr>
<tr>
<td>Tear Strength (ASTM D-624)</td>
</tr>
<tr>
<td>Impact Strength</td>
</tr>
</tbody>
</table>
100% REACTIVE SOLIDS VINYL ESTER
COATING/LINING SYSTEM

TECHNI-PLUS VE 40 is a 30 to 40 mil novolac vinyl ester resin based, flake-filled, peroxide cured polymer system. It is designed for use as a tank lining, exterior coating or chemical containment membrane on metal or concrete.

TECHNI-PLUS VE 40 exhibits excellent resistance to acid and alkaline environments as well as most organic solvents. In immersion service TECHNI-PLUS VE 40 is used in combination with TECHNI-PLUS P 3 Primer and performs as a corrosion resistant lining up to 140°F in severe corrosive environments. TECHNI-PLUS VE 40 provides superior performance in primary and secondary containment where excellent solvent and acid resistance is required. TECHNI-PLUS VE 40 is also an excellent high build exterior coating for severe corrosive environments.

CHEMICAL RESISTANCE 

In coating applications, TECHNI-PLUS VE 40 will generally withstand higher concentrations. Examples of chemical resistance for immersion services are listed. Contact KCC Corrosion Control Co. with complete operating service conditions for specific product recommendations.

<table>
<thead>
<tr>
<th>ACIDS</th>
<th>ALKALINES</th>
<th>SOLVENTS, CHEMICALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-50% Acetic</td>
<td>1-29% Ammonium Hydroxide</td>
<td>1-10% Acetone</td>
</tr>
<tr>
<td>glacial Acetic</td>
<td>Black &amp; White Pulp Liquor</td>
<td>Aniline</td>
</tr>
<tr>
<td>1-25% Adipic</td>
<td>1-100% Calcium Hydroxide</td>
<td>Benzene</td>
</tr>
<tr>
<td>saturated Benzoic</td>
<td>Copper Plating Cyanide</td>
<td>Butyl Acrylate</td>
</tr>
<tr>
<td>saturated Boric</td>
<td>Diethanolamine</td>
<td>Carbon Tetrachloride</td>
</tr>
<tr>
<td>1-50% Chloroacetic</td>
<td>Dimethylamine</td>
<td>Chlorotoluene</td>
</tr>
<tr>
<td>1-10% Chromic</td>
<td>Gold Plating Cyanide</td>
<td>Cyclohexane</td>
</tr>
<tr>
<td>1-100% Citric</td>
<td>30% Hydrogen Peroxide</td>
<td>Cyclohexanone</td>
</tr>
<tr>
<td>1-50% Hydrobromic</td>
<td>Isopropylamine</td>
<td>Ethanol</td>
</tr>
<tr>
<td>1-30% Hydrochloric</td>
<td>Morpholine</td>
<td>Isopropanol</td>
</tr>
<tr>
<td>1-20% Hydrofluoric</td>
<td>Sodium Bisulfite (saturated)</td>
<td>Jet Fuel</td>
</tr>
<tr>
<td>Maleic</td>
<td>0-100% Sodium Chlorate</td>
<td>Kerosene</td>
</tr>
<tr>
<td>Nickel Plating</td>
<td>0-50% Sodium Chlorite</td>
<td>Methylene Chloride</td>
</tr>
<tr>
<td>1-40% Nitric</td>
<td>1-100% Sodium Sulfate</td>
<td>Methyl Ethyl Ketone</td>
</tr>
<tr>
<td>Oleic</td>
<td>Sodium Peroxide</td>
<td>Naphtha, Aromatic</td>
</tr>
<tr>
<td>1-30% Perchloric</td>
<td>1-50% Potassium Hydroxide</td>
<td>ortho- &amp; para-Xylene</td>
</tr>
<tr>
<td>100% Propionic</td>
<td>1-15% Sodium Cyanide</td>
<td>5-85% Phenol</td>
</tr>
<tr>
<td>1-100% Phosphoric</td>
<td>1-10% Sodium Hydroxide</td>
<td>Salt Brine</td>
</tr>
<tr>
<td>Stearic</td>
<td>10-50% Sodium Hydroxide</td>
<td>Toluene</td>
</tr>
<tr>
<td>1-25% Sulfamic</td>
<td>1-18% Sodium Hypochlorite</td>
<td>1,1,1 Trichloroethane</td>
</tr>
<tr>
<td>1-75% Sulfuric</td>
<td></td>
<td>Trichloroethylene</td>
</tr>
</tbody>
</table>

MAXIMUM SERVICE TEMPERATURE

1 350°F Dry, 180°F for Splash/Spillage, 140°F for Immersion

For low concentrations special clear coat required.

KCC Corrosion Control Co.  Formerly Koch Corrosion Control Co.
4010 Trey Road  Houston, TX 77084  Phone: 713-550-1199  Fax: 713-550-9097  Toll Free

Ohio EPA DMWM DEC 16 2011
To: J.E. Fain

Subject: N-1497 RCRA Tank Dikefield Crack Repair and Coating

Testing was conducted on immersion coupons obtained from manufacturers of coatings for the concrete secondary containment of the light hydrocarbon tank 2003-F and the heavy hydrocarbon tanks 2104-F, 2105-F and 2108-F. The products that I tested are VE-40 and Elastiliner from KCC Corrosion and Semstone 145 and Semstone 245 from Carboline. Elastiliner is a proprietary polymeric coating that is rubber-like and very elastic. The VE-40 and the Semstone products are rigid coatings.

**Elastiliner**

Elastiliner is a chemical resistant, crack bridging polymer that is available in a standard version and a high performance version (higher chemical resistance). The high performance version was tested in the lights, while both types were tested in the heavies. Each coupon was weighed prior to immersion and reweighed when the test was complete. According to the manufacturers representative, a noticeable change in physical appearance or a gain in weight would show that the coating was being affected by the test solution.

The coupon that was tested in the lights sample was removed after only 6 hours and a visual inspection showed that the coupon had definitely increased in size. The weight of the coupon had in fact more than doubled from 4 grams to 9 grams. Consequently, Elastiliner will not be suitable in lights service.

The coupons in the heavies were immersed in the sample for 48 hours. The coupons were removed, wiped off and reweighed. From a visual inspection, no change in size in either coupon was evident. The standard version increased in weight from 4.04 g to 4.15 g and the more chemical resistant version from 4.15 g to 4.26 g, an increase of 2.7% for both. However, as the heavies sample was a very viscous, tarry material, it was difficult to remove all of the sample from the coupon. After reviewing these results with the manufacturers representative, either Elastiliner product should do well in the heavies application. These coupons will be returned to the manufacturer to verify this conclusion.

**VE-40**

This compound is a vinyl ester coating and was tested for 48 hours in the lights sample. A visual inspection showed no visible chemical attack or alteration in appearance. The weight increased 3.2% from 8.067 g to 8.324 g. After review of these results with the
manufacturer, this coating will be suitable in the lights tank application. This coupon will also be sent back to the manufacturer for verification.

**Semstone 145 and 245**

Carboline initially proposed Semstone 145, which is a novolac epoxy. From their chemical resistance chart, I noticed that the Semstone 245 had better chemical resistance than the 145, so I had them send me coupons of both. Both the Semstone 145 and 245 were immersed in the lights sample for 48 hours. Upon removal from the sample, the Semstone 145 showed definite signs of chemical attack. The coupon initially had a smooth surface and when removed from the lights sample, the surface was rough with particles flaking off. The Semstone 245 showed a noticeable increase in the thickness of the coupon, indicating it had absorbed a fair amount of the solution. Consequently, neither of these coatings will be suitable in the lights tank secondary containment application.

**Testing Rationale**

I tested only the Elastiliner in the heavies because with the heavies application there are essentially two problems to deal with: 1) chemical compatibility and 2) thermal shock. For a rigid coating, to deal with thermal shock, a fiberglass mat must be embedded into the coating to help dissipate the heat to prevent the coating from cracking. As the area we are looking at is approximately 32,500 sq. ft. and installing the mat has to be done by hand, this would increase the labor costs tremendously. A coating that does not need matting would be more cost effective. The Elastiliner is able to withstand the thermal shock associated with the heavies without the need for fiberglass matting. Had the Elastiliner not proven to be chemically compatible in the immersion test, I would have then tested the rigid coatings in the heavies.

Also, cracks and joints with Elastiliner need no special treatment. As long as the grout in the existing cracks is level with the concrete surface, the Elastiliner can be applied over the crack. With a rigid coating system, cracks have to be “bridged over”: 1) existing grout is removed, 2) the edges of the crack are ground smooth, 3) crack is regroused, 4) duct tape is applied over the crack to provide bond breaker, 5) primer is applied over the crack, 6) coating is applied over the crack 7) fiberglass matting is installed over crack and 8) the final coat is applied. With the number of cracks involved over the entire surface, this would also increase the labor costs.

**Recommendation:**

Based on the immersion tests that were conducted, I recommend VE-40 from KCC Corrosion Control be used as the lights tank 2003-F secondary containment coating. As outlined above, Elastiliner and Semstone 145 and 245 proved unsuitable for this application.
I recommend Elastiliner from KCC Corrosion Control be used for the secondary containment of 2104-F, 2105-F and 2108-F. This system will be more cost effective than a rigid coating system. Additional benefits of Elastiliner is its crack bridging ability and a 3 year chemical resistance and crack bridging warranty. A non-skid additive can be included to provide slip resistance.

The standard version is less costly material-wise, but can only be applied with a roller. The more chemical resistant version, however, can be applied with a sprayer, which may reduce the labor cost. We will have the contractors estimate the project both ways to determine the most cost effective option.

Please direct your comments and questions to me. A scope package will be submitted in May.

Joel B. Mahler

cc: J.M. Collier
    J.M. Delabar
    B.V. Elswick
    T.S. Lanier
    P.M. O’Neill
    J.A. Stitt
    B.M. Moore
    R.J. Wolf

Aristech Total Performance

OCT 2-9-2001
Attachment D-1

Tank Technical Data Sheets
TECHNICAL DATA SHEET

FACILITY: Aristech Chemical, Haverhill 

EPA I.D. NO. OHD005108477

TANK DESIGNATION: 2104-F

TYPE OF TANK: Vertical Cylindrical, Flat Bottom, Conical Roof

TSD FUNCTION: Storage Tank

CAPACITY: 200,000 gallons 

DIMENSIONS: 32" I.D. x 320" High

SHELL MATERIAL: Carbon Steel

SHELL THICKNESS: Design 7/16 in. Actual * in.

BOTTOM PLATE THICKNESS: Design 1/2 in. Actual * in.

FABRICATION SPECS: API 650

SEE ATTACHED DRAWINGS: S-28357-0, S-4-89

SECONDARY CONTAINMENT: Existing earthen dike covered with a concrete surface. The concrete surface is coated with V-40, a material compatible with the wastes stored. A bottom plate is installed to provide double wall containment of the tank bottom, and collection of leaks to provide visual detection of leaks.

* See tank assessment
TECHNICAL DATA SHEET

FACILITY: Aristech Chemical, Haverhill  EPA I.D. NO. OHDD005108477

TANK DESIGNATION: 2105-F

TYPE OF TANK: Vertical Cylindrical, Flat Bottom, Conical Roof

TSD FUNCTION: Storage Tank

CAPACITY: 250,000 gallons  DIMENSIONS: 36'4" I.D. x 32'3" High

SHELL MATERIAL: Carbon Steel

SHELL THICKNESS:
Design 3/16 in.  Actual * in.

BOTTOM PLATE THICKNESS:
Design 1/2 in.  Actual * in.

FABRICATION SPECS: API 650

SEE ATTACHED DRAWINGS: S-28357-0, S-4-89

SECONDARY CONTAINMENT:
Existing earthen dike covered with a concrete surface. The concrete surface is coated with V-40, a material compatible with the wastes stored. A bottom plate is installed to provide double wall containment of the tank bottom, and collection of leaks to provide visual detection of leaks.

* See tank assessment

OHIO EPA. DMWM
OCT 29 2001
TECHNICAL DATA SHEET

FACILITY: Aristechn Chemical, Haverhill  EPA I.D. NO. OHD005108477

TANK DESIGNATION: 2003-F

TYPE OF TANK: Vertical Cylindrical, Flat Bottom, Floating Roof

TSD FUNCTION: Storage Tank

CAPACITY: 200,000 gallons  DIMENSIONS: 32” I.D. x 32’0” High

SHELL MATERIAL: Carbon Steel

SHELL THICKNESS: Design 1/4 in.  Actual _ in.


FABRICATION SPECS: API 650

SEE ATTACHED DRAWINGS: S-28357-0, S-4-89

SECONDARY CONTAINMENT: Existing earthen dike covered with a concrete surface. The concrete surface is coated with V-40 a material compatible with the wastes stored. A bottom plate is installed to provide double wall containment of the tank bottom, and collection of leaks to provide visual detection of leaks.

* See tank assessment

00136

OHIO EPA DMM

DEC 16 2011
Attachment D-2

Tanks 2104-F and 2105-F Design Drawings
NOTES:
A. THE COMPAETED SAND IS COVERED WITH
5/8 PLYWOOD TO PROTECT SAND.
B. AS THE NEW STEEL BOTTOM IS INSTALLED, THE PLYWOOD IS REMOVED.
Attachment D-3

Tank 2003-F Design Drawings
Attachment D-4

Secondary Containment Capacity Calculations
Tanks 2104-F and 2105-F Secondary Containment Cap.

**Base Area:** 209 ft x 63.5 ft

\[
\text{Slope of containment wall} = \frac{203}{129} \approx 1.58
\]

**Containment Volume**

\[
\begin{align*}
(209 \text{ ft} \times 63.5 \text{ ft} \times 10.3 \text{ ft}) &+ \frac{1}{2} (8.9 \text{ ft} \times 10.3 \text{ ft}) (209 \text{ ft} + 209 \text{ ft} + 63.5 \text{ ft} + 63.5 \text{ ft}) \\
= 136,696 \text{ ft}^3 &+ 24,980 \text{ ft}^3 \\
= 161,676 \text{ ft}^3
\end{align*}
\]

**Tank Displacement**

**Tank 2104-F**

\[
\begin{align*}
\text{Diameter} &= \text{ID} + 2 \left(\text{shell thickness}\right) \\
&= 32.667 \text{ ft} + 2 \left(7/12\right) \text{ ft} \\
&= 32.74 \text{ ft} \\
V &= \pi \times \frac{D^2}{4} \times \frac{H}{2} \\
&= 10 \text{ ft} \times 3.14 \times \left(\frac{32.74}{2}\right)^2 \\
&= 8419 \text{ ft}^3
\end{align*}
\]
Diameter = \( \frac{3}{4} \) ft + 2(\( \frac{3}{4} \) ft) = 32.40 ft

Volume = 10 ft x 3.14 x (\( \frac{32.40}{2} \))^2

= 824.6 ft³

2108 - E

Diameter = 24.5 ft + 2(\( \frac{1}{4} \)) ft = 24.54 ft

Volume = 10 ft x 3.14 x (\( \frac{24.54}{2} \))^2

= 4730 ft³

Total tank displacement

\( 8419 \) ft³ + 8246 ft³ + 4730 ft³

= 21,395 ft³

Available volume

161,676 ft³ - 21,395 ft³

= 140,281 ft³
Conversion to Gallons

\[(140,281 \text{ ft}^3)(7.48 \text{ gal/ft}^3) = 1,049,302 \text{ gallons}\]

Required Containment Volume = Volume of largest tank + 25 yr 24 hr Rainfall (4.64 in or 0.383 ft)

25 yr 24 hr Rainfall:

\[0.383 \text{ ft}^3 \times 226.8 \text{ ft}^3 = 7071 \text{ ft}^3\]

\[7071 \text{ ft}^3 \times 7.48 \text{ gal/ft}^3 = 52,891 \text{ gallons}\]

Required Containment Volume

\[= 250,000 \text{ gal} + 52,891 \text{ gallons}\]

\[= 302,891 \text{ gal}\]

Available Containment is 1,049,302 gallons

Secondary Containment is Adequate
Tank 2003F Secondary Containment

Base Area $94 \text{ ft} \times 62 \text{ ft}$

Containment Volume

$(94 \text{ ft} \times 62 \text{ ft} \times 10.2 \text{ ft}) + \sum \frac{1}{2} (8.5 \text{ ft} \times 10.2 \text{ ft})(94 \text{ ft} + 94 \text{ ft} + 624 \text{ ft})$

$= 59,446 \text{ ft}^3 + 13,525 \text{ ft}^3$

$= 72,971 \text{ ft}^3$

Tank Displacement

$2003-\text{F}$

Diameter $= \text{ID} + 2 \left( \text{shell thickness} \right)$

$= 32.667 \text{ ft} + 2 \left( \frac{3}{16} \right) \text{ ft}$

$= 32.74 \text{ ft}$

$V = \pi \times \frac{d}{2} \times \left( \frac{d}{2} \right)^2$

$= 10 \pi \times 3.14 \times \left( \frac{32.74}{2} \right)^2$

$= 8,419 \text{ ft}^3$
Available Volume

\[ = 72,971 \text{ ft}^3 - 8419 \text{ ft}^3 \]
\[ = 64,552 \text{ ft}^3 \]

Conversion to Gallons

\[ = (64,552 \text{ ft}^3)(7.48 \text{ gal/ft}^3) \]
\[ = 482,849 \text{ gal} \]

Required Containment Volume = Volume of tank + 25 yr 24 hr rainfall

\[ \text{Rainfall} = 4.6'' \text{ or } 0.383' \]

25 yr 24 hr Rainfall

\[ = (0.383 \text{ ft})(11.4)(79 \text{ ft}^3) \]
\[ = 3,359 \text{ ft}^3 \]

Gallons = \( (3,359 \text{ ft}^3)(7.48 \text{ gal/ft}^3) \)
\[ = 25,125 \text{ gal} \]

Required Cont. Volume

\[ = 200,000 \text{ gal} + 25,125 \text{ gal} \]
\[ = 225,125 \text{ gal} \]

Available Cont is 482,849 gal

"Secondary Containment is Adequate"
Attachment D-5

Tank Assessments (2104-F, 2105-F, and 2003-F)
July 27, 2015

Jason Patrick
Haverhill Chemicals
1019 Haverhill - Ohio Furnace Road
Haverhill, OH 45636

Subject: Assessment and Certification of Tank 2105-F
Haverhill Chemicals, Haverhill Facility

Dear Mr. Patrick,

The assessment and annual certification of the subject tank has been completed. Attached you will find calculations and the most recent inspection report. The data obtained confirms that the tank integrity remains intact and is suitable for service.

I hereby certify that I have performed an assessment of the above referenced storage tank at your Haverhill facility as required by the Ohio Administrative Code Rule 3745-50-44. It has been concluded that the tank and ancillary equipment is adequately designed and has sufficient structural strength and compatibility for its intended service.

Ohio Administrative Code Rule 3745-50-42(D) requires a certification statement, therefore, “I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

Should you have any questions, please contact me.

Sincerely,

David Gibson, PE (Ohio E-55229)
Client: Haverhill Chemicals

Date: 26-Jul-15

Tank Number: 2105-F

Tank Diameter: D, feet = 36.33

Liquid Fill Height: H, feet = 32.25

Bottom Projection: inches = 0.00

Thickness of Bottom: Z_b, inches = 0.375

Material: ASTM A283 GrC

Material Density: lbs/ft^3 = 490

Material Yield Stress: Y_s, psi = 30,000

Specific Gravity = 1.00

API 650 Table 3-1: 

<table>
<thead>
<tr>
<th>t</th>
<th>Allowable Stress, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.193</td>
<td>27,000</td>
</tr>
</tbody>
</table>

Material Yield Stress: Y_s, psi = 30,000

Specific Gravity = 1.00

API 650 Table 3-1: 

<table>
<thead>
<tr>
<th>t</th>
<th>Allowable Stress, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.193</td>
<td>27,000</td>
</tr>
</tbody>
</table>

Soil Bearing Capacity: psf = 1,500 (assumed)

Reference Drawings: 2105-F-5.00-9.10

Shell Data

<table>
<thead>
<tr>
<th>Ring Number</th>
<th>height, feet</th>
<th>average thickness, inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7.30</td>
<td>0.1810</td>
</tr>
<tr>
<td>2</td>
<td>7.97</td>
<td>0.1745</td>
</tr>
<tr>
<td>3</td>
<td>7.97</td>
<td>0.1745</td>
</tr>
<tr>
<td>4</td>
<td>7.97</td>
<td>0.1873</td>
</tr>
</tbody>
</table>

Weight of Shell (W_s) = 

\[ \{(R1H*avg thk) +(R2H*avg thk) + (R3H*avg thk) + (R4H*avg thk)\}*\pi*D*Material density \]

Weight of Shell (W_s) = 26,066.22 lbf

Radial Width: API 650 page 3-5

Radial Width = \[ \frac{(390*Z_b)}{(H*G)^{0.5}} \]

Radial Width = 25.75 inches

Hydrostatic Test Stresses: API 650 Table 3-1

Hydrostatic Test Stresses = \[ 2.6*D*(H-1)/t \]

Hydrostatic Test Stresses = 15,294.37 psi

Compare to Allowable Stress: If > 1, then okay

\[ 1.76536 \]
Shell Design

See API 650 Section 3.6

D = 36.25 is < 50, therefore shell thickness > 3/16" (.1875")

Load from roof

<table>
<thead>
<tr>
<th>Number of rafters</th>
<th>n=</th>
<th>17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight, lb/ft</td>
<td>(W_r)</td>
<td>15</td>
</tr>
<tr>
<td>Dead Load, lb/ft^2</td>
<td>DL=</td>
<td>10.21</td>
</tr>
<tr>
<td>Live Load, lb/ft^2</td>
<td>LL=</td>
<td>25</td>
</tr>
</tbody>
</table>

Weight of Roof lbs \((\pi D^2/4)(DL+LL)\)

36,480.98 lbs

Total Load on Annual Ring= Weight of Shell + Roof

62,547.20 lbs

Unit Load on Annual Ring= Total Load / circumference

548.29 lb/f

Bearing on Annual Ring= Unit Load / Radial Width

255.48 lb/f^2

Compare with Soil Bearing Capacity

If Bearing on Annual Ring is less than Soil Bearing Capacity, then okay

255.48 is less than 1,500

Tank 2105-F can continue in service. This is the sixth inspection and certification of this tank (years 2007, 2011, 2012, 2013, 2014 & 2015). Based upon our calculations, the results from the inspections and our review, it is our opinion that an annual inspection is not now required. It is recommended to extend the inspection frequency to three years with the next inspection being due in June 2018.
April 28, 2016

Jason Patrick
Altivia Petrochemicals Company
1019 Haverhill – Ohio Furnace Road
Haverhill, OH 45636

Subject: Assessment and Certification of Tank 2104-F
Altivia Petrochemicals (formerly Sunoco Chemicals)
Haverhill Facility

Dear Mr. Patrick,

The assessment and certification of the subject tank has been completed. Attached you will find calculations and inspection reports.

I hereby certify that I have performed an assessment of the above referenced storage tank at your Haverhill facility as required by the Ohio Administrative Code Rule 3745-50-44. It has been concluded that the tank and ancillary equipment is adequately designed and has sufficient structural strength and compatibility for its intended service.

Ohio Administrative Code Rule 3745-50-42(D) requires a certification statement, therefore, "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowingly violating.”

Should you have any questions, please contact me.

Sincerely,

David Gibson, PE (Ohio E-55229)
Vice President
Altivia Petrochemicals

Client
Date 28-Apr-16
Tank Number 2104-F
Tank Diameter D, feet 32.7
Liquid Fill Height H, feet 29
Bottom Projection inches 0.00
Thickness of Bottom Zb, inches 0.47
Material ASTM A283 GrC
Material Density lbs/ft^3 490
Material Yield Stress Ys, psi 30,000
Specific Gravity t 1.00
API 650 Table 3-1 Allowable Stress, psi 27,000
API 650 Table 3-1 psf 1,500 assumed
Soil Bearing Capacity
Reference Drawings
Matrix ER1873-18

Shell Data

<table>
<thead>
<tr>
<th>Ring Number</th>
<th>height, feet</th>
<th>average thickness, inches</th>
<th>(feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8.00</td>
<td>0.4275</td>
<td>0.036</td>
</tr>
<tr>
<td>2</td>
<td>8.00</td>
<td>0.4234</td>
<td>0.035</td>
</tr>
<tr>
<td>3</td>
<td>8.00</td>
<td>0.4150</td>
<td>0.035</td>
</tr>
<tr>
<td>4</td>
<td>8.00</td>
<td>0.4205</td>
<td>0.035</td>
</tr>
</tbody>
</table>

Weight of Shell \( (W_s) = \)
\[\{(R1H*avg thk)+(R2H*avg thk)+(R3H*avg thk)+(R4H*avg thk))\}*pi*D*Material density

Weight of Shell \( (W_s) = 56,564.35 \text{ lbf} \)

Radial Width API 650 page 3-5

Radial Width \= \[(390*Z_b)/(\text{(H*G)^.5})\]

Radial Width \= 34.04 inches

Hydrostatic Test Stresses API 650 Table 3-1

Hydrostatic Test Stresses \= 2.6*D*(H-1)/t

Hydrostatic Test Stresses \= 3,174.08 psi

Compare to Allowable Stress If > 1, then okay

8.506
Shell Design

See API 650 Section 3.6

D = 32.7 is < 50, therefore shell thickness > 3/16"

Load from roof

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of rafters</td>
<td>n= 17</td>
</tr>
<tr>
<td>Weight, lb/ft</td>
<td>W_r= 15</td>
</tr>
<tr>
<td>Dead Load, lb/f^2</td>
<td>DL= 10.21</td>
</tr>
<tr>
<td>Live Load, lb/f^2</td>
<td>LL= 25</td>
</tr>
</tbody>
</table>

Weight of Roof

lbs \( (\pi D^2/4) \times (DL+LL) \)

29,555.02 lbs

Total Load on Annual Ring = Weight of Shell + Roof

86,119.37 lbs

Unit Load on Annual Ring = Total Load / circumference

838.73 lb/f

Bearing on Annual Ring = Unit Load / Radial Width

295.69 lb/f^2

Compare with Soil Bearing Capacity

If Bearing on Annual Ring is less than Soil Bearing Capacity, then okay

295.69 is less than 1,500
STORAGE TANK  NUMBER 2104-F  PRODUCT  HEAVY HYDROCARBONS

Datapoints are shown below at the approximate locations where corresponding ultrasonic thickness measurements were taken on the shell.

3-30-2016
Chek
Datapoints are shown below at the approximate locations where corresponding ultrasonic thickness measurements were taken on the shell.
Datapoints are shown below at the approximate locations where corresponding ultrasonic thickness measurements were taken on the tank roof.

3/30/2016
Check

WALTER ROSSLER CO.
April 28, 2016

Jason Patrick
Altivia Petrochemicals Company
1019 Haverhill – Ohio Furnace Road
Haverhill, OH 45636

Subject: Assessment and Certification of Tank 2003-F
Altivia Petrochemicals (formerly Sunoco Chemicals)
Haverhill Facility

Dear Mr. Patrick,

The assessment and certification of the subject tank has been completed. Attached you will find calculations, inspection reports and tank drawing.

I hereby certify that I have performed an assessment of the above referenced storage tank at your Haverhill facility as required by the Ohio Administrative Code Rule 3745-50-44. It has been concluded that the tank and ancillary equipment is adequately designed and has sufficient structural strength and compatibility for its intended service.

Ohio Administrative Code Rule 3745-50-42(D) requires a certification statement, therefore, “I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

Should you have any questions, please contact me.

Sincerely,

David Gibson, PE (Ohio E-55229)
Vice President
Altivia Petrochemicals

Client
Date 28-Apr-16
Tank Number 2003-F
Tank Diameter D, feet 32.667
Liquid Fill Height H, feet 32
Bottom Projection inches 0.00
Thickness of Bottom Zb, inches 0.375
Material ASTM A283 GrC
Material Density lbs/ft^3 490
Material Yield Stress Ys, psi 30,000
Specific Gravity t 1.00
API 650 Table 3-1
Allowable Stress, psi 27,000
Soil Bearing Capacity psf 1,500 assumed
Reference Drawings 2003F - 10115 Witherup

Shell Data

<table>
<thead>
<tr>
<th>Ring Number</th>
<th>height, feet</th>
<th>average thickness, inches</th>
<th>(feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7.97</td>
<td>0.1996</td>
<td>0.017</td>
</tr>
<tr>
<td>2</td>
<td>7.97</td>
<td>0.1930</td>
<td>0.016</td>
</tr>
<tr>
<td>3</td>
<td>7.97</td>
<td>0.1933</td>
<td>0.016</td>
</tr>
<tr>
<td>4</td>
<td>7.97</td>
<td>0.1954</td>
<td>0.016</td>
</tr>
</tbody>
</table>

Weight of Shell (Ws) =

\[((1+H*avg thk)+(2H*avg thk)+(3H*avg thk)+(4H*avg thk))*pi*D*Material density\]

Weight of Shell (Ws) = 26,082.20 lbf

Radial Width

API 650 page 3-5

Radial Width =

\{(390*Zb)/(H*G)^.5\}

Radial Width = 25.85 inches

Hydrostatic Test Stresses =

API 650 Table 3-1

Hydrostatic Test Stresses = 2.6*D*(H-1)/t

Hydrostatic Test Stresses = 13,642.28 psi

Compare to Allowable Stress If > 1, then okay

1.97914
Shell Design
See API 650 Section 3.6

\[ D = 36.25 \text{ is } < 50, \text{ therefore shell thickness } > 3/16" (.1875") \]

Load from roof

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of rafters, n</td>
<td>17</td>
</tr>
<tr>
<td>Weight, lb/ft, (W_r)</td>
<td>15</td>
</tr>
<tr>
<td>Dead Load, lb/ft^2, DL</td>
<td>10.21</td>
</tr>
<tr>
<td>Live Load, lb/ft^2, LL</td>
<td>25</td>
</tr>
</tbody>
</table>

Weight of Roof

\[ \text{lbs } (\pi * D^2/4) * (DL + LL) \]

\[ 29,495.39 \text{ lbs} \]

Total Load on Annual Ring=
Weight of Shell + Roof

\[ 55,577.60 \text{ lbs} \]

Unit Load on Annual Ring=
Total Load / circumference

\[ 541.83 \text{ lb/f} \]

Bearing on Annual Ring=
Unit Load / Radial Width

\[ 251.49 \text{ lb/f}^2 \]

Compare with Soil Bearing Capacity

If Bearing on Annual Ring is less than Soil Bearing Capacity, then okay

\[ 251.49 \text{ is less than } 1,500 \]
DATAPoints are shown below at the approximate locations where corresponding ultrasonic thickness measurements were taken on the shell.

North 214 191

DATE: July, 1996

WALTER ROSSLER CO.
Datapoints are shown below at the approximate locations where corresponding ultrasonic thickness measurements were taken on the shell.

3-31-2016

CHAD

WALTER ROSSLER CO.
Datapoints are shown below at the approximate locations where corresponding ultrasonic thickness measurements were taken on the tank roof.

3/31/2016
Chad
April 28, 2016

Jason Patrick  
Altivia Petrochemicals Company  
1019 Haverhill – Ohio Furnace Road  
Haverhill, OH 45636

Subject: Assessment and Certification of Containment for Tanks  
2003-F, 2104F, 2105F & 2108F  
Altivia Petrochemicals (formerly Sunoco Chemicals)  
Haverhill Facility

Dear Mr. Patrick,

The assessment and certification of the subject containment area has been completed. The containment was observed and compared with original design plans to confirm the containment is still functioning, as designed.

I hereby certify that I have performed an assessment of the above referenced storage tank containment area at your Haverhill facility as required by the Ohio Administrative Code Rule 3745-50-44. It has been concluded that the containment volume and coating system is adequately designed and has sufficient structural strength and compatibility for its intended service.

Ohio Administrative Code Rule 3745-50-42(D) requires a certification statement, therefore, “I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

Should you have any questions, please contact me.

Sincerely,

[Signature]

David Gibson, PE (Ohio E-55229)  
Vice President
April 28, 2016

Jason Patrick
Altivia Petrochemicals Company
1019 Haverhill – Ohio Furnace Road
Haverhill, OH 45636

Subject: Assessment and Certification of Tank 2108-F
Altivia Petrochemical (formerly Sunoco Chemicals)
Haverhill Facility

Dear Mr. Patrick,

The assessment and certification of the subject tank has been completed. Attached you will find calculations, inspection reports and tank drawing.

I hereby certify that I have performed an assessment of the above referenced storage tank at your Haverhill facility as required by the Ohio Administrative Code Rule 3745-50-44. It has been concluded that the tank and ancillary equipment is adequately designed and has sufficient structural strength and compatibility for its intended service.

Ohio Administrative Code Rule 3745-50-42(D) requires a certification statement, therefore, “I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

Should you have any questions, please contact me.

Sincerely,

[Signature]

David Gibson, PE (Ohio E-55229)
Vice President
Client: Altivia Petrochemicals
Date: 28-Apr-16

Tank Number: 2108-F
Tank Diameter, D, feet: 24.5
Liquid Fill Height, H, feet: 32
Bottom Projection: inches 0.00
Thickness of Bottom, Zb, inches: 0.375

Material: ASTM A36
Material Density, lbs/ft^3: 490
Material Yield Stress, Ys, psi: 36,000
Specific Gravity: 1.06

API 650 Table 3-1
Allowable Stress, psi: 21,000

Soil Bearing Capacity, psf: 1,500
Reference Drawings: Matrix ER1873-18

Shell Data

<table>
<thead>
<tr>
<th>Ring Number</th>
<th>height, feet</th>
<th>average thickness, inches</th>
<th>(feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8.00</td>
<td>0.2335</td>
<td>0.019</td>
</tr>
<tr>
<td>2</td>
<td>8.00</td>
<td>0.2310</td>
<td>0.019</td>
</tr>
<tr>
<td>3</td>
<td>8.00</td>
<td>0.2160</td>
<td>0.018</td>
</tr>
<tr>
<td>4</td>
<td>8.00</td>
<td>0.2295</td>
<td>0.019</td>
</tr>
</tbody>
</table>

Weight of Shell (W_s) = 
\{(R1H*avg thk)+(R2H*avg thk)+(R3H*avg thk)+(R4H*avg thk))\pi*D*Material density

Weight of Shell (W_s) = 22,868.72 lbf

Radial Width = API 650 page 3-5
Radial Width = \{(390*Zb)/(H*G)\} 25.11 inches

Hydrostatic Test Stresses = API 650 Table 3-1
Hydrostatic Test Stresses = 2.6*D*(H-1)/t
Hydrostatic Test Stresses = 10,231.61 psi

Compare to Allowable Stress
If > 1, then okay
2.052
Shell Design
See API 650 Section 3.6

\[ D = 24.5 \text{ is } < 50, \text{ therefore shell thickness } > 3/16" \]

Load from roof

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of rafters</td>
<td>17</td>
</tr>
<tr>
<td>Weight, lb/ft</td>
<td>15</td>
</tr>
<tr>
<td>Dead Load, lb/ft^2</td>
<td>10.21</td>
</tr>
<tr>
<td>Live Load, lb/ft^2</td>
<td>25</td>
</tr>
</tbody>
</table>

\[ \text{Weight of Roof} = \frac{\pi D^2}{4} (\text{DL} + \text{LL}) \]

\[ 16,590.82 \text{ lbs} \]

Total Load on Annual Ring = Weight of Shell + Roof

\[ 39,459.54 \text{ lbs} \]

Unit Load on Annual Ring = Total Load / circumference

\[ 512.93 \text{ lb/ft} \]

Bearing on Annual Ring = Unit Load / Radial Width

\[ 245.11 \text{ lb/ft}^2 \]

Compare with Soil Bearing Capacity

If Bearing on Annual Ring is less than Soil Bearing Capacity, then okay

\[ 245.11 \text{ is less than } 1,500 \]
Shell Design

See API 650 Section 3.6

D = 24.5 is < 50, therefore shell thickness > 3/16''

Load from roof

<table>
<thead>
<tr>
<th>Number of rafters</th>
<th>n</th>
<th>17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight, lb/ft</td>
<td>Wf</td>
<td>15</td>
</tr>
<tr>
<td>Dead Load, lb/f²</td>
<td>DL</td>
<td>10.21</td>
</tr>
<tr>
<td>Live Load, lb/f²</td>
<td>LL</td>
<td>25</td>
</tr>
</tbody>
</table>

Weight of Roof (lbs) = \((\pi * D^2 / 4) * (DL + LL)\) = 16,590.82 lbs

Total Load on Annual Ring = Weight of Shell + Roof = 39,459.54 lbs

Unit Load on Annual Ring = Total Load / circumference = 512.93 lb/ft

Bearing on Annual Ring = Unit Load / Radial Width = 245.11 lb/f²

Compare with Soil Bearing Capacity

If Bearing on Annual Ring is less than Soil Bearing Capacity, then okay

245.11 is less than 1,500
<table>
<thead>
<tr>
<th>N/S</th>
<th>E/W</th>
<th>CHIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0.529</td>
<td>0.519</td>
</tr>
<tr>
<td>4</td>
<td>0.520</td>
<td>0.522</td>
</tr>
<tr>
<td>8</td>
<td>0.513</td>
<td>0.526</td>
</tr>
<tr>
<td>12</td>
<td>0.510</td>
<td>0.530</td>
</tr>
<tr>
<td>16</td>
<td>0.485</td>
<td>0.532</td>
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<tr>
<td>20</td>
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<td>0.519</td>
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<tr>
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<td>0.508</td>
<td>0.523</td>
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<tr>
<td>28</td>
<td>0.508</td>
<td>0.526</td>
</tr>
<tr>
<td>32</td>
<td>0.522</td>
<td>0.535</td>
</tr>
<tr>
<td>36</td>
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<td>0.524</td>
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<td>40</td>
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<td>44</td>
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<td>48</td>
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<td>52</td>
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<td>56</td>
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Note: All Reading are in Inches.
## TANK INSPECTION REPORT

| Job Number: | Y3181-315088 |
| Customer:   | Sunoco Chemicals |
| Date:       | May 2011 |
| Tank Number: | 2105-F |

### ROOF AND NOZZLES

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Note: All readings are in inches.
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**Internal Settlement**

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**Average** | 53.667 | 54.208 | 55.625 | 56.972

**Average Internal Settlement**

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<tr>
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Note: See "Settlement Locations" drawing for station locations.

600 Kaiser Drive Bldg 241 Heath, Ohio 43056
(740)788-9188 Fax(740)788-9189
API 653 EXTERNAL TANK INSPECTION REPORT

Area: Logistics  
Tank #: 2105-F  
Service: Heavy Hydrocarbon Storage Tank  
Mfg Date: 1968  
Manufacturer: Graver Tank  
Diameter: 36'  
Height: 30'  
Material: 283 Gr. C  
Inspection Date: 5/31/2011

SUMMARY

An external visual examination was performed on 2105-F Heavy Hydrocarbon storage tank, which has been out of service for over two years. The inspection was conducted from the ground and the tank roof access platform.

FINDINGS

SHELL: Shell distortions were noted at the junction of the second floor. These bulges have been present since 1989 and do not appear to be affecting the serviceability of the tank. A large shell indentation was noted on course one (1) on the south west quadrant where four (4) nozzles attach to the shell. This area was thickness tested and will be penetrant inspected during the internal portion of the inspection. A door sheet located in the south east quadrant is installed with square corners which does not meet API code requirements. Also in the same quadrant a door sheet has been removed to facilitate cleaning of the tank. The insulation has been removed and total coating failure was noted.

ROOF: The roof inspection revealed total coating failure with light scale and scattered pitting <.020. The plates on the east and west side were buckled and indented 3”-6” this appears to be from fabrication and does not appear to be affecting the serviceability of the tank.

FLOOR PLATE EXTENSION: A second floor has been installed and it appears to meet the requirements of API 653. The leak detection valves are plugged and should be opened and inspected for drainage on a routine basis.

NOZZLES: The nozzles on the south west side appear to have pushed the tank shell inwards causing an indentation. No measurable corrosion was noted.
MISCELANEOUS: The manufactures data plate was located and was legible. The grounding lead was attached but one lead is grounding three tanks and should be checked. The access stairs and handrails were attached and serviceable but the coating is in poor condition.

RECOMMENDATIONS

1. Prep and coat the entire tank
2. Install new insulation if required
3. Remove existing door sheet and install a new sheet that meets code requirements
4. Install door sheet.
5. Open leak detection valves and monitor on a monthly basis.

CONCLUSION

As a result of this and the previous examination the tank will require repairs before returning it back to service.

Inspector: Jerry Sexton
Signature: Jerry Sexton
API 653 Number: 20698
API 653 INTERNAL TANK INSPECTION REPORT

Area: Logistics  
Tank #: 2105-F  
Service: Heavy Hydrocarbon Storage Tank  
Mfg Date: 1968  
Manufacturer: Graver Tank  
Diameter: 36’  
Height: 30’  
Material: 283 Gr. C  
Inspection Date: 5/31/2011

SUMMARY

An internal visual, ultrasonic thickness, MFE floor scan and MT examination was performed on 2105-F Heavy Hydrocarbon storage tank, which has been out of service for over two years. The visual inspection was performed from the floor since no scaffolding was erected.

FINDINGS

SHELL: The shell plate at the floor junction is bowed and distorted, which appears to be from the installation of the new floor in 1989, and does not appear to be affecting the serviceability of the tank. The shell at these areas was MT inspected and no relevant indications were noted. Also the bottom 2’ of the shell vertical weld seams were MT inspected and no relevant indications were noted. The upper shell courses were inspected from the floor and no areas of concern were noted.

Also noted was an indented area 2’X2’ on the south west quadrant where four (4) nozzles attach to the shell. This area has been noted on previous inspections. The indention appears to be from piping that has expanded and pushed inwards on the shell. The shell plate was PT and UT thickness inspected with no thinning or relevant indications were noted.

ROOF: The roof visual inspection was conducted from the floor. The rafters and roof plates appeared uniform in appearance with no measurable corrosion noted. Thickness readings taken at revealed no significant wall loss.

FLOOR: The weld quality of the floor plates was poor with areas of under cut and under fill noted. Buckling of the floor plates was noted. The buckled areas were MT inspected and no relevant indications were noted.
NOZZLES: A 2” nozzle on the south quadrant seal weld appears to be leaking. The nozzles were clear and free of debris. Thickness readings revealed no significant wall loss.

RECOMMENDATIONS

1. Repair seal weld on 2” nozzle.
2. Continue to monitor the shell indentation.

CONCLUSION

The indentation of the shell should be evaluated by an engineer experienced in storage tank design.

Inspector: Jerry Sexton
Signature: Jerry Sexton
API 653Number: 20698
CERTIFICATE OF INSPECTION
LIQUID PENETRANT

Date: 5/31/11
Job No: Y3181-315088
P.O. No: 
Other: 
Page: 1 of 1

Customer: Sunoco Chemicals
Location: Logistics
Street Address: 1019 Haverhill/Ohio Furnace Rd.
Contact: Tony Scior
City: Haverhill
State: OH
Zip: 45636
Part No. / Item No: 2105-F

Description: PT inspection of shell indention at the bottom of course 1 south west side

Inspection Method:

- Red Visible Dye
- Water Wash
- Solvent Removable
- Post Emulsified: Lipophilic
- Post Emulsified (high sensitivity)
- Other:

Specification/Code: ASME Sec V
Procedure: 580PT 001
Acceptance Criteria: API 653
Material Type: Carbon Steel
Test Temperature: Ambient

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<th>Manufacturer</th>
<th>Type</th>
<th>Batch Number(s)</th>
<th>Application Method</th>
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<tr>
<td>Penetrant</td>
<td>MAGNAFLUX</td>
<td>SKL-WP</td>
<td>08B16K</td>
<td>SPRAY</td>
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<td>Developer</td>
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<tr>
<td>Serial Number</td>
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</table>

Setup Data

- Pre-Clean Time: 10 min
- Dwell Time: 10 min
- Emulsifier Time: 
- Developer Time: 5 min

Additional Information:

Test Results:

| Quantity Inspected: 5 | Quantity Accepted: 5 | Quantity Rejected: 0 |

NOTE: The area of inspection was the distorted area at the bottom of course one (1) south west quadrant. The nozzle seal welds were also inspected with no relevant indications noted.

Technician & Date: C Huffman III T Scior

Observer/Mgt. Review: J E Sexton API 653# 21907

This report is not to be construed as a guaranty or warranty of the condition of the materials tested. Cosan Inspection Inc. is not liable for any misinterpretation of results or conditions, or for any claims or losses attributable to performance of a test. These services are rendered without any warranty. Any liability is limited to the amount paid for the services at issue. All orders are subject to Cosan Inspection Inc.'s Standard Terms and Conditions of Sale, which are available upon request.
CERTIFICATE OF INSPECTION
MAGNETIC PARTICLE
Date: 5-31-11
Job No: Y-3181-315088
P.O. No: HHS-0002491
Other: 
Page: 1 of 1

Customer: Sunoco Chemicals
Location: Logistics
Street Address: 1019 Haverhill/Ohio Furnace Rd.
Contact: Tony Scior
City: Haverhill
State: Oh
Zip: 45636
Part No. / Item No: 2105-F

Description: MT of welds.

Inspection Method:
☑ Yoke    ☑ Prods
☐ Head Shot: ☑ Coil Shot (note amperage):
☐ De-Magnetize (Residual: Gauss) ☑ Continuous
☐ Multi-Directional
☐ CBC
☐ Other:

Specification/Code:
ASME Section V
Procedure: 580-MT-003
Acceptance Criteria: API 653
Material Type: Carbon Steel
Test Temperature: Ambient

Equipment
Type: Contour Probe
Model: DA-400
Serial Number: 7081

Medium: Wet ☐ Visible ☑ Fluorescent
Color: Red
Type: 8A
Batch No: 037005

Light Meter, Model: N/A
Calibration Due Date: 1/15/2012

Setup Data
☐ A.C. ☐ HWDC ☑ Fixed
☐ D.C. ☑ Residual
CBC Fill Factor:
Amperage:
CBC Material & Diameter:

Additional Information:

Test Results:
Quantity Inspected: 3
Quantity Accepted: 3
Quantity Rejected: 0

Note:
Areas inspected included 100% of the floor to shell weld seam, and 2' of the shell vertical weld seams at the Floor junction. MT was also performed on distorted floor plates. Areas inspected noted no relevant indications.

Attachement Documentation:

C. Huffine L II  T Scior

Observer/Mgt. Review:
J E Sexton L II

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MP1-1 9-8-00

Ohio EPA DMWM DEC 16 2011
July 13, 2012

Jason Patrick  
Haverhill Chemicals  
1019 Haverhill – Ohio Furnace Road  
Haverhill, OH 45636

Subject: Assessment and Certification of Tank 2105-F  
Haverhill Chemicals, Haverhill Facility

Dear Mr. Patrick,

The assessment and annual certification of the subject tank has been completed. Attached you will find calculations and inspection reports.

I hereby certify that I have performed an assessment of the above referenced storage tank at your Haverhill facility as required by the Ohio Administrative Code Rule 3745-50-44. It has been concluded that the tank and ancillary equipment is adequately designed and has sufficient structural strength and compatibility for its intended service.

Ohio Administrative Code Rule 3745-50-42(D) requires a certification statement, therefore, “I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”
Based upon the current inspection data along with reviewing inspection data from 2007 and 2011 and the calculations performed each of those years, it is my recommendation that the next tank inspection should return to the API 653 inspection frequency of five years (Annual inspections and monitoring is not warranted). It has been determined that the shell condition has existed since 1989, when a second floor was installed. The data obtained confirms that the tank integrity remains intact and is suitable for service.

Should you have any questions, please contact me.

Sincerely,

David Gibson
Principal
Client: Haverhill Chemicals  
Date: 13-Jul-12  
Tank Number: 2105-F  
Tank Diameter: D, feet 36.33  
Liquid Fill Height: H, feet 32.25  
Bottom Projection: inches 0.00  
Thickness of Bottom: Zb, inches 0.375  
Material: ASTM A283 GrC  
Material Density: lbs/f^3 490  
Material Yield Stress: Ys, psi 30,000  
Specific Gravity: 1.00  
API 650 Table 3-1: t 0.193  
API 650 Table 3-1: Allowable Stress, psi 27,000  
Soil Bearing Capacity: psf 1,500 assumed  
Reference Drawings: 2105-F-5.00-9.10  

Shell Data:

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<th>average thickness, inches</th>
<th>(feet)</th>
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<td>1</td>
<td>7.30</td>
<td>0.1870</td>
<td>0.016</td>
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<tr>
<td>2</td>
<td>7.97</td>
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Weight of Shell (Ws) = 
\((R1H*avg thk)+(R2H*avg thk)+(R3H*avg thk)+(R4H*avg thk))\ast pi\ast D\ast Material density

Weight of Shell (Ws) = 26,907.56 lbf

Radial Width: API 650 page 3-5

Radial Width = \((390\ast Zb)/((H\ast G)^{0.5})\)  
Radial Width = 25.75 inches

Hydrostatic Test Stresses = API 650 Table 3-1

Hydrostatic Test Stresses = 2.6\ast D\ast (H-1)/t

Hydrostatic Test Stresses = 15294.37 psi

Compare to Allowable Stress: If > 1, then okay  
1.76536
Shell Design 

See API 650 Section 3.6

D = 36.25 is < 50, therefore shell thickness > 3/16" (.1875")

Load from roof

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<tbody>
<tr>
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<td>n=</td>
</tr>
<tr>
<td>Weight, lb/ft</td>
<td>Wr=</td>
</tr>
<tr>
<td>Dead Load, lb/ft^2</td>
<td>DL=</td>
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<tr>
<td>Live Load, lb/ft^2</td>
<td>LL=</td>
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</table>

Weight of Roof lbs

\[(\pi\times D^2/4)\times(DL+LL)\]

36480.98 lbs

Total Load on Annual Ring= Weight of Shell + Roof

63,388.54 lbs

Unit Load on Annual Ring= Total Load / circumference

555.67 lb/f

Bearing on Annual Ring= Unit Load / Radial Width

258.92 lb/ft^2

Compare with Soil Bearing Capacity

If Bearing on Annual Ring is less than Soil Bearing Capacity, then okay

258.92 is less than 1,500

A review was made of the distorted shell area mentioned in a May 2007 report. Upon further review and subsequent inspections, the area in question has been evident since 1989 and was apparently due to the installation of a second floor. This area is not affecting serviceability. Tank 2105-F can continue in service. This is the third inspection and certification of this tank (years 2007, 2011 & 2012). It is my recommendation that the next inspection and certification occur in five years which is the normal API 653 inspection frequency.
### TANK INSPECTION REPORT

**Job Number:** Y4197-417084  
**Customer:** Haverhill Chemicals  
**Date:** May 2012  
**Tank Number:** 2105-P

### SHELL READINGS

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<td>0.187</td>
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<tr>
<td>7.2</td>
<td>0.194</td>
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### TANK INSPECTION REPORT

**Job Number:** Y4197-417084  
**Customer:** Haverhill Chemicals  
**Date:** May 2012  
**Tank Number:** 2105-F

---

#### ROOF AND NOZZLES

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<tr>
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<th>Value</th>
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<td>0.211</td>
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**Note:** All readings are in inches.
July 13, 2012

Jason Patrick  
Haverhill Chemicals  
1019 Haverhill – Ohio Furnace Road  
Haverhill, OH 45656

Subject: Assessment and Certification of Tank 2185-F  
Haverhill Chemicals, Haverhill Facility

Dear Mr. Patrick,

The assessment and annual certification of the subject tank has been completed. Attached you will find calculations and inspection reports. The data obtained confirms that the tank integrity remains intact and is suitable for service.

I hereby certify that I have performed an assessment of the above referenced storage tank at your Haverhill facility as required by the Ohio Administrative Code Rule 3745-50-44. It has been concluded that the tank and ancillary equipment is adequately designed and has sufficient structural strength and compatibility for its intended service.

Ohio Administrative Code Rule 3745-50-42(D) requires a certification statement, therefore, “I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

Should you have any questions, please contact me.

Sincerely,

[Signature]

David Gibson, PE (Ohio E-35229)  
Principal
Client: Haverhill Chemicals  
Date: 8-Jun-13  
Tank Number: 2105-F  
Tank Diameter: D, feet: 36.33  
Liquid Fill Height: H, feet: 32.25  
Bottom Projection: inches: 0.00  
Thickness of Bottom: Zb, inches: 0.375  
Material: ASTM A283 GrC  
Material Density: lbm/ft³: 490  
Material Yield Stress: Yy, psi: 30,000  
Specific Gravity: 1.00  
API 650 Table 3-1 t: 0.193  
API 650 Table 3-1 Allowable Stress, psi: 27,000  
Soil Bearing Capacity psf: 1,500 assumed  
Reference Drawings: 2105-F-5.00-9.10

Shell Data

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<th>average thickness, inches</th>
<th>(feet)</th>
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<tr>
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<td>0.1835</td>
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<td>7.97</td>
<td>0.1755</td>
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</tr>
<tr>
<td>4</td>
<td>7.97</td>
<td>0.1860</td>
<td>0.016</td>
</tr>
</tbody>
</table>

Weight of Shell \( W_s \) = \((R1H+avg thk)+(R2H+avg thk)+(R3H+avg thk)+(R4H+avg thk))\cdot\pi\cdot D \cdot \text{Material density}

Weight of Shell \( W_s \) = 26,214.85 lbf

Radial Width: API 650 page 3-5  
Radial Width = \( \frac{(390 \cdot Z_d)}{(H^2 \cdot G)^{.5}} \)

Radial Width = 25.75 inches

Hydrostatic Test Stresses = API 650 Table 3-1  
Hydrostatic Test Stresses = \( 2.6 \cdot D \cdot (H-1) / t \)

Hydrostatic Test Stresses = 15,294.37 psi

Compare to Allowable Stress: If > 1, then okay  
1.76536
Shell Design

See API 650 Section 3.6

\[ D = 36.25 < 50, \text{ therefore shell thickness} > 3/16" \; (0.1875") \]

Load from roof

<table>
<thead>
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<th>( n )</th>
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<tr>
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<td>( W_w )</td>
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<tr>
<td>Dead Load, ( \text{lb/ft}^2 )</td>
<td>( DL )</td>
</tr>
<tr>
<td>Live Load, ( \text{lb/ft}^2 )</td>
<td>( LL )</td>
</tr>
</tbody>
</table>

\[
\text{Weight of Roof, lbs:} \quad (\pi D^2/4) \times (DL + LL) \\
36,480.98 \; \text{lbs}
\]

Total Load on Annual Ring = Weight of Shell + Roof

62,695.63 \; \text{lbs}

Unit Load on Annual Ring = Total Load / circumference

549.59 \; \text{lb/ft}

Bearing on Annual Ring = Unit Load / Radial Width

256.09 \; \text{lb/ft}^2

Compare with Soil Bearing Capacity

If Bearing on Annual Ring is less than Soil Bearing Capacity, then okay

256.09 \; \text{is less than} \; 1,500

---

A review was made of the distorted shell area mentioned in a May 2007 report. Upon further review and subsequent inspections, the area in question has been evident since 1989 and was apparently due to the installation of a second floor. This area is not affecting serviceability. Tank 2105-F can continue in service. This is the fourth inspection and certification of this tank (years 2007, 2011, 2012 & 2013).
INSPECTION REPORT

COMPANY: Sunoco Chemicals
LOCATION: Haverhill, OH
DATE: March 2002

STORAGE TANK
NUMBER: 2105-F
PRODUCT: HEAVY HYDROCARBONS

DESC: HEAVY HYDROCARBON STORAGE TANK

EQUIP RETIREMENT DATE: 7/10/2010
NEXT INSPECTION IS DUE: 7/31/2008

DWG#: 2105-F-10.00-12.10

PetroChem Inspection Services
April 24, 2007

Anthony Sciort
Sunoco Chemical Company
PO Box 127
Ironton, OH 45638
(740) 533-5438

Subject: Tank 2104-F Evaluation and Assessment Report
Heavy Hydrocarbon Service

Dear Mr. Sciort,

Information provided by you has been reviewed and an assessment has been completed on the subject tank.

I hereby certify that I have performed an assessment of the above referenced storage tank at your Haverhill facility as required by the Ohio Administrative Code Rule 3745-50-44. It has been concluded that the tank and ancillary equipment is adequately designed and has sufficient structural strength and compatibility for its intended service.

Ohio Administrative Code Rule 3745-50-42(D) requires a certification statement, therefore, “I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

Should you have any questions, please contact me.

Sincerely,

David Gibson, PE (Ohio E-55229)
Principal

[Signature]

Ohio EPA DMWM DEC 16 2011

EEC
P.S.C.
ETA ENGINEERING CONSULTANTS, PSC
RCRA Design Assessment of
New Tank 2003F

Sunoco Chemicals
Haverhill, Ohio
June 2006
1.0 Introduction

Sunoco Chemicals, Haverhill, Ohio, is proposing a modification to a tank in light hydrocarbon service by installing a new stainless steel tank to replace a carbon steel tank. The owner or operator installing a new tank system component must obtain a written design and installation assessment, meeting the requirements of OAC 3745-55-92, which identifies that the new tank system is acceptable for managing hazardous waste.

This assessment is intended to fulfill the design assessment requirements of OAC 3745-55-92 (A).

This design assessment is based on the following activities performed by Eta Engineering Consultants, P.S.C. (EEC) representatives:

- Review of tank quote submitted by Witherup Fabrication & Erection, Inc.
- Development of coating system for application to dike containment area
- A site visit of the area where the new tank is to be installed
- Verbal information provided by the facility personnel

2.0 Description of Tank System and Containment

The new tank system is a replacement to the light hydrocarbon storage system. Piping systems delivering product to the tank and taking product from the tank will not be modified. The new stainless steel tank will have a 32'-8" diameter and be 32'-0" tall. The nominal capacity will be 200,000 gallons.

The dike containment will also have a new lining system installed according to RCRA requirements. The new lining system, a “Carboline 145 AFRC” system will replace the existing Vinyl Ester (VE-4) system.

The following documents are attached for information;

- Drawing 10-00-0168
- Drawing A8HH06-0068 TK2003F
- Drawing 10115

3.0 Design Standards

The proposed tank replacement project and containment lining system will conform to API 650 Appendix S and 40 CFR Parts 264/265, Subpart J.

4.0 Hazardous Characteristics of the Wastes

The material stored in Tank 2003F is considered hazardous and is a regulated RCRA waste. A report narrative of the analytical tests performed on this material is attached.
5.0 Soil and Water Corrosion

The new tank is above ground and the lining system has been evaluated as to the resistant properties to soil and water.

6.0 Underground Tank System Components

This section does not apply.

7.0 Foundation Consideration

The existing foundation of 2003F has been found to be sound and sufficient for supporting the stainless steel tank.

8.0 Tank System Component Installation Inspection

As part of the tank system inspection, a qualified independent professional engineer will visually inspect the tank system to verify the following:

- Tank system components are above ground allowing visual inspection
- The exterior tank system components (that are not stainless steel) are free from visible corrosion and painted for exterior corrosion protection
- Installed components represent the information in this design assessment
- Installed containment lining system meets the designed criteria
Certification Statement for Written Assessment for the Design for the Tank System

The purpose of this assessment is to fulfill requirements of OAC 3745-55-92 (A) for tank systems used to store hazardous wastes.

I attest that I am an independent, qualified, registered professional engineer.

The assessment shows that the new system components are adequately designed or specified, has compatibility with the identified wastes to be managed.

The assessment includes, at a minimum, the following information:
1) Design standards according to which the ancillary equipment are constructed
2) Hazardous characteristics of the waste to be handled
3) For new tank systems or components in which the external shell of a metal tank will be in contact the soil or with water, a determination by a corrosion expert of:
   a) Factors affecting the potential for corrosion
   b) The type and degree of external corrosion protection that are needed to ensure the integrity of the tank system during the use of the tank system components

I certify under penalty of law that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person who manages the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true and accurate. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature of Registered Professional Engineer

David Gibson

Date: June 14, 2006
Attachment D-6

Tank Assessments (2108-F)
RCRA Tank Assessment
Tank 2108-F

Aristech Chemical Corporation
Haverhill, Ohio Plant

Prepared by:
ICF Kaiser Engineers, Inc.
April 28, 1997
CERTIFICATION

ICF Kaiser Engineers, Inc. has performed a RCRA tank assessment for a new tank system located at Aristech Chemical Corporation, Haverhill, Ohio Plant. The purpose of this assessment is to fulfill requirements of OAC 3745-55-92 and 40 CFR 264.192 for new tank systems. Limited to the information contained in this assessment report, ICF Kaiser provides the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Carl V. Jeffreys, P.E.
Registered Professional Engineer

Date 4-28-97

(SEAL)
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
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<tbody>
<tr>
<td>1.0 Introduction</td>
<td>1</td>
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<tr>
<td>2.0 Description of Tank System</td>
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<td>3.0 Design Standards</td>
<td>2</td>
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<td>4.0 Hazardous Characteristics</td>
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<tr>
<td>5.0 Soil and Water Corrosion</td>
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<tr>
<td>6.0 Underground Tank System Components</td>
<td>3</td>
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<tr>
<td>7.0 Foundation Considerations</td>
<td>3</td>
</tr>
<tr>
<td>8.0 Tank Installation Inspection</td>
<td>3</td>
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</table>

## Attachments

- Select Design Drawings
- Piping and Instrumentation Diagrams
- Testing Documentation
1.0 Introduction

Aristech Chemical Corporation, Haverhill Plant (Aristech), is installing a new hazardous waste accumulation tank. The tank and associated equipment are defined as a “New Tank System” in OAC 3745-50-10(A)(72) since it was installed after July 14, 1986. The owner or operator of new tank systems must obtain a written design and installation assessment identifying that the system is acceptable for accumulating, storing or treating hazardous waste.

This assessment is based on the following activities performed by ICF Kaiser representatives:

- Review of attached information
- A site inspection of the installed tank system
- Verbal information provided by the plant engineer and construction manager

2.0 Description of Tank System

The tank system consisted of the following components:

- One 100,000 gallon, double bottom, steel tank
- New aboveground inlet, outlet, and recirculation piping
- Two pumps
- Steam heating piping system

Select P&ID, tank design drawings, API 650 plate information, and secondary containment system design drawings are attached.

The new tank system, designated as 2108-F, is located within an existing permitted hazardous waste tank farm adjacent to tanks 2104-F and 2105-F. All three tanks share a common secondary containment system consisting of earthen dikes and base covered with concrete paving. The paving is constructed with water stops at the concrete joints.

The tank consists of a vertical steel vessel, 32 feet high and 24.5 feet in diameter. A double bottom plate is separated with steel grating with the interstitial space drained by small side wall nozzles emptying into the secondary containment area.
The 2108-F tank system is designed for the accumulation of heavy organic distillation bottoms resulting from the production of phenol, aniline and BPA. This new tank system is intended to accumulate material normally stored in the adjacent two tanks during testing periods to characterize the waste material prior to burning. Associated piping and pumps for the new tank system include the following:

- Inlet piping from the piping rack associated with the permitted storage tanks
- Outlet piping to each of the two adjacent storage tanks
- Recirculating piping
- Two pumps located within the secondary containment area

Piping is constructed of schedule 40 welded steel not requiring secondary containment. Flanges, valves, and pumps are limited to the areas within secondary containment.

Since the waste material is very viscous, forming a solid at ambient temperatures, the tank system is heated with steam coils and insulated along the piping runs.

3.0 Design Standards

Based on the design drawings and field plate, the tank was designed to API 650 standards, which are acceptable standards for steel vessels. The tank was field constructed of carbon steel. An API code plate was located on the tank side wall identifying operating and design information. A copy of this plate is attached.

Ancillary piping was constructed of Schedule 40 carbon steel with welded fittings.

4.0 Hazardous Characteristics of the Wastes

The waste to be accumulated in the tanks consist of organic distillation bottoms that are not corrosive. There are no know constituents that would attack the steel tank. Detailed waste characterization and testing results are contained in the facilities RCRA waste analysis plan.
5.0 Soil and water Corrosion

This section does not apply. The tank and ancillary equipment are aboveground, not in contact with soil or water.

6.0 Underground Tank System Components

This section does not apply. The tank and ancillary equipment are aboveground.

7.0 Foundation Consideration

The tank is founded on a two-foot, steel reinforced, concrete pad supported by medium to stiff clayey silts. The concrete pad extends beyond the tank perimeter where it is connected to 6-inch concrete paving that provides secondary containment. A section drawing of the foundation is attached.

The static loads from the tank and material are less than 3000 psf, which is a light foundation load. Standard foundation references allow bearing pressures in excess of 3000 psf for the site soil types. The plant is not located on one of the political jurisdictions listed in 40 CFR 264 Appendix VI for high risk seismic areas relative to managing hazardous wastes.

The perimeter of the tank is anchored to the concrete pad to minimize the potential for floating or dislodgment.

While silts are susceptible to frost heave, the clayey silt nature of site soils results in a hydraulic conductivity of $1 \times 10^{-7}$, which typically is not subject to significant frost heave. The site inspection did not reveal damage to the existing concrete paving indicative of frost heave. Due to the heated nature of the stored materials, site soils, and existing foundations, frost heave was not considered a factor for the operating tank system.

8.0 Tank Installation Inspection

As part of the tank system inspection, a qualified representative of ICF Kaiser inspected the tank system resulting in the following observations:

- The tank system components were aboveground allowing visual inspection
• No structural damage to the installed tank system was observed

• The exterior was painted and piping was insulated for corrosion protection

• An API 650 design plate was mounted on the tank

Based on a review of testing documentation and discussions with the plant engineer and construction manager, the tank was tested as follows:

• Hydrostatic testing was performed by filling the tank to slightly above the top roof weld. At the time of inspection, the test waters were draining from the tank.

• Oil penetrant testing was utilized along the bottom plate/side wall weld.

• Vacuum box testing was performed on both bottom plate welds

• Piping was hydraulically tested

Documentation of this testing is attached.
**Title:** API-650 NAME PLATE  
**Tank No.:** 2108-F  
**24'-6" Dia.**  
**Customer:** ARISTECH CHEMICAL CORP.  
**Location:** HAVERHILL, OH.  

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<tr>
<td>3</td>
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NAME PLATE IS TO BE INSTALLED ON THE TANK NEAR A MANWAY.

---

**API STANDARD 650**

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<th>YEAR COMPLETED</th>
<th>EDITION</th>
<th>REVISION NO.</th>
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<th>NOMINAL HEIGHT</th>
<th>NOMINAL CAPACITY</th>
<th>DESIGN LIQUID LEVEL</th>
<th>MAX. OPER. TEMP.</th>
<th>DESIGN PRESSURE</th>
<th>MFG SERIAL NO.</th>
<th>PURCHASER'S TK NO.</th>
<th>FABRICATED BY</th>
<th>ERECTED BY</th>
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<td>1996</td>
<td>9TH</td>
<td>2</td>
<td>24'-6&quot;</td>
<td>32'-0&quot;</td>
<td>2381 BBL'S</td>
<td>32'-0&quot;</td>
<td>400' F</td>
<td>12&quot; OF W.C.</td>
<td>ER1873</td>
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**Shell Course**

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**OHIO EPA DHWM**

**SHOP TO RIVET NAMEPLATE TO BRACKET**

**OCT 2-9-2001**
CUT OFF CORNER OF TOP PLATE 1/2" x 1/2", ALL PLATES 5/16" & THICKER, OPTIONAL FOR 1/4" & THINNER PLATES.

THREE PLATE LAP CORNER DETAIL

12'-6" RAD

8'-10 1/2" 3'-0"

DIA. CALC. ON 1 1/2" MIN. REQ'D.

TYP. LAP JOINT

ADN

WEIGHT OF PLATES
SKETCH PLATES - 30,071

矩阵服务，Inc.

标题：底部布局

客户：Aristech化学公司

地点：河滨，俄亥俄州

TANK NO.: 2108-F

DIA.: 24'-6"

DBL. BY: PTL

CILK. BY: HLF

Job No.: ER1873

Dwg. No.: 01
COMPANY: ARISTECH
JOB #: ER-1873

LOCATION: HAVERHILL OH

TANK #: 2108-F

TANK SIZE: 24'6 X 32

DATE: 3-21-97

This certifies the satisfactory completion of the hydrotesting on the above referenced tank.

The following personnel conducted and/or witnessed this test:

MATRIX FOREMAN: [Signature]

OWNER REPRESENTATIVE: [Signature]

TEST OPERATOR: 

COMMENTS:

________________________

________________________

________________________

________________________

________________________

OHIO EPA DMWM

00176

-00305

-OC-94

DEC 16 2011
COMPANY: ARISTECH
LOCATION: HAVERHILL OH
TANK #: 2108-F
TANK SIZE: 24" X 32'
DATE: 2.24.97

This certifies the satisfactory completion of the corner weld oil penetrant test.

Light diesel oil was applied to the entire length of the corner weld. No “wicking” occurred.

The following personnel conducted and/or witnessed this test:

MATRIX FOREMAN: HINKLEY JOWERY
OWNER REPRESENTATIVE: [Signature]
TEST OPERATOR: ROBERT MINION
COMMENTS: TEST WAS OK

00177

OHIO EPA. DHWM
OCT 29 2001

Ohio EPA. DHWM DEC 16 2011
COMPANY: APRITECH
LOCATION: HAVERHILL OH
TANK #: 2108-F
TANK SIZE: 24'6" X 32"
DATE: 2-20-97

This certifies the satisfactory completion of the vacuum box test on the above referenced tank bottom.

The vacuum box test was completed on all fillet welds joining bottom plates.

The following personnel conducted and/or witnessed this test:

MATRIX FOREMAN: HINKLE Towery
OWNER REPRESENTATIVE: [Signature]
TEST OPERATOR: W. Payne L. Roubelbush
COMMENTS: TEST OK

Ohio EPA DWWM DEC 16 2011
OHIO EPA DWWM
HAVERHILL RECEIVED
FEB 20 1997
00173
00307
FIELD CONSTRUCTION

OCT 29 2001
# Piping Construction Check Sheet

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<th>Line Number</th>
<th>Line Size</th>
<th>Pipe Spec</th>
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<th>Date</th>
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<th>Test Press</th>
<th>Init</th>
<th>Date</th>
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<th>Type</th>
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<th>Date</th>
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- **SHOP PRE-FAB SPOOLS TAPEO OVER WELDS, ALL WELDS NOT PAINTED**
  - **SPOOLS AND PIPE PAINTED**

---

1. At some point in time during construction of each pipeline check to verify that the materials of construction are per the specifications. For alloy pipe checking of the stamped ASTM designation is sufficient. For carbon steel pipe verify the schedule by measuring the wall thickness.
2. Medium refers to the test medium. I.e. air, water, in service.
3. Type refers to the kind of non-destructive test required. I.e. 10% X-ray, 100% X-ray, visual, etc.
4. Check to see that all permanent supports have been installed and adequately support the pipe.
5. All valves that are open to atmosphere must be plugged, capped, or blinded.
6. All quarter turn valves that are 2" and under in size and that are open to the atmosphere must have oval handles.

NR indicates "not required" — NA indicates "not applicable"
EARLY CONSTRUCTION COMPANY
QUALITY CONTROL

Test Record Sheet
Job # 10
Job Description 2108 Tank Heaten Coil

Line No. MS-22096 - 2" - (151) SCH. 160
Type of System Steam
Operating Pressure 150 lb
Test Pressure 170 lb
Test Medium: Nitrogen Water Air Water
Type of Joints: Welded Scrd Other Welded

Start time of test 2:45 pm
Complete test 3:30 pm

Date 3-18-97

Early Representative Jim Porter
Owner Representative
Other Representative

NOTE: Soon after finishing welding of the 7in.
coil, it began to rain. Early's Hydro Pump
did not work. We worked on it for appx. 1 hr.
still no luck, by then it was appx. 4:45 pm.
matrix was due in the following day to button up
the tank. I told Early that I would accept the
hydrant press on the pipe as a qualified hydro,
as it was held at the above press. For a longer
period than stated.

Ohio EPA DMWW DEC 16 2011
OHIO EPA. DHWM 3-19-97
OCT 29 2001
This is a core roof API storage tank, during the hydro test the water level was raised to 12" Above the roof to shell seam, all of the roof weld seams were visually inspected. During the construction of this tank Tim Stith and Tim Climer reviewed the progress. 3/29/97, Stith and Climer reviewed progress prior to Radiographic inspection as required per API-650. Radiographic and Vacuum box records on file in Cost Management department.

VISUAL EXAMINATION PERFORMED BY

James H. Climer

VISUAL EXAMINATION EVALUATION

James H. Climer

Ohio EPA DHWM
DEC 16 2011
Test Record Sheet
Job # 10
Job Description Test Spill Back Line

Line No. Spill Back Line
Type of System Heavy Ends
Operating Pressure
Test Pressure 170 lb
Test Medium: Nitrogen Water Air Water
Type of Joints: Welded Scrd Other Welded

Start time of test 11:15 AM
Complete test 12:00 Noon

Date 3-21-97

Early Representative

Owner Representative

Other Representative

Ohio EPA DMWM DEC 16 2011
RCRA Permit Renewal Application

Volume 2 of 2

Sunoco, Inc., (R&M)
Haverhill, Ohio
EPA ID #OHD005108477

Prepared by:

URS
13825 Sunrise Valley Drive, Suite 250
Herndon, Virginia 20171

May 2011
SECTION F

PROCEDURES TO PREVENT HAZARDS
SECTION F. PROCEDURES TO PREVENT HAZARDS

TABLE OF CONTENTS

Section                                                                 Page

SECTION F. PROCEDURES TO PREVENT HAZARDS .............................................. F-1

F-1 SECURITY: §264.14, OAC 3745-54-14; 270.14(b)(4), OAC 3745-50-44 .......... F-1
   F-1a Security Procedures and Equipment: §270.14(b)(4), OAC 3745-50-44; .... F-1
       264.14, OAC 3745-54-14 .................................................................. F-1
   F-1b Waiver: §264.14(a), OAC 3745-54-14 ............................................. F-1

F-2 GENERAL INSPECTION REQUIREMENTS: [OAC 3745-50-44 AND
   3745-54-15]............................................................................................... F-2
   F-2a Tank Inspection Requirements [OAC 3745-55-95] .............................. F-3
   F-2b Boiler Inspection Requirements [OAC 3745-54-15] ............................ F-4
   F-2c Container Inspection Requirements [OAC 3745-66-74] ....................... F-4
   F-2d Other Inspection Requirements ....................................................... F-4

F-3 DOCUMENTATION OF PREPAREDNESS AND PREVENTION
   REQUIREMENTS............................................................................................ F-4
   F-3a Equipment Requirements: [OAC 3745-50-44, 3745-54-32] ...................... F-5
   F-3b Aisle Space Requirement: [OAC 3745-54-35] ..................................... F-6

F-4 PREVENTIVE PROCEDURES, STRUCTURES, AND EQUIPMENT ...... F-6
   F-4a Unloading Operations: [OAC 3745-50-44] ........................................ F-6
   F-4b Run-Off: [OAC 3745-50-44] .............................................................. F-6
   F-4c Water Supply: [OAC 3745-50-44]....................................................... F-6
   F-4d Equipment and Power Failure: [OAC 3745-50-44] ............................ F-6
   F-4e Personal Protective Equipment: [OAC 3745-50-44] ........................... F-7

F-5 PREVENTION OF REACTION OF IGNITABLE, REACTIVE, AND
   INCOMPATIBLE WASTES: [OAC 3745-50-44] ........................................ F-7
   F-5a Precautions to Prevent Ignition or Reaction of Ignitatable or Reactive
       Wastes: [OAC 3745-50-44 and 3745-54-17] ....................................... F-7
   F-5b General Precautions for Handling Ignitatable or Reactive Waste and
       Mixing of Incompatible Waste: [OAC 3745-50-44 and 3745-54-17] ...... F-8
   F-5c Management of Ignitatable or Reactive Wastes in Containers:
       [OAC 3745-50-44(c)(1) and 3745-55-76] ............................................. F-8
   F-5d Management of Incompatible Wastes in Containers:
       [OAC-3745-50-44(c)(1) and 3745-55-77] .......................................... F-8
   F-5e Management of Ignitatable or Reactive Wastes in Tank Systems:
       [OAC-3745-50-44(c)(2) and 3745-55-98] .......................................... F-8
SECTION F. PROCEDURES TO PREVENT HAZARDS

TABLE OF CONTENTS (Continued)

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-5f</td>
<td>Management of Incompatible Wastes in Tank Systems: [OAC 3745-50-44, 3745-54-17, and 3745-55-99]</td>
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<td>Management of Ignitable Reactive Wastes Placed in Waste Piles: [OAC 3745-50-44(c)(4) and OAC 3745-56-56]</td>
<td>F-9</td>
</tr>
<tr>
<td>F-5h</td>
<td>Management of Incompatible Wastes Placed in Waste Piles: [OAC 3745-50-44 and 3745-56-57]</td>
<td>F-9</td>
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<td>Management of Ignitable or Reactive Wastes Placed in Surface Impoundments: [OAC 3745-50-44(c)(3 and 3745-56-29]</td>
<td>F-9</td>
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<tr>
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<td>Management of Ignitable or Reactive Wastes Placed in Landfills: [OAC 3745-50-44(c)(7 and 3745-57-12]</td>
<td>F-10</td>
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<td>Management of Incompatible Wastes Placed in Landfills: [OAC 3745-50-44(c)(7 and 3745-57-13]</td>
<td>F-10</td>
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<td>F-5m</td>
<td>Management of Ignitable or Reactive Wastes Placed in Land Treatment Units: [OAC 3745-50-44(c)(5 and 3745-56-81]</td>
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<td>F-5n</td>
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<td>F-10</td>
</tr>
</tbody>
</table>
SECTION F. PROCEDURES TO PREVENT HAZARDS

LIST OF EXHIBITS

<table>
<thead>
<tr>
<th>Exhibit F-1</th>
<th>Security Devices Inspection Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exhibit F-2</td>
<td>Safety and Emergency Equipment Inspection Schedule</td>
</tr>
<tr>
<td>Exhibit F-3</td>
<td>Spill Cleanup Supplies Inspection Schedule</td>
</tr>
<tr>
<td>Exhibit F-4</td>
<td>Tank System and Ancillary Equipment Inspection Schedule</td>
</tr>
</tbody>
</table>
SECTION F. PROCEDURES TO PREVENT HAZARDS

This section describes the security and emergency procedures and equipment used at the Haverhill Plant. It also presents the site inspection plan that will be followed to minimize potential hazards. This section includes information on the procedures, structures, and equipment to be used by the facility to minimize spills during waste transfer, to prevent run-on or run-off from impacting the environment or interfering with facility operations, and to mitigate the effects of equipment failure. Finally, the techniques used to manage ignitable waste at the facility are discussed.

F-1 SECURITY: §264.14, OAC 3745-54-14; 270.14(b)(4), OAC 3745-50-44

F-1a Security Procedures and Equipment: §270.14(b)(4), OAC 3745-50-44; 264.14, OAC 3745-54-14

The Haverhill Plant has a 24-hour surveillance system that provides continuous security for all of its operations. Access to the facility is controlled by a chain link fence which completely surrounds the plant. Security personnel at the main gate entrance gate monitor persons and vehicles entering the facility. Visitors are required to register at the guard house, obtain a visitor’s pass, and view a safety video.

F-1a(1) 24-Hour Surveillance System: §264.14(b)(1), OAC 3745-54-14

Security personnel are provided at the main gate 24 hours a day. Traffic (vehicular and pedestrian) entering and leaving the facility is monitored. During the night shift, security personnel inspect the interior and perimeter of the facility.

F-1a(2) Barrier and Means to Control Entry: §264.14(b)(2), OAC 3745-54-14

F-1a(2)(a) Barrier: §264.14(b) (2)(I), OAC 3745-54-14

The active portion of the facility is enclosed by a chain link fence.

F-1a(2)(b) Means to Control Entry: §264.14(b)(ii), OAC 3745-54-14

Entrance to the facility is gained through various restricted-access gates. Entry through the gates requires the use of an electronic device, which is issued to plant employees and other long-term on-site personnel after having their identity established and being approved by Haverhill supervisory personnel. Security personnel are provided at the main gate and monitor the other gates via electronic equipment.
F-1a(3) Warning Signs: §264.14(c), OAC 3745-54-14

Signs with the legend “Danger - Keep Out - Authorized Personnel Only” are posted at each entrance gate. The same sign is posted on the fence surrounding the facility at approximately 100-foot intervals. The signs may be seen from any approach and are legible from a distance of 25 feet. These signs also prevent unauthorized entry into the boiler area.

F-1b Waiver: §264.14(a), OAC 3745-54-14

A waiver of the security procedures and equipment requirements is not being sought.

F-2 GENERAL INSPECTION REQUIREMENTS: [OAC 3745-50-44 AND 3745-54-15]

The Ohio Administrative Code (OAC) includes inspection requirements for hazardous waste treatment, storage, and disposal facilities. These inspections are intended to prevent and detect system malfunctions, equipment deterioration, operator error, and other discharges which, if allowed to continue without remedial action, might ultimately lead to a release of hazardous waste constituents to the environment and/or threaten human health. The Haverhill facility complies with these requirements, as described below.

The facility has developed and follows inspection schedules for various types of equipment. The types of equipment and the location of the individual inspection schedules in this permit application are provided in the following table. The facility performs the tank inspections at the required frequency when those pieces of equipment are operating with or storing hazardous waste.

<table>
<thead>
<tr>
<th>#</th>
<th>Type of Equipment</th>
<th>Location of Inspection Schedule</th>
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<tr>
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<td>Security Devices</td>
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<td>2</td>
<td>Safety and Emergency Equipment</td>
<td>Exhibit F-2</td>
</tr>
<tr>
<td>3</td>
<td>Spill Cleanup Supplies</td>
<td>Exhibit F-3</td>
</tr>
<tr>
<td>5</td>
<td>Tank Systems and Ancillary Equipment</td>
<td>Exhibit F-4</td>
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</tbody>
</table>

The tank inspection schedules include the associated monitoring, operating, and structural equipment. The inspection schedules are maintained at the facility.
The inspection schedules identify the types of problems that need to be assessed during the inspections. The schedules also identify the frequency for the inspections. The results of the inspections are recorded on paper-copy forms or in computerized records. The records include at least the following information:

- Date and time of the inspection;
- Name of the inspector;
- A notation of the observations made; and
- The date and nature of any repairs or remedial actions.

The records are maintained for at least three years from the date of inspection.

The facility will remedy any malfunction or deterioration that the inspections reveal to prevent an environmental or human health hazard. If an inspection reveals that an environmental or human health hazard has already occurred, the facility will take remedial action.

F-2a **Tank Inspection Requirements** [OAC 3745-55-95]

The OAC includes specific inspection requirements for hazardous waste storage tanks. The Haverhill facility complies with these requirements, as described below.

Permitted, hazardous waste storage tanks 2003-F, 2104-F, and 2105-F are each equipped with level gauges. These gauges also serve as high level alarms. Operators routinely monitor the gauges and alarms to prevent overfilling of the tanks.

The storage tanks are each equipped with double bottoms and a bleed pipe. Should a leak occur and drain into the space between the double bottoms, the waste would flow through the bleed pipe into the tanks’ secondary containment system. Leaks would be detected during the inspection of the secondary containment.

When the tanks contain hazardous waste, facility personnel inspect above-ground portions of the tank systems daily for external corrosion and releases of waste, waste released from the tanks would be contained in the secondary containment. A description of the secondary containment is provided in Section D.
When the tanks contain hazardous waste, the tank construction materials, secondary containment area, secondary containment construction, and all areas immediately surrounding any of the tank systems are inspected daily for corrosion, erosion, leaks, or deterioration.

When the tanks do not contain hazardous waste, the OAC inspection requirements do not apply. Therefore, the tanks will not be inspected when they do not contain hazardous waste.

None of the permitted storage tanks have cathodic protection.

**F-2b  Boiler Inspection Requirements [OAC 3745-54-15]**
As of 2009, the operation of the boilers on hazardous waste is regulated by 40 CFR 63, Subpart EEE: The HWC MACT Standards. Boiler inspections are required for that regulation and are addressed in the Operating and Maintenance Plan for that regulation.

**F-2c  Container Inspection Requirements [OAC 3745-66-74]**
The Haverhill facility has no containers or container storage areas for which a permit is required. Therefore, the facility is exempt from the container requirements of OAC 3745-55-70 because of the exceptions provided by OAC 3745-54-01(G)3 and OAC 3745-52-34 for generators of hazardous waste storing the material in containers for fewer than 90 days. Therefore, the Haverhill plant conducts inspections of all less-than-90-day hazardous waste container storage areas in compliance with OAC 3745-66-74. An inspection of any container storage area is conducted at least weekly, when the container area is storing hazardous waste. Specific items looked for during the inspection are proper labeling of containers, lids in place, container condition, and the presence of any leaks or deterioration of the containers or their containment.

**F-2d  Other Inspection Requirements**
The OAC includes specific inspection requirements for surface impoundments; waste piles; land treatment units; landfills; incinerators; and miscellaneous units. However, the Haverhill plant does not include any of these types of regulated units. Therefore, the specific inspection requirements for those units are not applicable to the Haverhill facility.

**F-3  DOCUMENTATION OF PREPAREDNESS AND PREVENTION REQUIREMENTS**
The Haverhill Plant is designed, constructed, maintained, and operated in a manner that minimizes the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, surface water, or groundwater
which could threaten human health or the environment. The Haverhill plant follows industry
guidelines, codes of practice, manufacturer specifications, and sound engineering principles. A
contractor will respond should a spill reach the Ohio River. The preparedness and prevention
procedures for the Haverhill Plant are discussed in detail in this section.

F-3a  Equipment Requirements: [OAC 3745-50-44, 3745-54-32]
The Haverhill plant meets all the equipment requirements detailed in OAC 3745-54-32 and as
described in this section. Included is a discussion of the internal communications system,
external communications system, emergency equipment, water for fire control, and aisle spacing.

F-3a(1)  Internal Communications: [OAC 3745-54-32]
The Haverhill Plant has available several types of internal communication systems capable of
providing immediate emergency instruction to facility personnel including radios, internal public
address system with audible, plant-wide alarms, and a telephone system.

F-3a(2)  External Communications: [OAC 3745-54-32]
Telephones are immediately available throughout the facility for summoning emergency
assistance from the local police department, fire department, and state and local emergency
response teams. Phones are located at every operating unit control room, in the guard houses,
and in the offices at the facility.

F-3a(3)  Emergency Equipment: §264.32(c), OAC 3745-54-32
Emergency equipment including portable fire extinguishers, fire control equipment, spill control
equipment, and decontamination equipment is available at the facility. This equipment is
described in the plant emergency procedures.

F-3a(4)  Water for Fire Control: §264.32(d), OAC 3745-54-32
The facility is equipped with water at adequate volume and pressure to supply water hose
streams, foam producing equipment, and automatic sprinklers. Three one-million-gallon fire
water storage tanks are located at the plant-site.

An underground fire water header is located throughout the plant site with fire hydrants
distributed in critical areas. The header is supplied with fire water from the fire water storage
tanks using pumps that are located near the tanks. Additional water for fire control is provided at
the river dock. In addition, a fixed foam system is provided for protection of the west tank field.
This system consists of foam, a foam pump, and fixed foam lines to the cumene tanks, phenol tanks, and AMS tanks.

**F-3b  Aisle Space Requirement: [OAC 3745-54-35]**
Sufficient aisle space exists and is maintained to allow the unobstructed movement of personnel, fire protection equipment, or spill control equipment to any area of the plant’s facilities and operations in an emergency. The aisle space is provided by a road system which is shown on the site plan in Exhibit B-2 and consists of 20-foot-wide roads with 2-1/2 foot shoulders. In addition, the facility complies with the buffer zone requirements of the National Fire Protection Association Flammable and Combustible Code.

**F-4  PREVENTIVE PROCEDURES, STRUCTURES, AND EQUIPMENT**
Preventive procedures, structures, and equipment utilized to prevent a release that may threaten human health or the environment are in the following sections.

**F-4a  Unloading Operations: [OAC 3745-50-44]**
Wastes stored are piped directly from the process areas to the storage tanks. The wastes are then either piped directly to the utility boilers or unloaded into trucks or transportation containers.

**F-4b  Run-Off: [OAC 3745-50-44]**
Run-off from hazardous waste areas at the facility is retained by the secondary containment systems. This run-off will not come in contact with any hazardous waste under normal operations; however, it will be collected and visually inspected before any discharge to the bio-wastewater system is allowed. If visual observations indicate that the precipitation has been impacted by a release from the tank, then the water will be disposed of off site as a hazardous waste.

**F-4c  Water Supply: [OAC 3745-50-44]**
The facility ensures that potential water supplies are protected from contamination by providing all waste handling areas at the facility with adequate spill containment. Potable water is supplied via Municipal Water Treatment Facilities. Water used for utility and fire water is drawn from the Ohio River and treated.

**F-4d  Equipment and Power Failure: [OAC 3745-50-44]**
The procedures and equipment to be used during equipment failure and power outages are outlined in Plant Emergency procedures. All unit shift coordinators have a copy of the manual and are familiar with the procedures.
In the event of electrical power failure, emergency equipment will be employed to maintain facility operations. Emergency generators are located throughout the plant. Portable pumps are available at the facility to prevent overtopping of the sumps. Pipe connections are provided on existing pipe lines to allow the portable pumps to be easily connected during emergencies.

**F-4e  Personal Protective Equipment: [OAC 3745-50-44]**

The Haverhill Plant ensures that personnel are protected from undue exposure to hazardous waste by requiring use of adequate protective clothing and equipment. The facility requires that all personnel inside the plant wear hard hats, safety eyeglasses, and safety shoes. Other protective equipment is used as specified by facility procedures.

Located throughout the production areas are emergency safety cabinets, safety showers and eye wash fountains. Equipment available at the facility to prevent undue exposure of personnel to hazardous waste is described in the Contingency Plan (Section G).

**F-5  PREVENTION OF REACTION OF IGNITABLE, REACTIVE, AND INCOMPATIBLE WASTES: [OAC 3745-50-44]**

**F-5a  Precautions to Prevent Ignition or Reaction of Ignitible or Reactive Wastes: [OAC 3745-50-44 and 3745-54-17]**

The hazardous waste management units requiring a RCRA Part B permit do not handle any reactive wastes. However, they do manage several ignitable waste streams. The facility has taken precautions to prevent ignition during handling of ignitable waste. The facility ensures that ignitable wastes are separated from sources of ignition such as open flames, smoking, cutting and welding, hot surfaces, frictional heat, sparks, spontaneous ignition, and radiant heat.

Due to the fact that the Haverhill Plant is a chemical production facility which routinely handles ignitable or flammable substances in its process areas, the facility has "NO SMOKING" signs conspicuously placed on all gates to the plant entrance. Smoking is not permitted in the plant, except in specific, designated areas.

Additionally, the plant strictly controls the work within the facility which could lead to accidental ignition of substances. The plant's safety regulations require the issuance of an internal Hot Work Permit prior to the performance of all cutting, burning, welding, use of non-explosion proof tools or electrical equipment or an ignition source. Finally, the facility has a safety regulation for lockout of
all electrical motor driven equipment and electrical circuits that require operations or maintenance to repair or inspect.

F-5b General Precautions for Handling Ignitable or Reactive Waste and Mixing of Incompatible Waste: [OAC 3745-50-44 and 3745-54-17]

The facility does not manage any reactive or incompatible wastes in the tanks requiring a permit.

The precautions outlined above in Section F-5a are followed to prevent reactions of ignitable waste which:

- Generate extreme heat or pressure, fire or explosions, or violent reactions;
- Produce uncontrolled flammable fumes, dusts, or gases in sufficient quantities to threaten human health or the environment;
- Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;
- Damage the structural integrity of the device or the facility; or
- By similar means threaten human health or the environment.

F-5c Management of Ignitable or Reactive Wastes in Containers: [OAC 3745-50-44(c)(1) and 3745-55-76]

There are no container storage areas being permitted at the facility. Therefore, this section is not applicable.

F-5d Management of Incompatible Wastes in Containers: [OAC-3745-50-44(c)(1) and 3745-55-77]

There are no container storage areas being permitted at the facility. Therefore, this section is not applicable.

F-5e Management of Ignitable or Reactive Wastes in Tank Systems: [OAC-3745-50-44(c)(2) and 3745-55-98]

The Haverhill Plant follows several operational procedures to minimize the possible ignition of ignitable waste. The plant strictly controls the work within the facility which could lead to accidental ignition of substances. The plant’s safety regulations require the issuance of an internal Hot Work Permit prior to the performance of all cutting, burning, welding, use of non-explosion proof tools or electrical equipment or an ignition source. Hot work routinely requires a fire watch in areas such as the hazardous waste tanks to prevent the possibility of stray sparks or hot material coming into contact with ignitable material. Finally, the facility has a safety...
regulation for lockout of all electrical motor driven equipment and electrical circuits that require operations or maintenance to repair or inspect.

The only unit managing ignitable waste requiring a permit is Tank 2003-F. All plant safety regulations are followed carefully when working on this tank and its appurtenances.

The 2003-F tank is located in accordance with the required spacing in compliance with NFPA 30-1984, Chapter 2, Tank Storage, 2-2.13, Location with Respect to Property Lines, Public Ways and important Buildings on the Same Property and 2-2.2.1 Spacing (Shell to Shell) Between Any Two Adjacent Aboveground Tanks.

The tank is grounded by direct connection to a plant-wide system that serves to provide a common electrical ground for tanks and other equipment to prevent the possible build-up of static electricity that could cause a spark.

**F-5f Management of Incompatible Wastes in Tank Systems:** [OAC 3745-50-44, 3745-54-17, and 3745-55-99]

Incompatible wastes are not stored within the same tank system. Each of the three permitted tanks is dedicated to storing a single waste stream. The tanks will only be used to store other materials after they are cleaned sufficiently to remove the hazardous waste such that there are no incompatibility issues.

**F-5g Management of Ignitable Reactive Wastes Placed in Waste Piles:** [OAC 3745-50-44(c)(4) and OAC 3745-56-56]

There are no waste piles being permitted at the facility. Therefore, this section is not applicable.

**F-5h Management of Incompatible Wastes Placed in Waste Piles:** [OAC 3745-50-44 and 3745-56-57]

There are no waste piles being permitted at the facility. Therefore, this section is not applicable.

**F-5i Management of Ignitable or Reactive Wastes Placed in Surface Impoundments:** [OAC 3745-50-44(c)(3 and 3745-56-29]

There are no surface impoundments being permitted at the facility. Therefore, this section is not applicable.
F-5j  Management of Incompatible Wastes Placed in Surface Impoundments:  [OAC 3745-50-44(c)(3) and 3745-56-30]

There are no surface impoundments being permitted at the facility. Therefore, this section is not applicable.

F-5k  Management of Ignitable or Reactive Wastes Placed in Landfills:  [OAC 3745-50-44(c)(7) and 3745-57-12]

There are no landfills being permitted at the site. Therefore, this section is not applicable.

F-5l  Management of Incompatible Wastes Placed in Landfills:  [OAC 3745-50-44(c)(7) and 3745-57-13]

There are no landfills being permitted at the site. Therefore, this section is not applicable.

F-5m  Management of Ignitable or Reactive Wastes Placed in Land Treatment Units:  [OAC 3745-50-44(c)(5) and 3745-56-81]

There are no land treatment units being permitted at the site. Therefore, this section is not applicable.

F-5n  Management of Incompatible Wastes Placed in Land Treatment Units:  [OAC 3745-50-44(c)(5) 3745-56-82]

There are no land treatment units being permitted at the site. Therefore, this section is not applicable.
### Exhibit F-1

**SECURITY DEVICES INSPECTION SCHEDULE**

<table>
<thead>
<tr>
<th>Specific Item</th>
<th>Type of Problem</th>
<th>Frequency of Inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facility fence</td>
<td>Damage to chain link fence or barbed wire</td>
<td>Monthly</td>
</tr>
<tr>
<td>All gates and locks</td>
<td>Sticking or corroding lock; locked/unlocked gates</td>
<td>Monthly</td>
</tr>
<tr>
<td>Warning signs</td>
<td>Damaged or missing</td>
<td>Monthly</td>
</tr>
</tbody>
</table>
EXHIBIT F-2

SAFETY AND EMERGENCY EQUIPMENT INSPECTION SCHEDULE
### Exhibit F-2

**SAFETY AND EMERGENCY EQUIPMENT INSPECTION SCHEDULE**

<table>
<thead>
<tr>
<th>Specific Item</th>
<th>Type of Problem</th>
<th>Frequency of Inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard industrial absorbents (pads, boom)</td>
<td>Insufficient stock</td>
<td>Weekly</td>
</tr>
<tr>
<td>Submersible pumps</td>
<td>Inoperable</td>
<td>Monthly</td>
</tr>
<tr>
<td>Flexible hoses with quick couple fittings</td>
<td>Cracks or holes, fittings stick</td>
<td>Weekly; hydrostatically tested annually</td>
</tr>
<tr>
<td>Emergency shower &amp; eyewash</td>
<td>Inadequate water pressure, leaking, nonfunctional</td>
<td>Weekly</td>
</tr>
<tr>
<td>Face shields and extra protective eye-glasses</td>
<td>Broken, dirty, or insufficient supply</td>
<td>Weekly</td>
</tr>
<tr>
<td>Disposable particulates (dust) respirators</td>
<td>Broken, dirty, or insufficient supply</td>
<td>Weekly</td>
</tr>
<tr>
<td>Chemical cartridge respirators</td>
<td>Broken, dirty, or insufficient supply, correct respirator for hazards of concern</td>
<td>Weekly; before and after each use</td>
</tr>
<tr>
<td>· organic vapor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>· full mask</td>
<td></td>
<td></td>
</tr>
<tr>
<td>· half mask</td>
<td></td>
<td></td>
</tr>
<tr>
<td>· acid gas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>· full mask</td>
<td></td>
<td></td>
</tr>
<tr>
<td>· half mask</td>
<td></td>
<td></td>
</tr>
<tr>
<td>· cartridges/canisters</td>
<td>Insufficient supply, illegible, expiration date exceeded, etc.</td>
<td>Weekly or after each use</td>
</tr>
<tr>
<td>Self-contained breathing apparatus (SCBA)</td>
<td>Air quantity in reserve, air delivery system, strap seals, regulator and warning devices</td>
<td>Weekly and after each use</td>
</tr>
<tr>
<td>Five-Minute Air Capsules</td>
<td>Air quality strap seals</td>
<td>Weekly</td>
</tr>
<tr>
<td>Portable pumps</td>
<td>Nonoperable</td>
<td>Weekly</td>
</tr>
<tr>
<td>Fire extinguishers</td>
<td>Needs recharging, correct fire extinguishers for hazards in the area</td>
<td>Weekly</td>
</tr>
<tr>
<td>· 30 lb. Ansur</td>
<td></td>
<td></td>
</tr>
<tr>
<td>· 10 lb. CO₂</td>
<td></td>
<td></td>
</tr>
<tr>
<td>· 15 lb. CO₂</td>
<td></td>
<td></td>
</tr>
<tr>
<td>· 150 lb. Ansur Dry Chemical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>· 5 lb. Halon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>· 9 lb. Halon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alarm system</td>
<td>Power failure, horn not working, lights out</td>
<td>Weekly</td>
</tr>
<tr>
<td>PA System</td>
<td>Power failure, inoperable</td>
<td>Weekly</td>
</tr>
<tr>
<td>Telephone system</td>
<td>Power failure, inoperable</td>
<td>Weekly</td>
</tr>
<tr>
<td>Specific Item</td>
<td>Type of Problem</td>
<td>Frequency of Inspection</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>--------------------------------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>Two-Way Radio</td>
<td>Batteries, inoperable</td>
<td>Weekly</td>
</tr>
<tr>
<td>Generators</td>
<td>Fuel supply, spark plugs, oil</td>
<td>Weekly</td>
</tr>
<tr>
<td>Emergency lighting system</td>
<td>Battery failure, lights</td>
<td>Weekly</td>
</tr>
<tr>
<td>- Medical Grab Bag</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- First Aid Cabinet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protective clothing (impermeable full-body coveralls, gloves, and foot coverings)</td>
<td>Holes, normal wear and tear, or insufficient stock</td>
<td>Weekly</td>
</tr>
<tr>
<td>Safety harnesses and ropes (rescue in confined locations)</td>
<td>Rope stress, broken straps</td>
<td>Weekly</td>
</tr>
<tr>
<td>PSL Foam fire suppression system</td>
<td>Inoperable</td>
<td>Weekly</td>
</tr>
<tr>
<td>Oxygen and combustible gas meter</td>
<td>Battery low</td>
<td>Weekly</td>
</tr>
<tr>
<td>Sprinkler system</td>
<td>Loss of pressure, broken valves</td>
<td>Weekly</td>
</tr>
<tr>
<td>Halon Protection System</td>
<td>Inoperable</td>
<td>Semi-Annually</td>
</tr>
<tr>
<td>BD-908 Fire Trucks</td>
<td>Inoperable equipment, missing equipment</td>
<td>Weekly</td>
</tr>
<tr>
<td>Emergency Fire Water Pumps</td>
<td>Steam supply, fuel supply, inoperable</td>
<td>Weekly</td>
</tr>
<tr>
<td>- steam turbine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- diesel driven</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire Hydrants</td>
<td>Broken valve, loss of pressure</td>
<td>Weekly</td>
</tr>
<tr>
<td>Portable Sump Pumps</td>
<td>Fuel supply, spark plugs inoperable</td>
<td>Weekly</td>
</tr>
<tr>
<td>- gasoline powered</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- air operated</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
EXHIBIT F-3

SPILL CLEANUP SUPPLIES INSPECTION SCHEDULE
**EXHIBIT F-3**

**SPILL CLEANUP SUPPLIES INSPECTION SCHEDULE**

<table>
<thead>
<tr>
<th>Specific Item</th>
<th>Type of Problem</th>
<th>Frequency of Inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tools</td>
<td>Insufficient stock, damage</td>
<td>Weekly</td>
</tr>
<tr>
<td>Pumps</td>
<td>Insufficient stock, damage</td>
<td>Weekly</td>
</tr>
<tr>
<td>Hoses</td>
<td>Insufficient stock, damage</td>
<td>Weekly</td>
</tr>
<tr>
<td>Cords</td>
<td>Insufficient stock, damage</td>
<td>Weekly</td>
</tr>
<tr>
<td>Oil absorbent</td>
<td>Insufficient stock</td>
<td>Weekly</td>
</tr>
<tr>
<td>Absorbent materials</td>
<td>Insufficient stock</td>
<td>Weekly</td>
</tr>
<tr>
<td>Sorbents</td>
<td>Insufficient stock</td>
<td>Weekly</td>
</tr>
<tr>
<td>Soda ash</td>
<td>Insufficient stock</td>
<td>Weekly</td>
</tr>
<tr>
<td>Over-pack drums</td>
<td>Insufficient stock, damage</td>
<td>Weekly</td>
</tr>
<tr>
<td>Sealant</td>
<td>Insufficient stock</td>
<td>Weekly</td>
</tr>
<tr>
<td>Cleaners</td>
<td>Insufficient stock</td>
<td>Weekly</td>
</tr>
<tr>
<td>Portable generator</td>
<td>Ready to operate</td>
<td>Weekly</td>
</tr>
</tbody>
</table>
EXHIBIT F-4

TANK SYSTEM AND ANCILLARY EQUIPMENT INSPECTION SCHEDULE
## EXHIBIT F-4

**TANK SYSTEM AND ANCILLARY EQUIPMENT INSPECTION SCHEDULE**

<table>
<thead>
<tr>
<th>Specific Item</th>
<th>Type of Problem</th>
<th>Frequency of Inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tank shell</td>
<td>Corrosion, discoloration, cracks, buckles, bulges</td>
<td>Daily</td>
</tr>
<tr>
<td>Tank roof</td>
<td>Malfunction of seals, blockage of roof drains, corrosion</td>
<td>Daily</td>
</tr>
<tr>
<td>Tank bottom</td>
<td>Corrosion, discoloration, cracks, buckles, bulges</td>
<td>Daily</td>
</tr>
<tr>
<td>Foundation/structural support</td>
<td>Cracks, spalling, uneven settlement, erosion, wet spots</td>
<td>Daily</td>
</tr>
<tr>
<td>Anchor bolts</td>
<td>Distortion, corrosion</td>
<td>Daily</td>
</tr>
<tr>
<td>Pipe connections</td>
<td>External corrosion, cracks, distortion</td>
<td>Daily</td>
</tr>
<tr>
<td>Nozzles</td>
<td>Cracks, corrosion</td>
<td>Daily</td>
</tr>
<tr>
<td>Base</td>
<td>Cracks, spalling, uneven settlement, erosion, wet spots</td>
<td>Daily</td>
</tr>
<tr>
<td>Pump</td>
<td>Power, clogging</td>
<td>Daily</td>
</tr>
<tr>
<td>Secondary containment</td>
<td>Cracks, spalling, uneven settlement, erosion, wet spots, leaks</td>
<td>Daily</td>
</tr>
<tr>
<td>Pipes (includes all piping between storage tanks and boilers)</td>
<td>Leaks, corrosion or deterioration</td>
<td>Daily</td>
</tr>
<tr>
<td>Valves (includes all valves between storage tanks and boilers)</td>
<td>Leaks, corrosion or deterioration</td>
<td>Daily</td>
</tr>
<tr>
<td>Fittings (includes all fittings between storage tanks and boilers)</td>
<td>Leaks, corrosion or deterioration</td>
<td>Daily</td>
</tr>
<tr>
<td>High level alarms</td>
<td>Malfunction, deterioration, or improper operation</td>
<td>Daily</td>
</tr>
<tr>
<td>Pressure, level, and temperature gauges</td>
<td>Improper operation</td>
<td>Daily</td>
</tr>
<tr>
<td>Tank gauge level reading (for tanks without level gauges)</td>
<td>Overfilling</td>
<td>Daily</td>
</tr>
</tbody>
</table>
SECTION G

CONTINGENCY PLAN
# SECTION G. CONTINGENCY PLAN

## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>SECTION G. CONTINGENCY PLAN</td>
<td>G-1</td>
</tr>
<tr>
<td>G-1 Introduction</td>
<td>G-1</td>
</tr>
<tr>
<td>G-2 General Plant Information</td>
<td>G-2</td>
</tr>
<tr>
<td>G-3 Incident Commanders: [OAC 3745-54-52 and 3745-54-55]</td>
<td>G-3</td>
</tr>
<tr>
<td>G-4 Emergency Equipment: [OAC 3745-54-52]</td>
<td>G-4</td>
</tr>
<tr>
<td>G-5 Coordination Agreements: [OAC 3745-54-52 and 3745-54-37]</td>
<td>G-5</td>
</tr>
<tr>
<td>G-6 Implementation: [OAC 3745-54-51 and 3745-54-56]</td>
<td>G-6</td>
</tr>
<tr>
<td>G-7 Emergency Response Procedures</td>
<td>G-8</td>
</tr>
<tr>
<td>G-7b Assessment: [OAC 3745-54-56]</td>
<td>G-9</td>
</tr>
<tr>
<td>G-7c Control Procedures: [OAC 3745-54-52]</td>
<td>G-9</td>
</tr>
<tr>
<td>G-7d Procedures for Container Spills and Leakage: [OAC 3745-54-52, 3745-55-71]</td>
<td>G-10</td>
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<tr>
<td>G-7e Procedures for Hazardous Waste Tank System and BIF Units: Spills and Leakage</td>
<td>G-10</td>
</tr>
<tr>
<td>G-7f Procedures for Fires and Explosions</td>
<td>G-13</td>
</tr>
<tr>
<td>G-8 Notifications and Evacuations: [OAC 3745-54-56(A), 3745-54-52]</td>
<td>G-14</td>
</tr>
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<td>G-9 Prevention Or Recurrence Of Spread Of Fires, Explosions, Or Releases: [OAC 3745-54-56]</td>
<td>G-16</td>
</tr>
<tr>
<td>G-10 Storage and Treatment Of Released Material: [OAC 3745-54-56]</td>
<td>G-17</td>
</tr>
<tr>
<td>G-11 Incompatible Waste: [OAC 3745-54-56]</td>
<td>G-17</td>
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<tr>
<td>G-12 Post-Emergency Equipment Maintenance: OAC 3745-54-56</td>
<td>G-18</td>
</tr>
<tr>
<td>G-13 Reporting: [OAC 3745-54-56]</td>
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</table>
SECTION G. CONTINGENCY PLAN

LIST OF TABLES

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>G-1</td>
<td>Emergency Equipment List</td>
<td>G-5</td>
</tr>
<tr>
<td>G-2</td>
<td>Constituents to be Quantitated in Environmental Media Associated with Releases</td>
<td>G-12</td>
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</tbody>
</table>
SECTION G. CONTINGENCY PLAN

LIST OF ATTACHMENTS

<table>
<thead>
<tr>
<th>Attachment G-1</th>
<th>Location Map</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment G-2</td>
<td>Hazardous Waste Tank System - Accumulation, Treatment, and Storage Facilities</td>
</tr>
<tr>
<td>Attachment G-3</td>
<td>Site Plan for Hazardous Waste Management Units</td>
</tr>
<tr>
<td>Attachment G-4</td>
<td>Incident Commanders and Alternates</td>
</tr>
<tr>
<td>Attachment G-5</td>
<td>Outside Agencies with Coordination Agreements</td>
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SECTION G. CONTINGENCY PLAN

G-1 INTRODUCTION

This Contingency Plan has been prepared in accordance with Ohio requirements contained in OAC 3745-54-50 to 56 and with the requirements of the Ohio EPA-issued RCRA permit for the Haverhill plant. OAC 3745-54-51 requires that the owner or operator shall have a contingency plan for the “facility.” OAC 3745-50-10 (39a) defines the facility as

“All contiguous land, and structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units (e.g.; one or more landfills, surface impoundments, or combinations of them).”

For the purposes of the Contingency Plan, Haverhill defines the “facility” as the permitted and non-permitted hazardous waste handling areas of the plant-site, including only the following specific areas, when they are storing or processing hazardous waste:

- The permitted hazardous waste storage tanks: 2003-F, 2104-F, and 2105F;
- The non-permitted, less than 90-day storage tank 2108-F;
- The hazardous waste burning boilers: 2001-UC and 2001-UE; and
- The non-permitted, less than 90-day container storage area BD-908.

This Contingency Plan addresses minimizing hazards to human health and the environment from fires, explosions, or sudden releases of hazardous wastes or hazardous waste constituents to air, soil, or surface water from the hazardous waste handling areas of the Haverhill facility.

Haverhill will immediately implement the Contingency Plan in the event of a fire, explosion, or release of hazardous wastes or hazardous waste constituents from the areas identified above that could threaten human health or the environment. Further details regarding these actions are provided later in this plan.

The Haverhill plant operates 24 hours per day, seven days per week, year-round. At least one person is on-site at all times who will coordinate emergency responses if it becomes necessary. The responsible person has the title Incident Commander, which is the plant term that is analogous to the
Commander will be used rather than “Emergency Coordinator.” The Incident Commander is responsible for the decision to implement the Contingency Plan and is authorized by Haverhill and corporate management to commit resources to implement the plan.

The Haverhill plant maintains a comprehensive set of operating procedures that govern activities associated with health, safety, the environment, emergency response, hazard communication, and training. Haverhill has developed these procedures to address many regulatory programs, including contingency planning requirements under RCRA (OAC 3745-54-50 through 56). Haverhill maintains these procedures on the plant-wide intranet so that they are immediately available to all those who need them whenever necessary. Haverhill periodically reviews and updates these procedures as necessary to ensure they remain current and reflect best practices. Haverhill will distribute the procedures to outside police, fire, and response agencies, as applicable, to provide those groups with the information needed to understand how the plant will deal with emergencies. Where appropriate, this Contingency Plan will refer to plant procedures for a detailed description of the actions to be taken. However, while these procedures are referenced in this plan, they are not specifically a part of the plan.

As required by the regulations, Haverhill will

- Maintain a copy of the Contingency Plan at the plant;
- Submit the plan to local emergency response teams;
- Review and amend the plan, if necessary, when
  - The RCRA permit is revised
  - The contingency plan fails in an emergency
  - The facility changes such that the potential for fires, explosions, or releases increases, or that changes the necessary responses.
  - The list of emergency coordinators changes,
  - The list of emergency equipment changes, or
  - As required by the director.

G-2 GENERAL PLANT INFORMATION
The Haverhill Plant is a chemical production facility located in southern Ohio along the Ohio River bordering Kentucky (see Attachment G-1, Location Map). The property comprises approximately 600 acres, and the active portion of the site occupies approximately 60 acres. The plant employs
approximately 300 people, including both company employees and contracted personnel. Additional pertinent information is as follows:

Facility Address:  
Haverhill Chemicals LLC  
1019 Haverhill-Ohio Furnace Road  
Haverhill, Ohio 45636

Facility Owner:  
Haverhill Chemicals LLC  
16800 Imperial Valley Dr., Suite 499  
Houston, TX 77060

Facility Operator:  
Haverhill Chemicals LLC  
16800 Imperial Valley Dr., Suite 499  
Houston, TX 77060

Facility Contact:  
Jason Patrick  
Environmental Manager

Telephone Number:  
(740) 533-5267

The Haverhill Plant has multiple process areas that convert organic chemical feedstocks into bulk industrial chemicals. The primary process is the production of phenol, acetone from cumene, and Bisphenol A. One other product is alpha-methylstyrene. Phenol intermediates and AMS intermediates may be produced as a product.

The Haverhill Plant accumulates, stores, and treats the hazardous wastes generated from these process facilities in tanks and container accumulation areas. The facility burns some of the hazardous waste generated on site in boilers for energy recovery. All hazardous wastes handled within the site are generated on site and can be characterized as being one of several general types. These include: heavy hydrocarbons, light hydrocarbons, contaminated trash and soils, acidic and basic wastewaters, paint related wastes, spent solvents, utility firebox ash and rinseate, and used process filters.
to the Emergency Coordinator in the regulations. The Incident Commander is responsible for the decision to implement the Contingency Plan and is authorized by Haverhill and corporate management to commit resources to implement the plan.

The Incident Commander will normally be one of the two shift supervisors who are on-site at all times. Each supervisor is responsible for specific areas of the plant. The decision about which of the two shift supervisors assumes the role of Incident Commander in any situation is governed by plant Emergency Response Procedures (ERP). The supervisor who is not directly responsible for the area in which the situation occurs assumes the role of Incident Commander. The shift supervisor who is directly responsible for the area in which the situation occurs assumes the role of Fire Chief. The Incident Commander has overall responsibility for coordinating and managing the response. The Fire Chief directly responds to the situation.

Other shift supervisors, when they are not specifically on-site, are on-call and available if needed in an emergency. Attachment G-4 lists the shift supervisors. Because the role of Incident Commander may be fulfilled by any of several individuals, depending on which shift is present on-site at the time a situation occurs and which area of the plant is involved in an emergency, all of the shift supervisors are considered as both primary and alternate Incident Commanders.

Each shift supervisor has extensive experience at the plant and is familiar with the Contingency Plan; all operations and activities at the facility; the location and characteristics of the hazardous waste at the plant; the location of records at the plant; and the facility layout. Specific duties, roles, and assignments for the Incident Commander, Fire Chief, and other plant emergency responders are provided in the plant ERP.

G-4 **EMERGENCY EQUIPMENT: [OAC 3745-54-52]**

The Haverhill plant maintains various types of emergency equipment in each area of the facility to be used to respond to fires, explosions or releases of hazardous waste or hazardous waste constituents. Table G-1 lists the emergency equipment that is available for use.
### TABLE G-1. EMERGENCY EQUIPMENT LIST

<table>
<thead>
<tr>
<th>Emergency Equipment</th>
<th>Boiler Area</th>
<th>Storage Tank Area</th>
<th>Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Firefighting and Emergency Response (serves entire plant-site)</td>
<td>1 Fire Engine&lt;br&gt;1 Rescue/Hazardous Materials Truck&lt;br&gt;1 Quick Attack Truck&lt;br&gt;1 Foam Trailer</td>
<td></td>
<td>Water and foam pumping capability</td>
</tr>
<tr>
<td>Fixed Firefighting Equipment (serves entire plant-site)</td>
<td>Fire Water Supply Header System&lt;br&gt;Fire Foam Supply System&lt;br&gt;1 Electric Fire Water Pump&lt;br&gt;2 Diesel Powered Fire Water Pumps</td>
<td></td>
<td>Provides fire water to plant-site&lt;br&gt;Provide firefighting foam to plant-site&lt;br&gt;Provide adequate pressure for fire water supply header</td>
</tr>
<tr>
<td>Fire Hydrants/Monitors</td>
<td>1 south side of boilers&lt;br&gt;1 southeast of boilers</td>
<td>1 north side of tanks&lt;br&gt;1 east side of tanks&lt;br&gt;1 south side of tanks</td>
<td>Provide fire water and spray nozzle from fire water supply header</td>
</tr>
<tr>
<td>Foam Delivery System</td>
<td>None</td>
<td>2003-F&lt;br&gt;2104-F&lt;br&gt;2105-F</td>
<td>Provides firefighting foam directly to storage tank perimeter for fire suppression</td>
</tr>
<tr>
<td>Fire Extinguishers</td>
<td>1 at Boiler UC (30# Ansul)&lt;br&gt;1 at Boiler UD (30# Ansul)&lt;br&gt;1 at Boiler UE (30# Ansul)&lt;br&gt;1 inside Boiler Sample Building (CO₂)</td>
<td>1 at Tank Farm at 2104-F (30# Ansul)</td>
<td>Provide fire suppression for small, localized fires</td>
</tr>
<tr>
<td>Spill Response Kit</td>
<td>1 at Boiler Area</td>
<td>1 near Tank Farm</td>
<td>Provides emergency clean-up and containment for spills</td>
</tr>
<tr>
<td>Safety Shower/Eyewash</td>
<td>1 at boiler area&lt;br&gt;1 adjacent to boilers at CEM building</td>
<td>1 at Tank Farm</td>
<td>Provide emergency shower/eyewash for personnel safety. Operation triggers plant-wide emergency alarm system</td>
</tr>
<tr>
<td>Plant Alarm Pull Stations</td>
<td>1 at boiler area</td>
<td>2 at tank farm (zone 1 and zone 2)</td>
<td>Operation triggers local or plant-wide emergency alarm system</td>
</tr>
<tr>
<td>Additional Equipment</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### G-5 COORDINATION AGREEMENTS: [OAC 3745-54-52 AND 3745-54-37]

The Haverhill Plant has provided its Contingency Plan to the various local and regional agencies and has entered into mutual aid agreements with them. A list of these agencies is provided in Attachment G-5. The Haverhill Plant maintains on-site records that the contingency plans were sent to the agencies and the agreements that the agencies return.
If an incident threatens the Ohio River, the Haverhill plant will use an independent contractor for response.

**G-6 IMPLEMENTATION: [OAC 3745-54-51 AND 3745-54-56]**

OAC 3754-54-51 and the RCRA permit require that “the provisions of the Contingency Plan shall be implemented immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment.” In practice, Haverhill personnel will take the following actions whenever a fire, explosion, or release occurs.

1. The person that witnesses or first discovers the situation is responsible to activate the plant alarm system.
2. Upon activation of the plant alarm system, the shift supervisors communicate with each other and decide who will assume the role of Incident Commander and who will assume the role of Fire Chief.
3. The Incident Commander gathers preliminary information regarding the situation to identify the source, amount, area impacted, and character of the fire, explosion or released material.
4. The Incident Commander also assesses the possible hazards to human health and the environment that may arise from the situation and makes a decision of whether or not the situation could threaten human health or the environment.
5. The Incident Commander also determines the personal protective equipment required to maintain personnel safety for those working with the situation.
6. If the Incident Commander decides that the situation could threaten human health or the environment, then the Incident Commander will implement the Contingency Plan.
7. If the Incident Commander decides that the situation could not threaten human health or the environment, then the Incident Commander will not implement the Contingency Plan.

Examples of situations related to hazardous waste or hazardous waste constituents, which because of their type and nature, will require implementation of the Contingency Plan, include:

1. Any spill or release of hazardous waste or hazardous waste constituents that are deemed to adversely affect human health and/or the environment;
2. Any spill or release of hazardous waste or hazardous waste constituents that are deemed to be a fire or explosion hazard;
3. Any spill or release of hazardous waste or hazardous waste constituents that exhibits the characteristics of reactivity as defined by OAC Rule 3745-51-23 and which results in the release of gases that may threaten human health or the environment;
4. Any spill on site of hazardous waste or hazardous waste constituents that may potentially cause on-site or off-site soil contamination and/or groundwater or surface water contamination;

5. Any spill or release of hazardous waste or hazardous waste constituents that is reported to the National Response Center or local (city or county) emergency response center (for example, because the spill exceeded the Reportable Quantity ("RQ") limits as defined in 40 CFR 302.4).

Examples of situations related to hazardous waste or hazardous waste constituents, which may require implementation of the Contingency Plan, depending on the extent and severity of the specific situation, include:

1. Leakage of hazardous waste or hazardous waste constituents from a tank truck/tank car during loading/unloading;

2. Erroneous lineup of valving or a leak from a valve to the ground that releases hazardous waste or hazardous waste constituents;

3. Rupture of a pipe that contains hazardous waste or hazardous waste constituents that can be shut off;

4. All fires related to hazardous waste or hazardous waste constituents that can be controlled and extinguished by the plant fire brigade;

5. Overflow of a tank that contains hazardous waste or hazardous waste constituents into secondary containment;

6. Major releases of hazardous waste or hazardous waste constituents to the air that could impact areas outside the immediate facility;

7. Explosion and fire in a storage tank that contains hazardous waste or hazardous waste constituents;

8. Fire related to hazardous waste or hazardous waste constituents that cannot be contained by shutting off the source;

9. Rupture of a tower, tank, or drum that releases hazardous waste or hazardous waste constituents more than can be contained by the proximate process and other secondary containment curbs or dikes.

10. Sudden release of the contents of a waste treatment tank;

11. A fire occurs that could cause the release of toxic materials;

12. A fire spreads and could possibly ignite materials at other locations on site or could cause heat-induced explosions;

13. A fire that could possibly spread to off-site areas;

14. Use of water or water and chemical fire suppressant could result in contaminated runoff;

15. An imminent danger exists that an explosion could occur;
16. An imminent danger exists that an explosion could ignite other hazardous waste at the facility;
17. An imminent danger exists that an explosion could result in release of toxic materials;
18. An explosion has occurred;
19. A spill could result in release of flammable liquids or vapors, thus causing a fire or vapor cloud explosion hazard; or
20. The spill could cause the release of toxic liquid or fumes.

G-7 **EMERGENCY RESPONSE PROCEDURES**

The Haverhill plant maintains a comprehensive set of operating procedures that govern activities associated with health, safety, the environment, emergency response, hazard communication, and training. Haverhill has developed these procedures to address many regulatory programs, including contingency planning requirements under RCRA (OAC 3745-54-50 through 56).

Haverhill maintains these procedures at the plant-site so that they are immediately available to all those who need them whenever necessary. Haverhill periodically reviews and updates these procedures as necessary to ensure they remain current and reflect best practices.

Haverhill will distribute the procedures to outside police, fire, and response agencies, as applicable to provide those groups with the information needed to understand how the plant will deal with emergencies. While these procedures are referenced in this contingency plan, they are not specifically a part of the plan. (The procedures are available for agency review while on site or per request).

**G-7a Identification of Hazardous Materials: [OAC 3745-54-56]**

Hazardous wastes and waste constituents as well as other hazardous materials generated at the Haverhill plant are described in the plant emergency procedures. The support personnel at the incident command post will assist to identify the character (composition), exact source, hazards associated with, and personal protective equipment required for a release involving these materials. The volume and extent of the release will be determined by visual observation and the operating log (record of information). In the event that the nature of a release cannot be identified by its location and visual inspection, identification will be determined by other alternative means. This information is compiled from process knowledge, material safety data sheets for the products, and waste characterization analyses.
G-7b  Assessment: [OAC 3745-54-56]
The incident commander, with assistance of the support personnel, will assess possible hazards to human health and the environment that may result from a release, fire, or explosion. The assessment will consider both direct and indirect effects of the release, fire, or explosion. The assessment will include the following actions:

1. Identify the types of materials involved in the incident and any potential hazards;
2. Assess the magnitude and extent of incident;
3. Evaluate the effects on human health and the environment from exposure to materials; and
4. Consider the effects of mixtures of affected materials.

Potential hazards to be considered will include surface water contamination due to runoff of hazardous wastes, hazardous constituents or any chemicals or water used to control a fire, spill, or explosion; potential for explosion; generation of gases or vapors that may be toxic, irritating, explosive, or ignitable; and groundwater contamination. The assessment and control procedures are described in greater detail in the plant emergency procedures.

G-7c  Control Procedures: [OAC 3745-54-52]
Handling instructions for releases of hazardous waste/materials are provided in the plant emergency procedures. The characteristics and hazards, along with fire and spill control procedures, are listed for each waste stream. Product transportation emergency handling procedures are also described there. The possible hazards to human health and the environment are assessed based on process knowledge, information provided in the material safety data sheets, and RCRA waste characterization analyses.

Guidelines for the use of personal protective equipment are included in the emergency procedures. The determination of protection level is a combination of many factors, including: amount of material, temperature of material, weather conditions, and ventilation. At a minimum, however, in all cases spill response personnel will wear impervious chemical protective clothing suits, impervious boots, impervious gloves, eye protection, and hard hats.

Confirmation of a fire, explosion, or release and a call for assistance, if required, will be transmitted via the emergency phones or radios located in each operating unit's control room. Operating units not involved in a fire, explosion, or release will act immediately to protect their unit against any imminent danger or possible utility outages and are to remain on standby alert to provide assistance if called upon.
G-7d  Procedures for Container Spills and Leakage: [OAC 3745-54-52, 3745-55-71]

Emergency response procedures outlined in Sections G-7a-c will be followed in response to spills and leaks from containers containing hazardous materials/wastes. In addition, the following actions will be taken in the event of container spills or leakage:

1. Determine content of container.
2. Don appropriate protective clothing and respiratory protective equipment.
3. Position leaking container, if possible, to prevent further leakage. (Normally this involves positioning the leak above the liquid level in the container.)
4. Contain the spill in the smallest area possible using absorbent and/or dike.
5. Spread absorbing or neutralizing material into the spill area.
6. Overpack any damaged drum, ensuring that the overpack drum is properly marked and sealed.
7. Remove contaminated soil and/or absorbents with appropriate equipment and place it into DOT-approved containers.
8. Properly dispose of materials.

G-7e  Procedures for Hazardous Waste Tank System and BIF Units: Spills and Leakage

Emergency response procedures outlined in Section G-7A-C will be followed in response to spills and leaks from storage tanks or boilers containing hazardous materials/wastes. In addition, the following actions will be taken in the event of a tank spill or leakage.

G-7e(1)  Stopping Waste Addition: [OAC 3745-55-96]

The procedures used by the facility to stop waste addition in the event of hazardous waste tank(s) spills or leaks include the following:

1. Immediately notify Operations.
2. Cease operations in the area. (This includes stopping the flow or addition of wastes to the affected hazardous waste tank system.)
3. Assess the source and extent of the emergency.
4. Assess hazards related to the emergency.

G-7e(2)  Removing Waste: [OAC 3745-55-96]

The procedures used by the facility in the removal of waste are as follows.

1. Remove additional material from the tank (within 24 hours or as soon as practicable) which caused the leak or spill to prevent any additional release.
2. Remove all released material from the secondary containment system within 24 hours of...
the discovery of the release or in as timely a manner as possible.

3. Collect removed material and place in proper storage container.

G-7e(3) **Containment of Visible Releases: [OAC 3745-55-96]**

The procedures used by the facility to contain visible releases are as follows.

1. Immediately conduct a visual inspection of the release.
2. Prevent further migration of the leak by using appropriate barriers to contain the release.
3. Remove any visibly contaminated soil and place it in storage containers prior to treatment and/or disposal.
4. Collect any contaminated surface water in tanks or containers for treatment and disposal.
5. Perform confirmatory sampling to determine if all contaminated media have been removed.

G-7e(4) **Decontamination of Secondary Containment after Releases:**

The procedures used by the facility to decontaminate secondary containment structures after a release from a tank or boiler has occurred are as follows.

1. Remove recoverable liquid spills from the containment system (e.g. by the use of a portable pump, vacuum truck, or other similar means.)
2. Remove non-pumpable sludges (e.g. by the use of a vacuum truck, shovels and other hand tools, or other similar means.)
3. Clean the spill area until all visual evidence of waste has been removed (e.g. by the use of hot water or steam pressure washing, solvent washing and rinsing, blasting, scarification, mechanical scraping, or other similar means.)
4. Inspect areas of secondary containment that were impacted by the spill or leak and determine if any failures in the secondary containment were present at the time of the spill or leak. Document the presence and location of any failures if found; document the absence of failures as appropriate.

G-7e(5) **Decontamination of Environmental Media after Releases:**

In the event a spill contaminates environmental media (soil or surface water) outside the secondary containment, the following actions will occur:

1. Remove and properly dispose of any visible contamination of the soil or surface water.
2. Excavate visibly contaminated slag, gravel, and soils (e.g.: by the use of a backhoe, shovels and other hand tools, or other similar means.)
3. Sample environmental media to determine the extent of contamination beyond visible indications, using sampling and analytical procedures appropriate for a remedial activity.
4. Analyze the collected samples for the organic and inorganic constituents listed in Table G-2.
5. Based on the sampling results, continue removing soil and/or water until additional sampling indicates contamination is not present at detectable levels. (If initial sampling indicates no contamination present, no additional removal or sampling is required.)

**TABLE G-2. CONSTITUENTS TO BE QUANTITATED IN ENVIRONMENTAL MEDIA ASSOCIATED WITH RELEASES**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Constituent</th>
<th>Preparation Method (SW 846)</th>
<th>Analytical Method (SW-846)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metals and Chlorine</td>
<td>Antimony</td>
<td>1311</td>
<td>6010B</td>
</tr>
<tr>
<td></td>
<td>Arsenic</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Barium</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Beryllium</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cadmium</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chromium</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lead</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Silver</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Thallium</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mercury</td>
<td></td>
<td>7470A</td>
</tr>
<tr>
<td></td>
<td>Total Chlorine/Chloride</td>
<td>SW-846 9075 or ASTM D4208</td>
<td>Method 9075 (XRF) or 9056 (IC)</td>
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<td>Volatile Organics</td>
<td>Acetone</td>
<td>5030B/5035</td>
<td>8260b</td>
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<tr>
<td></td>
<td>Benzene</td>
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<tr>
<td></td>
<td>n-Butylbenzene</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>sec-Butylbenzene</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>tert-Butylbenzene</td>
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<td></td>
<td>Ethylbenzene</td>
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<td></td>
<td>Isopropylbenzene</td>
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<td></td>
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<tr>
<td></td>
<td>p-Isopropyltoluene</td>
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<td></td>
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<tr>
<td></td>
<td>Methylene Chloride</td>
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<td></td>
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<tr>
<td></td>
<td>n-Propylbenzene</td>
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<td>Styrene</td>
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<tr>
<td></td>
<td>Tetrachloroethene</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Toluene</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1,2,4-Trimethylbenzene</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>m- &amp; p-Xylene</td>
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<td></td>
</tr>
</tbody>
</table>
TABLE G-2. CONSTITUENTS TO BE QUANTITATED IN ENVIRONMENTAL MEDIA ASSOCIATED WITH RELEASES (CONTINUED)

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Constituent</th>
<th>Preparation Method (SW 846)</th>
<th>Analytical Method (SW-846)</th>
</tr>
</thead>
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<tr>
<td>Semivolatile</td>
<td>Acetophenone</td>
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<td>Organics</td>
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<td></td>
<td>bis(2-Chloroethyl) Ether</td>
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<td></td>
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<td></td>
<td>bis(2-Chloroisopropyl) Ether</td>
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<td></td>
<td>para-para bis-phenol A</td>
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<td>ortho-para bis-phenol A</td>
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<td>p-Chloro-m-Cresol</td>
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<tr>
<td></td>
<td>2,4-Dinitrotoluene</td>
<td></td>
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<tr>
<td></td>
<td>Diphenylamine</td>
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<td></td>
<td>2-Methylphenol</td>
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</tr>
<tr>
<td></td>
<td>α-Methyl Styrene</td>
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</tr>
<tr>
<td></td>
<td>3-Nitroaniline</td>
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<td></td>
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<td></td>
<td>4-Nitrophenol</td>
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<td></td>
<td>n-Nitrosodiphenylamine</td>
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<td></td>
<td>Pentachlorophenol</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Phenol</td>
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<td>Phenolic Polymers</td>
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<td></td>
<td>1,2,4-Trichlorobenzene</td>
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<tr>
<td></td>
<td>Cumyl Phenol</td>
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</tr>
</tbody>
</table>

G-7f  Procedures for Fires and Explosions

Emergency response procedures outlined in Section G-7a-c will be followed in response to a fire or explosion. The response to a fire or explosion may include the responses to a release that are described above. In addition, the following actions will be taken.

1. Immediately notify control room and sound plant alarm for all fires.
2. Emergency Response Team members will drive the fire truck to the emergency location when it is requested.
3. The Incident Commander will establish a staging area for manpower reporting to the emergency.
4. Personnel responding to a fire must take their bunker clothing, helmets, self-contained breathing apparatus and boots with them to the scene.
5. At the scene of a fire, unroll fire hose, make necessary connections, operate applicable turret nozzles, and fight the fire.
6. After the fire has been extinguished and there is no possibility of a new outbreak, all fire-fighting gear will be returned to its proper location.

7. All expended dry chemical extinguishers will be taken to the designated area for recharging prior to being replaced at their proper stations.

8. Foam tanks on truck and/or stationary units will be refilled.

G-8  NOTIFICATIONS AND EVACUATIONS: [OAC 3745-54-56(A), 3745-54-52]

The Haverhill facility will implement the following internal and external notifications and evacuations, as deemed necessary by the incident commander and/or Haverhill management personnel.

The following situations are examples of general criteria that may require an evacuation:

1. Unconfined fire, explosion, or toxic gas release;
2. A fire which causes the release of toxic gas or vapors;
3. A fire which spreads and could possibly ignite materials at other locations on site or could cause heat-induced explosions;
4. An imminent danger exists that an explosion could occur, causing a safety hazard;
5. An imminent danger exists that an explosion could ignite other hazardous waste at the facility;
6. A spill which could result in a release of flammable liquids or vapors, thus causing a fire or gas explosion hazard;
7. A spill which could cause the release of toxic liquid or vapors.

INTERNAL NOTIFICATION

In the event of an emergency, personnel witnessing or discovering the incident will:

1. Notify personnel in the control rooms and surrounding area via local alarm pull station, public address system, or two-way radio;
2. Sound audible, plant-wide emergency alarm; AND
3. Notify the Shift Supervisor.

The Shift Supervisors will decide on which of them will serve as of Incident Commander and which will serve as Fire Chief. The Incident Commander will decide on whether or not to implement the Contingency Plan.
INTERNAL EVACUATION

The Incident Commander will assess the situation for imminent hazards to human health or the environment and the need for evacuation of the facility. The following are general criteria that may require an evacuation:

1. Unconfined fire, explosion, or toxic gas release;
2. A fire which causes the release of toxic gas or vapors;
3. A fire which spreads and could possibly ignite materials at other locations on site or could cause heat-induced explosions;
4. An imminent danger exists that an explosion could occur, causing a safety hazard;
5. An imminent danger exists that an explosion could ignite other hazardous waste at the facility;
6. A spill which could result in a release of flammable liquids or vapors, thus causing a fire or gas explosion hazard; or
7. A spill which could cause the release of toxic liquid or vapors.

In the event that an incident poses an actual or potential serious threat to human health or safety, the Incident Commander will recommend an evacuation of the affected area at a minimum or possibly of the entire facility.

The Incident Commander will initiate the evacuation procedure described in the ERP. The Evacuation Procedures include information regarding plant alarm, primary and alternate evacuation routes, and assembly locations.

In the event plant evacuation is deemed necessary by the incident commander, the following actions will be taken:

1. The plant-wide, audible signal for plant evacuation will be given.
2. Operations will follow emergency shutdown procedures for their areas and will ensure that all personnel in their areas have evacuated.
3. All employees, visitors, and contractors will leave the facility in an orderly manner, following the evacuation routes shown in Attachment G-3, Evacuation Routes. If the designated primary evacuation routes are blocked, the incident commander will announce this and will direct the affected personnel to use the designated alternate route.
EXTERNAL NOTIFICATION

In an imminent or actual emergency situation where a fire, explosion, or release could threaten human health and the environment, the Incident Commander will notify, or instruct other plant responders to notify, the local response agencies and Ohio EPA listed in Attachment G-5. The notification will include the following:

1. Name and telephone number of reporter;
2. Name and address of facility (both mailing address and actual location);
3. Time and type of incident (fire, explosion, or release);
4. Name and quantity of material(s) involved, to the extent known;
5. The extent of any injuries, if any; and
6. The possible hazards to human health or the environment outside the facility.

EXTERNAL EVACUATION

If an evacuation of an area outside the plant is deemed necessary, the Incident Commander will notify, or instruct other responders to notify, the agencies listed in Attachment G-5 and will provide the same information as listed above for external notifications. The Incident Commander will be available to those agencies to help decide the location, extent, and duration of the evacuation of an area outside the plant.

G-9 PREVENTION OR RECURRENCE OF SPREAD OF FIRES, EXPLOSIONS, OR RELEASES: [OAC 3745-54-56]

During an emergency, the Incident Commander will coordinate the appropriate measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other hazardous waste areas. These measures include, where applicable, stopping processes and operations, collecting and containing released waste, and removing or isolating containers.

Specific actions to prevent the recurrence or spread of fires, explosions, or releases include determining the source of the incident; ceasing operations and turning off the power supply to the affected areas; cleaning up debris from the incident and maintaining good housekeeping; containing and collecting all released waste; recovering and isolating any affected containers; ensuring that a fire is completely extinguished; and decontaminating the affected area/equipment.
Examples of further measures to prevent the recurrence or spread of fires, explosions, or releases include using spark-proof tools, isolating the waste by removing all ignition or reaction sources, and protecting the area from open flames, cutting and welding activities, hot surfaces, and frictional heat. If fire or explosion is an ongoing hazard, standby fire-fighting equipment will be maintained in a ready state until the emergency is over.

The equipment operation which caused the incident will not be restarted until adequate corrective and preventative measures have been developed and implemented.

If the Incident Commander determines that stopping process operations is a necessary response to a situation, the Incident Commander, or another responder, will monitor the stopped process operations for leaks, increases in pressure, the generation of gas, or ruptures in piping and equipment.

G-10 STORAGE AND TREATMENT OF RELEASED MATERIAL: [OAC 3745-54-56]
The Incident Commander will coordinate treatment, storage, and disposal of recovered waste, contaminated soil, surface water, debris, or any other material that results from a release, fire, or explosion at the facility.

Any releases from a Unit or area that handles hazardous materials/wastes will be assumed to be hazardous and appropriately managed. The release material will be collected, containerized, labeled, and stored. Subsequently, the contents or the containers will be sampled and analyzed to determine the proper disposition of the materials/wastes. Liquid material that is released outside of secondary containment areas will be contained with absorbent. Spilled materials, contaminated soil, and absorbents will be placed into empty containers. These containerized materials will be properly labeled and placed in storage prior to treatment and/or disposal off site.

G-11 INCOMPATIBLE WASTE: [OAC 3745-54-56]
The Incident Commander will ensure that no substance that may be incompatible with the released material is brought into the spill area until cleanup procedures are completed. Extreme care will be taken during emergency situations to keep incompatible waste separated. Spill cleanup contractors and other agencies which respond to the emergency will be made aware of potential incompatible waste stored at the Haverhill Facility.
Areas affected by a spill, release, fire, or explosion will be designated as limited access by the Shift Supervisors of the affected areas and response personnel. Personnel will not be allowed to enter affected areas unless they are participating in emergency response or cleanup activities. The barriers will be removed only after the Incident Commander receives word from the production manager or their designee that (1) the incident has passed; (2) cleanup operations have concluded; (3) waste material has been properly stored; and (4) it is safe to resume operations.

G-12 POST-EMERGENCY EQUIPMENT MAINTENANCE: OAC 3745-54-56

After an incident is resolved, the Incident Commander and/or support personnel will ensure that all emergency equipment used in responding to an emergency incident is inspected, cleaned, and fit for its intended use or is replaced.

G-13 REPORTING: [OAC 3745-54-56]

Any event that requires implementing the Contingency Plan will be documented in the plant operating record. The documentation will include the date and time of the incident and the details regarding the incident.

Within 15 days after the incident, the Haverhill Plant will submit a written report regarding the incident to the Ohio EPA. The report will include:

1. Name, address, and telephone number of the owner or operator;
2. Name, address, and telephone number of the facility;
3. Date, time, and type of incident (e.g., fire, explosion, and cause);
4. Name and quantity of material(s) involved;
5. The extent of injuries, if any;
6. An assessment of actual or potential hazards to human health or the environment outside of the facility, where this is applicable; and
7. Estimated quantity and disposition of material recovered from the incident.

All releases (of hazardous waste) from the tank systems to the environment that are greater than the reportable quantity of one pound and are not immediately contained and cleaned up will be orally reported to Ohio EPA within 24 hours of detection. Additionally, within 30 days of detection of a release, a report containing the following information will be submitted to Ohio EPA:
1. Likely route of migration of the release.
2. Characteristics of the surrounding soil (composition, geology, hydrogeology, climate).
3. Results of any monitoring or sampling conducted in connection with the release (if available). If sampling or monitoring data relating to the release are not available within 30 days, these data will be submitted to the Agency as soon as they become available.
4. Proximity to down-gradient drinking water, surface water, and populated areas.
5. Description of response actions taken or planned.
Attachment G-1

Location Map
Attachment G-2

Hazardous Waste Tank System - Accumulation, Treatment, and Storage Facilities
HAZARDOUS WASTE TANK SYSTEM
ACCUMULATION, TREATMENT, AND STORAGE FACILITIES

Utility Boiler Waste Fuel Storage Tanks (Permitted)

<table>
<thead>
<tr>
<th>Tank</th>
<th>Description</th>
<th>Capacity (gallons)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2104-F</td>
<td>Storage Tank</td>
<td>200,000</td>
<td>Heavy Hydrocarbon Waste, K022</td>
</tr>
<tr>
<td>2105-F</td>
<td>Storage Tank</td>
<td>250,000</td>
<td>Heavy Hydrocarbon Waste, K022</td>
</tr>
<tr>
<td>2003-F</td>
<td>Storage Tank</td>
<td>200,000</td>
<td>Light Hydrocarbon Purge Waste Fuel, D001</td>
</tr>
</tbody>
</table>

Utility Boilers

- 2001-UC: Boiler used for energy recovery
- 2001-UE: Boiler used for energy recovery
- 2001-UA: RCRA Closure Approved June 12, 2012
- 2001-UB: RCRA Closure Approved June 12, 2012

Less Than 90 Day Accumulation Tanks and Containers

<table>
<thead>
<tr>
<th>Tank</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>BD-908</td>
<td>Drum accumulation (200, 55-gal.)</td>
</tr>
<tr>
<td>2108-F</td>
<td>Waste Hydrocarbon Tank (100,000 gal.)</td>
</tr>
</tbody>
</table>

Spill Control Sump

<table>
<thead>
<tr>
<th>Tank</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>2491-A</td>
<td>BD-908 Drum Accumulation Building</td>
</tr>
</tbody>
</table>
Attachment G-3

Site Plan for Hazardous Waste Management Units
Attachment G-4

Incident Commanders and Alternates
INCIDENT COMMANDERS AND ALTERNATES

Facility Contact Information:
ALTIVIA Petrochemicals, LLC
1019 Haverhill-Ohio Furnace Road
Haverhill, Ohio 45636
740 533-5252

<table>
<thead>
<tr>
<th>Shift Supervisors</th>
<th>Cellular Telephone</th>
</tr>
</thead>
<tbody>
<tr>
<td>B Botting</td>
<td></td>
</tr>
<tr>
<td>G Barrett</td>
<td></td>
</tr>
<tr>
<td>D. A. Smith</td>
<td></td>
</tr>
<tr>
<td>Brent Dickess</td>
<td></td>
</tr>
<tr>
<td>J Brooks</td>
<td></td>
</tr>
<tr>
<td>J Sites</td>
<td></td>
</tr>
<tr>
<td>Robert Goldcamp</td>
<td>(740) 479-8508</td>
</tr>
<tr>
<td>James J Parsley</td>
<td></td>
</tr>
<tr>
<td>M Blackburn (Production Specialist can act as shift supervisor if needed)</td>
<td></td>
</tr>
<tr>
<td>K Hobstettor (PMC(^1), can act as shift supervisor if needed)</td>
<td></td>
</tr>
</tbody>
</table>

The on-duty shift supervisor carries the cellular telephone listed above when on-site. The cellular telephone number is therefore the best contact number for any event that may require activation of the Contingency Plan.

\(^1\) PMC is Process Maintenance Coordinator
Attachment G-5

Outside Agencies with Coordination Agreements
Attachment G-5

List of Agencies with which a Coordination Agreement has been established

The Haverhill Plant has provided its Contingency Plan to the following local and regional agencies and entered into mutual aid agreements with them.

<table>
<thead>
<tr>
<th>Agency</th>
<th>Phone Number(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Township Fire Department and Emergency Squad</td>
<td>911</td>
</tr>
<tr>
<td>Scioto County Ohio Sheriff</td>
<td>911, (740) 354-7566,</td>
</tr>
<tr>
<td></td>
<td>(740) 355-8350</td>
</tr>
<tr>
<td>Lawrence County Ohio Sheriff</td>
<td>(740) 532-3525,</td>
</tr>
<tr>
<td></td>
<td>(740) 867-3157</td>
</tr>
<tr>
<td>Ohio State Highway Patrol</td>
<td>(740) 354-2888</td>
</tr>
<tr>
<td>Ohio EPA Emergency Response Division (24-Hour Number)</td>
<td>(800) 282-9378</td>
</tr>
<tr>
<td>Scioto County Ohio Emergency Management Agency (EMA)/ Local</td>
<td>(740) 355-8300</td>
</tr>
<tr>
<td>Emergency Planning Commission (LEPC)</td>
<td></td>
</tr>
<tr>
<td>Lawrence County Ohio EMA/LEPC</td>
<td>(740) 533-4375</td>
</tr>
<tr>
<td>Greenup County Kentucky Emergency Response Committee/LEPC</td>
<td>(606) 921-6791</td>
</tr>
<tr>
<td>Kentucky Disaster and Emergency Services Division</td>
<td>(800) 255-2587</td>
</tr>
<tr>
<td>U.S. Coast Guard</td>
<td>(304) 353-5524</td>
</tr>
<tr>
<td>Norfolk Southern Railroad Yardmaster</td>
<td>(740) 354-8204</td>
</tr>
<tr>
<td>Southern Ohio Medical Center, Portsmouth, OH</td>
<td>(740) 354-5000</td>
</tr>
<tr>
<td>King's Daughters Medical Center, Ashland, KY</td>
<td>(606) 327-4000</td>
</tr>
</tbody>
</table>
SECTION H
PERSONNEL TRAINING
# SECTION H. PERSONNEL TRAINING

## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>SECTION H. PERSONNEL TRAINING</td>
<td>H-1</td>
</tr>
<tr>
<td>H-1 OUTLINE OF THE TRAINING PROGRAM: OAC 3745-54-16</td>
<td>H-1</td>
</tr>
<tr>
<td>H-1a Job Title/Job Description: OAC 3745-54-16</td>
<td>H-1</td>
</tr>
<tr>
<td>H-1b Training Content, Frequency and Techniques: OAC 3745-54-16</td>
<td>H-2</td>
</tr>
<tr>
<td>H-1c Training Director: OAC 3745-54-16</td>
<td>H-4</td>
</tr>
<tr>
<td>H-1d Relevance of Training to Job Position: OAC 3745-54-16</td>
<td>H-4</td>
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<tr>
<td>H-1e Training for Emergency Response: OAC 3745-54-16</td>
<td>H-5</td>
</tr>
<tr>
<td>H-2 IMPLEMENTATION OF TRAINING PROGRAM: OAC 3745-54-16</td>
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</tr>
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**SECTION H. PERSONNEL TRAINING**

**LIST OF EXHIBITS**

<table>
<thead>
<tr>
<th>Exhibit H-1</th>
<th>Introductory and Continuing Training Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exhibit H-2</td>
<td>Organizational Chart of Individuals that Manage Hazardous Waste</td>
</tr>
<tr>
<td>Exhibit H-3</td>
<td>Respiratory Protection Program Training Outline</td>
</tr>
<tr>
<td>Exhibit H-4</td>
<td>Available Computer-Based Training Topics</td>
</tr>
<tr>
<td>Exhibit H-5</td>
<td>Example Fire Fighting Training Outline</td>
</tr>
<tr>
<td>Exhibit H-6</td>
<td>Safety Training Attendance Record</td>
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</table>
SECTION H. PERSONNEL TRAINING

LIST OF ATTACHMENTS

Attachment H-1  Job Descriptions
Attachment H-2  Contract Service Providers and Third Party Worker Oversight
SECTION H. PERSONNEL TRAINING

This section of the permit application describes the Haverhill Plant’s RCRA training program. Training plan outlines, job descriptions, training content, frequency, and techniques are described as well as the implementation of the training program. The training program has been developed in accordance with OAC 3745-50-44 and 3745-54-16.

The purpose of the training program is to provide facility employees with information and instruction needed to safely and effectively perform their duties. The objectives of the training program are to thoroughly train employees in the proper performance of their job duties relevant to hazardous waste management as well as to ensure that all appropriate employees are capable of effectively implementing emergency procedures in the event an incident should arise.

H-1 OUTLINE OF THE TRAINING PROGRAM: OAC 3745-54-16

The plant has developed a training program for personnel as an integral part of the existing safety training program. This training program is supplemented by specific training related to hazardous waste management. Facility personnel who handle hazardous wastes must successfully complete a program of classroom instruction and/or on-the-job training in order to prepare them to operate and maintain the facility in a safe manner and ensure the facility's compliance.

Further discussion of the content, frequency, and techniques used in the training program is provided in Section H-1b. An outline of the training program is provided in Exhibit H-1.

H-1a Job Title/Job Description: OAC 3745-54-16

Written job descriptions are maintained for personnel at the facility who handle or manage hazardous waste. These descriptions are kept current by facility managers and supervisors. Copies of the current job descriptions (Attachment H-1) are maintained in a file by the Manager of Human Resources and include the following information:

- Job title/position
- Duties/responsibilities
- Job prerequisites and qualifications
Exhibit H-2 provides a list of job positions with responsibilities for managing, supervising, operating, or maintaining hazardous waste and for responding effectively to emergency situations at the Facility. A list of names of current employees filling each job is maintained on a computer data base by the Training Coordinator. The areas of responsibility are as follows:

- Phenol I & II
- Bisphenol A
- Laboratory
- Contracted Outside Security
- Phenol III
- Boiler/Utilities
- Administration/Engineering
- Material Handling
- Contracted Onsite Maintenance

**H-1b Training Content, Frequency and Techniques: OAC 3745-54-16**  
The basic content of the training program is displayed in the outline in Exhibit H-1.

**Introductory Training**
All new employees must successfully complete their formal classroom training within six months of their employment or assignment to their unit prior to working in an unsupervised position. Upon transfer or promotion of existing employees to a new position with training requirements that differ from those of the previously held position, these employees must be closely supervised by the area supervisor until they complete the required additional training.

The introductory training program is divided into the following:

- **Environmental Awareness**: basic RCRA requirements applicable to waste generation, storage, transporting, and disposal (BIF units) at the Haverhill Plant.
- **Procedures for Personnel Handling Hazardous Waste**: including instructions on facility operating roles, types and hazards of wastes being handled, safe handling of containers, and emergency response procedures.
- **Contingency Plan**: review of the facility contingency plan including evacuation procedures and assembly areas and discussion of responsibilities under the plan.
- **Incident Management Procedures**: review of the Haverhill Plant incident command structure and interface with the crisis communication manual.
As reflected in the listing above, training techniques utilized for introductory training may include use of written materials, audio visual presentations, computer-based training, and on-the-job training. Written materials such as the facility Contingency Plan, Hazard Communication Plan, the Haverhill Plant Emergency Procedures Manual, Fire and Safety Regulations and the Safe Job Procedures documents are used to ensure uniformity of training and depth of coverage. These written materials are used during all phases of new employee orientation training.

On-the-job training is provided for all facility employees involved in managing hazardous wastes. On-the-job training provides individualized training pertinent to daily operations of the facility. A major advantage of this type of training is “hands-on” experience, with supervision, for specific equipment and processes used at the facility. On-the-job training at the Haverhill Plant is used primarily for orientation purposes for operational new hires and transfers. On-the-job training is based on job descriptions and includes instruction and supervision in facility operating rules and procedures, inspection of hazardous waste management units, and emergency response procedures. The amount of on-the-job training received by an individual employee is determined by the employee’s supervisor and is dependent upon prior experience, job difficulty, and hazards.

Introductory training also includes demonstrations of various facility equipment and procedures. Demonstrations are provided in the use of fire and emergency equipment and personal protection equipment during the Contingency Plan, Specific Job Procedures, and Incident Management Procedures phases of orientation training. An example of this type of training is the respiratory protection program training provided for each employee who will potentially be required to use respiratory protection equipment at the plant. This training is repeated annually. An example outline and description of training provided under the facility's respiratory protection program is provided in Exhibit H-3.

**Continuing Training**

Continuing training is provided on a regular basis for all facility employees involved in hazardous waste management. Continuing training may consists of the use of written materials, safety meetings, drills, and computer-based training. A sample list of available computer-based training topics is provided in Exhibit H-4.
The facility Contingency Plan and Emergency Response Manual are reviewed and subsequently discussed by all employees involved in hazardous waste management. Any portions of these documents that have been updated are emphasized. Routine safety meetings are held to allow employees to discuss critical safety issues and incidents and to receive instruction in the use of newly acquired safety equipment or recently instituted safety procedures. These safety meetings address safety issues such as awareness, goals, and protective equipment.

In addition to routine safety meetings, facility personnel participate in fire training sessions and fire drills as part of the continuing training. Fire drills are hands-on sessions involving use of fire fighting equipment. An example outline of the fire fighting training program is provided in Exhibit H-5.

**H-1c Training Director: OAC 3745-54-16**

The RCRA training program is directed by the plant’s Environmental and Safety Department. The hazardous waste management training director will have, at a minimum, the following qualifications:

- Bachelor’s degree in an environmental or engineering related discipline
- Broad background and experience in production and plant procedures
- Continued updating of training experience as environmental regulations and internal standards change.

**H-1d Relevance of Training to Job Position: OAC 3745-54-16**

Each employee handling or managing hazardous waste is trained to operate and maintain the facility safely, and to understand hazards unique to the job assignment. The plant’s training program is designed to give employees appropriate instruction regarding the hazardous waste management procedures they will encounter in performing their respective duties. Since the handling of hazardous materials is an important part of the operations of the facility, all employees handling or managing hazardous waste are given training in environmental regulations, transportation regulations, and the applicable sections of the Part B Permit (Procedures to Prevent Hazards and the Contingency Plan).

The emergency coordinators are specifically trained in their responsibilities in an emergency including reporting requirements, implementation of the plan, assessment procedures and recordkeeping requirements as discussed in Section G, the Contingency Plan, and Section H-1b.
H-1e Training for Emergency Response: OAC 3745-54-16

All facility personnel are trained to respond effectively to emergency situations, as applicable to their specific job positions as summarized in Exhibit H-2. This training is provided in all phases of the new employee orientation training program. Personnel training includes security, fire and rescue services, emergency incidents and examples, emergency response actions, use of the Contingency Plan, emergency equipment, and incident management. Unit operators receive additional emergency response training in shutdown procedures and use of emergency equipment.

Procedures for Using, Inspecting, Repairing, and Replacing Facility Emergency and Monitoring Equipment

Personnel receive instruction in the use of all emergency and monitoring equipment applicable to their duties. Employees are trained to inspect all facility emergency and monitoring equipment to mitigate the effects of equipment failure. They receive instruction in this area in both classroom and on-the-job training. All facility personnel receive instruction in the use of alarms and fire fighting techniques.

Key Parameters For Automatic Waste Feed Cut-Off Systems

Tanks 2104-F, 2105-F, 2003-F, and 2108-F have backup outflow pumps. The operators receive training in the operation of these pumps as part of the Specific Job Procedures portion of new employee orientation training. In addition, these employees are trained in the use and inspection of tank level control devices.

Communications and Alarm Systems

All facility employees are instructed as to the location and use of all telephones, plant address system, alarm actuator boxes, and radios as part of the specific Job Procedures and Incident Management Procedures portions of training. Personnel receive additional instruction in the use of communication systems and alarms particular to their respective areas.

The emergency communications and alarm systems are discussed in Section G, Contingency Plan.

Response to Fires or Explosions

All personnel involved in hazardous waste management at the facility receive basic instruction in
fire prevention and notification in the Site Safety and Contingency Plan portions of the training program. In addition, all operating personnel receive additional training in responding to fires and explosions. Training for response to fires or explosions includes fire brigade training, fire drills, and use of fire extinguishers. An example outline of fire-fighting training is provided in Exhibit H-5.

Response to Groundwater Contamination Incidents
The possibility of groundwater contamination by operations at the Haverhill Plant is highly unlikely since all hazardous waste management activities take place within secondary containment areas. Inspection of containers, tanks, process units, and secondary containment structures also reduces the probability of groundwater contamination. Containers, tanks, and process units are inspected for corrosion, leaks, spills, and equipment wear. The concrete secondary containment structures are inspected daily for cracks and structural damage.

Response to Release of Hazardous Waste to the Environment
All operating personnel involved in hazardous waste management at the facility receive instruction in spill and release prevention and response in all phases of the introductory training program. In addition, response procedures are reviewed as part of the continuing training program.

Shutdown of Operation
The primary responsibility for shutdown lies with operations. However, all personnel with operational responsibilities are instructed in the proper procedures for planned and unplanned shutdown of operations. This training is provided as part of the Specific Job Procedures portion of new employee orientation training. Shutdown procedures are discussed in Section G-4d of the Contingency Plan.

H-2 IMPLEMENTATION OF TRAINING PROGRAM: OAC 3745-54-16
No employee works in an unsupervised position until he has completed the training requirements. Training is completed by appropriate facility personnel within six months after the date of employment or assignment. “Facility Personnel” include any company or contract employee that will be involved in the management of hazardous wastes. Contract personnel assigned for only periodic work at the facility will be informed by his supervisor of the procedures to follow during their short-term assignment. These procedures are covered in the
contract service providers and third party worker oversight document, provided in Attachment H-2.

Records documenting that initial training and annual reviews of such training have been administered to and successfully completed by facility personnel are maintained in the Training Coordinator office. An example of the form used to record completed training is provided in Exhibit H-6. This form is used for recording completion of all safety training at the facility. In addition, training attendance and completion records are maintained on a computer database at the facility.

Training history and records for all current employees will be retained on site until closure of the facility. Training records for former employees will be kept for three years from the date of the individual employee’s termination.
EXHIBIT H-1

INTRODUCTORY AND CONTINUING TRAINING PROGRAM
Exhibit H-1

INTRODUCTORY AND CONTINUING TRAINING PROGRAM

A. Environmental Awareness
   - Environmental laws
   - Waste classification
   - Generator requirements
   - EPA permitting system

B. Classification, Identification, and Verification of Hazardous Wastes
   - Waste handling (drums and tanks)
   - Chemical and physical hazards
   - Hazardous substance identification

C. Preparedness and Prevention Plan
   - Facility inspections
   - Maintenance of facilities and equipment
   - Emergency equipment

D. Contingency Plan and Emergency Procedures
   - Chemical hazards
   - Handling a material spill or release
   - Fire explosion response

E. Training
   - Frequency and purpose of training

F. Inspections
   - Performance of an inspection
   - Proper recordkeeping

G. Manifesting
   - RCRA requirements
   - Completing and distributing a manifest

H. Spill Simulation and Spill Reports
   - Spill simulation
   - RCRA reporting requirements
   - Recordkeeping requirements

I. Boiler Monitoring And Operating Equipment
   - Key Parameters For Boiler Automatic Waste Feed Cut-Off Systems
   - Shutdown Of Boiler Operations
   - Continuous Emission Monitors
BIF REFRESHER TRAINING

1. Utility Boiler Bif Controls Continuous Monitoring & Recording
   A. Operating Parameters
   B. Constituent Feed Rates

2. Bif Operating Procedures
   A. Batch Burning Of Heavy Ends
   B. Burning Of Light Oils
   C. Testing Of Bif Shutoffs On Boilers
   D. Daily Inspection

3. Bif Sampling And Transfer Of Samples
   A. Sjp 2003-F, 2104-F, 2105-F Bif Sampling
   B. Chain Of Custody Record

4. Checklists And Sjps
   A. Checklists For Burning Of Hhc (Control Room Operator)
   B. Checklists For Burning Of Hhc With Each Pump And From Each Tank
   C. Sjps For Burning Of Hhc With Each Pump And From Each Tank
   D. Checklists For:
      - Rundown Of Heavy Ends
      - Heavy Ends Recirculation
      - Transfer Of Hhc From 2108-F To 2104-F Or 2105-F
      - Control Room Operator Burning Of Light Oil

5. Log Sheets And Checklists
   A. Testing Of Automatic Waste Fuel Cutoff Trips Guidelines
   B. Testing Of Automatic Waste Feed Cutoff Log (Daily Per Schedule)
   C. Testing Of Automatic Waste Fuel Trips Log (Running Log)
   D. Waste Fuel Shut Off Occurrence (Report Form)
   E. Daily Inspection Log For Hazardous Waste Storage Tanks And Auxiliary Equipment, Utilities Area
   F. Co/O2 Analyzer Daily Audit
   G. Report Of Spent Air Thermal Oxidizer By-Pass
EXHIBIT H-2

ORGANIZATIONAL CHART OF INDIVIDUALS THAT MANAGE HAZARDOUS WASTE
## Exhibit H-2

**ORGANIZATIONAL CHART OF INDIVIDUALS THAT MANAGE HAZARDOUS WASTE**

<table>
<thead>
<tr>
<th>Job Title</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Plant Manager</strong></td>
</tr>
<tr>
<td><strong>Manager - Production</strong></td>
</tr>
<tr>
<td>Process Specialists</td>
</tr>
<tr>
<td>Shift Supervisors/Day Foremen</td>
</tr>
<tr>
<td>Operators/Work Crew</td>
</tr>
<tr>
<td><strong>Manager - Technical Services</strong></td>
</tr>
<tr>
<td>Lab Superintendent</td>
</tr>
<tr>
<td>Lab Supervisor</td>
</tr>
<tr>
<td>Lab Technician</td>
</tr>
<tr>
<td>Engineers</td>
</tr>
<tr>
<td><strong>Manager – Health, Environmental &amp; Safety</strong></td>
</tr>
<tr>
<td>Safety Coordinator</td>
</tr>
<tr>
<td>Environmental Superintendent</td>
</tr>
<tr>
<td>Environmental Engineer</td>
</tr>
<tr>
<td>Environmental Technician</td>
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<td><strong>Contracted On-Site Maintenance</strong></td>
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<td><strong>Contracted On-Site Security</strong></td>
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EXHIBIT H-3

RESPIRATORY PROTECTION PROGRAM TRAINING OUTLINE
Exhibit H-3

RESPIRATORY PROTECTION PROGRAM TRAINING OUTLINE

TRAINING

Every employee that uses respiratory protection equipment must be physically able to perform the work while using the equipment. Employees required to use respiratory devices will be instructed and trained by a member of Management who is knowledgeable of inhalation hazards and respiratory protective equipment. Schooling shall be conducted as follows:

A. An explanation of each item of breathing gear. All component parts shall be discussed as necessary to provide the employee with a thorough understanding of how a breathing device functions.

B. Fitting instruction will include a demonstration of how to fit the respirator to the face, adjust bands, and test the seal to show that adjustment is correct. See respirator fit test, Section VI.

C. The employee shall practice use of the respirator to determine the feel that will be experienced in actual application.

D. The employee will be advised of required cleaning, maintenance and storage. Cleaning shall consist of removing the filtering media from the respirator and then washing the balance of the component parts in warm soapy water-rinse and allowing them to air dry or cleaning them with a sanitizing solution and drying. A respirator that is assigned to one person shall be cleaned at least at the end of each shift and more often if necessary. A respirator that is used by more than one person shall be cleaned and sanitized and have the filtering media changed after each use. Storage shall be in a sanitary container such as a closed plastic bag.

E. The employee must demonstrate to the trainer an acceptable degree of proficiency in the understanding of the breathing unit’s protective capability, the actual use of the unit, and its inspection and care including proper cleaning and storage.

Advise employee that if he smells a contaminant while wearing a respirator, he either:

1. Has the wrong type respirator;
2. Has improper filter;
3. Has used up the filter;
4. Has improper fit;
5. Has mask malfunctioning; or
6. Has contaminant too rich for filter type mask.

F. A name list of all persons trained shall be forwarded to and maintained in the safety office. Reports will be generated periodically to advise department superintendents of the employees' respirator training status.
Exhibit H-3 - Continued

RESPIRATORY PROTECTION PROGRAM TRAINING OUTLINE

When a work assignment requires that the employee utilize a dust respirator, chemical cartridge respirator, air supplied unit, or self-contained breathing gear, the superintendent must consult the employee’s record to determine that he has physical certification and has received training in using the type of respirator that is being utilized. If the employee has been previously fitted and trained and can demonstrate a workable knowledge of the unit, the superintendent will issue the appropriate respirator, complete the form, and submit a copy of the form to the safety office. In the event the employee has not had previous training, the superintendent will direct the employee to a properly trained foreman, who will administer to the employee a fitness test and training program. The employee must satisfactorily demonstrate proficiency for use before attempting to use the unit. The superintendent will then complete a form and forward it to the safety office.

All superintendents, employees involved in the fire brigade, rescue squad, and all other employees whose jobs may require the use of supplied air or self-contained breathing gear shall be re-trained annually in the use of this equipment. Training shall, as a minimum, include a lecture covering all types of breathing devices in use at the plant and a refitness test. It shall additionally include a complete discussion of the capabilities and operating characteristics and care of both supplied air and the self-contained apparatus. The re-training shall include a demonstration on the use of each piece of equipment with sufficient question and answer time to resolve all questions. The re-training will be completed by requiring each student to satisfactorily demonstrate proper use of the breathing gear. Re-training will be conducted by or under supervision. Records shall be maintained in the safety office showing participants of each re-training session, the trainer, and date.
EXHIBIT H-4

AVAILABLE COMPUTER-BASED TRAINING TOPICS
Exhibit H-4

AVAILABLE COMPUTER-BASED TRAINING TOPICS

Personnel
Gat Security and Control
Plant Wide Process Overview
Personal Protective Equipment
Respiratory Protection
Safety Showers
Housekeeping
Process Safety Management
Toxic Substance Control Act (TSCA)
Hazardous Communication
Plant Emergency Procedures
HAZWOPER Awareness
Fire Prevention/Fighting Information
Lockout/Tag out
Work and Hot Work Permits
Confined Space Entry
Environmental Procedures
EXHIBIT H-5

EXAMPLE FIRE FIGHTING TRAINING OUTLINE
Exhibit H-5

EXAMPLE FIRE FIGHTING TRAINING OUTLINE

A. Fire Brigade

Fire Brigade training will consist of the following hands-on practice.

1. Fire Truck
   a. Making foam solution
   b. Boosting water pressure
   c. Refilling foam tanks
   d. Knowledge of equipment carried on the fire truck
   e. Flushing and draining pumps and piping systems

2. Hose layout and handling

3. Use of nozzles

4. Hydrant operation

5. Interior structural fire fighting with full Bunker gear and Scott Air Pak

6. Applying foam to flammable liquid storage tanks

7. Applying foam to spill fires

8. Use of fire extinguishers
   a. 30 pound dry chemical
   b. 150 pound dry chemical wheel units
   c. Carbon dioxide
   d. Halon

9. Use of portable foam proportioners and pick-up tubes

B. Brigade Training Schedule

1. One summer and one fall quarter "hands-on" fire drill session of 3 to 4 hours each will be held at the fire drill field.

2. Either monthly drills of 1/2- to 1-hour sessions or quarterly sessions of 2-1/2 to 3-1/2 hours for the balance of the year. Topics for these drills will be training films, lectures, and process area fire fighting equipment such as fixed foam systems, sprinkler systems, etc.
Exhibit H-5 - Continued

FIRE FIGHTING TRAINING OUTLINE

C. Fire Drill Training Field

The fire drill field contains the following evolutions:

1. Leaking overhead pipe rack fire
2. Leaking pump seal and flange fire
3. Tank car or tank truck dome fire
4. Tank fire
5. Pan for simulated spill fire
6. Pan and trench fires for extinguishers

D. Office and Maintenance Personnel

1. Supervisory and engineering personnel will attend fire drill training sessions.

2. Laboratory and administration personnel will attend annual training sessions on the use of water, dry chemical, and carbon dioxide extinguishers.
EXHIBIT H-6

SAFETY TRAINING ATTENDANCE RECORD
SAFETY TRAINING ATTENDANCE RECORD

SUBJECT OF SAFETY TRAINING: ________________________________

INSTRUCTOR(S): ___________________________ COURSE CODE: __________________

TIME START: __________ FINISH: __________ DATE: __________

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**ATTACH OUTLINE OF TRAINING MATERIAL, ALSO LIST TRAINING AIDS USED**

Ohio EPA DHWM

DEC 16 2011

OCT 29 2004

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Attachment H-1

Job Descriptions
PLANT MANAGER

The Plant Manager is responsible for all plant operations including production, maintenance, engineering, personnel, shipping, and hazardous waste management. The Plant Manager is also responsible for ensuring that personnel are trained in hazardous waste management procedures to minimize threats to human health or to the environment. The Plant Manager is also an Alternate Emergency Coordinator.

The Plant Manager:

- Interprets and administers approved policies and procedures.
- Is the contact between the corporation and the plant operations.
- Assigns, coordinates and follows progress on projects across the facility.
- Ascertains that plant standards, goals and practices are adhered to.
- Assists coordinator for the hazardous waste contingency plan.

Minimum Requirements: B.S. Degree
Broad background and experience in production, engineering and administrative matters.
PRODUCTION MANAGER

The Production Manager is under the general supervision of the Plant Manager and is responsible for planning, directing and supervising activity in the Production Facilities, and as the Supervisor of Personnel.

The Production Manager is responsible for:

- Operations oversight and planning. Coordinates safety in the units.
- Cost projection and control.
- Overall management of the site, including training programs. Develops and administers policies concerning promotions, merit ratings, disciplinary action, vacations, hiring requisitions and other personnel actions.
  - Ensure adherence to plant and governmental safety and to environmental standards. Direct and guide personnel to ensure understanding of standards and to ensure safety and environmental guidelines and regulations are followed. Initiate actions to correct unsafe conditions.
  - Personnel Matters.

Minimum Requirements: B.S. Degree
Broad background and experience in production and administrative matters.
PROCESS SPECIALIST

The Process Specialist oversees the manufacturing process for the units.

The Process Specialist’s responsibilities include:

- Set process parameters for safe, efficient, daily operation
- Analyzes and troubleshoots process data
- Provides direction for Supervisors

10 years of operational experience.
SHIFT SUPERVISOR
(Page 1 of 2)

The Shift Supervisor is responsible for supervising the day to day activity in the production units. The Shift Supervisor reports to the Production Manager.

The Shift Supervisor responsibilities include:

- Emergency Response/Incident Command
  - Respond to plant emergencies.
  - Fill role of operations chief or incident command
  - Coordinate and direct response efforts.
  - Notify plant personnel and outside agencies per procedures.

- Safety
  - Discuss safety aspects of work that is going on or is to be done.
  - Conduct Monthly Safety Meeting with crews.
  - Work on Safety Issues and Improvements.
  - Behavior-Based Safety.
  - Ensure the reporting of incidents; assist in incident.

- Environmental
  - Be aware of key environmental compliance points and issues.

- Training
  - Monitor progress of new personnel.

- Process
  - Stay abreast of operating conditions and product quality.

Attachment H-1-4
Assist in troubleshooting as needed, resolve issues, problems.
SHIFT SUPERVISOR
(Page 2 of 2)

- Work with crew members on process improvement projects.
  
- Maintenance
  - Review next day's maintenance schedule with crew.
  - Work with operators PMC to ensure schedule compliance.

- Personnel
  - Stay abreast of personnel issues (Time off, staffing, OT).

Minimum Requirements:  High School Diploma
10 years of chemical plant operating experience.
OPERATORS/WORK CREW
(Page 1 of 2)

The Operator function is responsible for the day to day operation of the units. These responsibilities include:

- Preparing for First Round Inspection.
  - Communicate with Operator being relieved.
  - Read Operator Logbook.
  - Read Daily information book.
  - Review personal safety equipment.

- Making First Round Inspection.
  - Visually inspect production area.

- Collect Routine Samples.

- Responsible for the day to day outside operation of the process.
  - Operating pumps.
  - Opening/closing valves.
  - Clearing lines.
  - Switching filters.
  - Washing pre-heater.
  - Maintaining housekeeping.
  - Pull samples.
  - Line up tanks.
  - Climbing ladders and stairs.
OPERATORS/WORK CREW
(Page 2 of 2)

- Responding to Emergency Situations.
  - Spills.
  - Storms.
  - Electrical Outage.
  - Steam Outage.
  - Loss of Cooling Water.
  - Shutdown of Cleavage.
  - Each emergency situation involves a rapid response, in the form of shutting valves, clearing lines, and /or restarting pumps and equipment.

Minimum Requirements: High School Diploma
MANAGER - TECHNICAL SERVICES

The Technical Services Manager is under the general supervision of the Plant Manager and is responsible for planning, directing, and supervising the Technical Services and Laboratory Services Department.

The Technical Services Manager:

- Applies company administrative and personnel policies.
- Supervises the Technical Services and Laboratory Department and directs their efforts in planning and scheduling.
- Coordinates plant projects with other departments, and reviews projects for technical accuracy.

Minimum Requirements:  
B.S. Degree in Engineering  
Broad background and experience in production and plant procedures.
LABORATORY SUPERINTENDENT
(Page 1 of 2)

The Laboratory Superintendent is responsible for overseeing the daily operation of the Quality Control Laboratory. This position provides oversight for two (2) lab supervisors and eight (8) lab technicians. Incumbent also holds responsibility for tracking and auditing the ISO 9000 process at Haverhill.

- Assists the Manager of Technical Services.
- Oversees day to day Lab operations.
- Assures training of Lab personnel and development of Lab training programs.
- Oversees scheduling of Lab personnel.
- Responsible for Lab personnel evaluations.
- Manages Lab LIMS.
- Manages Lab Data Acquisition Software.
- Responsible for primary Research and Technology personnel interfacing with the Lab.
- Assists in method development for the Lab.
- Assures instrumentation maintenance, upgrades, selection, and installation.
- Coordinates sample schedules and special sample requests with Operations.
- Acts as Lab technical contact for customer quality issues.
- Assist in resolution of analytical and operational problems as needed.
- Assists in Lab bench work if needed.
- Oversees preparation of samples for off-site shipment.
- Responsible for Lab budgeting finances.
LABORATORY SUPERINTENDENT
(Page 2 of 2)

- Responsible for Lab staffing.
  - ISO management representative.
  - Manages the internal quality audit function at Haverhill.
  - Responsible for ensuring that all persons regularly employed at the Plant are trained in ISO 9002:2000.

Minimum Requirements:  B.S. in chemistry/biology.
Previous experience in an industrial lab environment.
LAB SUPERVISOR

The Lab Supervisor works under the general supervision of the Lab Superintendent and oversee the daily activity of 8 Lab Technicians.

The Lab Supervisor’s responsibilities include:

- Oversee the flow of samples and direct testing.
- Supervise and training of laboratory personnel and ensure that the proper analytical procedures are being followed.
- Responsible for calibration and maintenance of laboratory equipment.
- Responsible for verification of previous results when test equipment is found to be "out of calibration".
- Prepare and update analytical procedures.
- Assist in investigating causes of non-conforming product.
- Maintain laboratory data records.
- Assures incoming raw materials meet specifications (where applicable).
- Assist in development and implementation of analytical test procedures.
- Responsible for the ordering of Laboratory Supplies
- Responsible for preparing Laboratory analytical reagents

Minimum Requirements: Bachelor’s degree in science related field.
3 to 5 years experience in industrial laboratory setting.
LABORATORY TECHNICIAN

Laboratory technicians perform numerous qualitative and quantitative analysis of various in-process, final product, and waste streams found on the plant site. Chromatography, titration, colorimetric, and other wet chemistry and instrumentation techniques are performed in carrying out these required analyses. These analyses are used to monitor the processes, to identify nonconforming streams or product, and to identify components within waste streams for economic and regulatory compliance. In addition to performing the actual tests, the technicians also maintain recordkeeping and reporting requirements to appropriate on-site personnel. Technicians also work with other technical personnel (chemists, engineers, and environmental staff) in performing non-routine analysis of various in-process or waste streams. Technicians must also be able to identify malfunctioning laboratory instruments and either repair or initiate repair. These technicians have sufficient experience and expertise to work without supervision.

Technicians work with hazardous wastes during sample handling, analysis, and disposal. Therefore, they must be familiar with the chemical and hazardous waste handling procedures specified for the laboratory. Technicians attend fire and safety training, hygiene and emergency response training, and RCRA training as scheduled throughout the year. This is in addition to their formal and on-the-job technician training they receive.

- Handling – four ounce sample bottles, one pint sample bottles, and/or sampling tins are typically used for waste stream samples. Per procedure or analytical methods, the required aliquots of these samples are taken from these containers for the actual analysis.

- Analysis – the technicians analyze hazardous wastes by performing a variety of tests.

- Disposal – They dispose of samples in a properly labeled container.

- Inspection of the laboratory hazardous waste management areas.
Minimum Requirements:  B.S in science related field or laboratory experience.
ENGINEERS

The Process Engineer assists production in troubleshooting of process problems, monitors key parameters (material yield, energy, quality, capacity utilization, etc.) of all processes to maintain past gains, and establishes process optimization opportunities.

The Process Engineer responsibilities include:

- Identify process optimization/improvement opportunities and provide necessary engineering to implement.
- MOC champion.
- Project engineer responsibility.
- Technical support for major process outages and start ups.
- Interface with Corporate Research and Technology personnel on process improvement/optimization activities.
- Assist in development, design, and coordination of feasibility studies, preliminary engineering, and major process capital projects.
- Day-to-day process engineering support of plant operations, monitor key process parameters, and identify process optimization/improvement opportunities.

Minimum Requirements:  BS degree in Chemical Engineering.
Must be analytical in interpreting data and making recommendations based upon that data. Must be excellent communicator, able to work well in teams and work independently and strategically for the plant site.
SUPERINTENDENT – LOGISTICS AND SHIPPING

The Superintendent is under the general supervision of the Plant Manager and directs subordinate supervisors in managing the BPA Warehouse, the Shipping Clerks as well as Liquid Loading. This position also coordinates with corporate personnel on Production Planning, Supply Chain Management and Order Entry.

The Superintendent is:

- Responsible for the coordination of all shipments from the Haverhill plant site.
- Site contact with customers, corporate supply chain management.
- Administers company and personnel policies.
- Sets long and short term goals for proper and efficient operation of shipping and logistics function.
- Determines and provides for personnel training within each unit including personnel hazardous work management procedures and contingency plan implementation.
  - Ensures that work processes and shipments conform to all applicable Department of Transportation requirements.

Minimum Requirements:  B.S. Degree

Broad background and experience in shipping and logistics.
SUPERVISOR OF LOADING OPERATIONS

This position is similar to the Shift Supervisor in that the incumbent will directly supervise hourly personnel in the day to day duties on the Liquid Loading group and the BPA Warehouse.

The Supervisor of Loading Operations duties include:

- Evaluation of job performance for new personnel.
- Supervise, train, and direct the day-to-day activities in Liquid Loading.
- Coordinates activities between the production units and maintenance, and the needs of those in shipping and logistics.
- Interfaces with regulatory agencies.
- Ensures proper shipments are made at appropriate times.


Extensive knowledge of plant production procedures as well as all aspects of process safety management systems.
LOADERS

The Loader Position is responsible for the loading and unloading of tank cars and tank trucks in the facility.

The Loader duties include:

- Loading of trucks and tank cars.
  - Phenol.
  - Acetone.
  - AMS.
  - Cumene.
- Maintains Housekeeping.
- Emergency Response Team member.
  - Attend fire school annually.
  - Hole watch responsibilities.
- Promotes safety and follows all plant safety procedures.
- Is the feeder group for operations, therefore:
  - Industrial process knowledge a plus.
- Perform minor maintenance activities.

Minimum Requirements: High School Diploma
SHIPPING CLERK

The primary duty of the Shipping Clerk is to schedule loading and shipping of products for customers from orders received from sales offices and to prepare records of shipments, loading schedules, packaging instructions, customer order status.

- Record orders that are received from customer service.
- Provide loading instructions (liquid shipments) and/or packaging instructions for railcars and trucks.
- Generate certificates of analysis for each order.
- Fax bills of lading and certificates of analysis to customers as requested in order's special instructions.
- Coordinate off-loading of barges.
- Label sample container appropriately according to Haz-Mat requirements.
- Responsible for addressing customer complaints.
- ISO Documents.
- Responsible for updating/revising Order Entry procedures as necessary.

Minimum Requirements: High School.
Required to read, comprehend, and write legibly.
MANAGER – HEALTH, ENVIRONMENTAL AND SAFETY

The Health, Environmental and Safety Manager is under the general supervision of the Plant Manager and is responsible for planning, directing, and supervising the Health, Environmental and Safety Department.

The Health, Environmental and Safety Manager:

- Supervises the health, environmental and safety review of plant projects with other departments, and assures projects are completed on schedule.
- Develops environmental policies at the plant.
- Directs the Health, Environmental and Safety Department in planning and scheduling.
- Applies company administrative and personnel policies.
- Is the prime contact between government regulatory agencies and the plant.
- Coordinates compliance with regulations and deadlines.
- Provides an interface between Plant and Corporate initiatives.

Minimum Requirements: B.S. Degree in Engineering
Broad background and experience in environmental and safety administrative matters required.
SAFETY COORDINATOR

The Safety Coordinator serves as a technical resource for the facility in health/safety and loss control programs.

The Safety Coordinator responsibilities include:

- Assists with regulatory compliance and management systems.
- Safety training.
- Conducts safety audits.
- Updates, revises and tracks changes to health and safety procedures and the organization’s safety standards in accordance with government regulations.
- Assists with governmental reporting.
- Conducts industrial hygiene surveys.
- Assists management in identifying potential hazards.
- Assists field management with loss control efforts including hazard assessment and control, compliance assessments and establishment of behavior safety systems.
- Develops and implements safety training programs for site locations.
- Provides input for the development and implementation of programs to track and evaluate personal injury experience.
- Evaluates training needs, identifying best method to deliver training, scheduling training, and serving as trainer.

Broad based and significant exposure to health and safety protocols.
Experience in legal aspects of HES legislation.

ENVIRONMENTAL SUPERINTENDENT

The Environmental Superintendent is responsible for supervising the environmental engineers, maintaining the project backlog, assigning project work, and completing all possible projects in a timely basis.

The Environmental Superintendent:

- Maintains the environmental deadline backlog and meets deadlines.
- Must know regulations pertaining to air, hazardous wastes, water, toxic substances, and injection wells.
- Manages plant environmental inspections and initiates corrective and preventive actions.
- Notifies agencies of environmental releases and maintains environmental files.
- Must be familiar with the Hazardous Waste Contingency Plan.

Minimum Requirements: B.S. Degree

Broad background and experience in production and plant procedures.
ENVIRONMENTAL ENGINEER

The Environmental Engineer is under the general supervision of the Environmental Superintendent and is assigned important and major engineering projects requiring expert environmental engineering techniques, skills, and experience.

The Environmental Engineer:

- Is given wide latitude for independent decisions.
- Prepares or directs preparation of environmental engineering contracts and government permits and documents.
- Regularly directs the work of other environmental engineers, draftsmen or technicians assigned to projects.
- Monitors daily sampling and processes to ensure compliance with government regulations.
- Performs comprehensive investigations; writes or directs progress and technical reports, recommendations, and studies.
- Corresponds frequently with government regulatory agencies.

Minimum Requirements:  
B.S. Degree in Engineering  
Broad background and experience in environmental affairs.
ENVIRONMENTAL TECHNICIAN

The Environmental Technician works under the general supervision of the Environmental Superintendent and is responsible for the day to day duties of complying with LDAR.

The Environmental Technician responsibilities include:

- Tracking maintenance activities related to leaking components
- Tagging new components
- Periodic visual inspections
- Periodic VOC leak detection
- Initiating maintenance work orders for leak repair
- Regulatory required repair monitoring
- Regulatory required follow-up monitoring
- Component data entry
- Leak data entry

Minimum requirements: High School Diploma
3 to 5 years of experience in an industrial setting.
ENVIRONMENTAL ASSISTANT

The Environmental Assistant gives daily direction to the work group assigned to the hazardous waste storage area, to day supervisors, to shift supervisors, and to operators on how to stay compliant with EPA permits. This position has responsibility for overseeing contractors and operation personnel during activities that effect EPA compliance (i.e. stack testing, BIF boilers burn rates, spill clean-ups).

The Environmental Assistant responsibilities include:

- Responsible for negotiation of contracts with Hazardous Waste disposers and Analytical Laboratories to insure the EPA RCRA regulations intent are met.
- Generate proper shipping names and manifest for hazardous waste utilizing 40 CFR parts 172 and 40 CFR 261.
- Submittal of One-Time LDR Notice for Each New Waste or New Receiving Facility Verification.
- Boiler ash concentration verification.
- Land Disposed Waste Compliance with the Treatment Standard Requirements Verification.
- Boiler Cleaning Procedures.
- Boiler 2001-UC CO/O2 Analyzers Calibration Verification.
- Hazardous waste shipping verification.
- Investigation of spills and unusual occurrences.

Minimum Requirements: B.S. in science related area.
4 to 6 years of industrial experience.
MANAGER - MAINTENANCE

The Maintenance Manager is under the general supervision of the Plant Manager and is responsible for planning, directing, and supervising the Engineering and Services Department, and providing the maintenance services necessary to the operation and maintenance of the plant. He is the alternate news media coordinator on the EOC.

The Maintenance Manager:

- Assigns engineering projects and then approves the design criteria, engineering drawings and specifications, and cost estimates.
- Provides direction to the contract labor force.

Minimum Requirements: B.S. Degree in Engineering
Broad background and experience in maintenance and administrative matters required.
MAINTENANCE ENGINEER

The Maintenance Engineer is under the general supervision of the Manager of Maintenance.

The Maintenance Engineer:

- Performs engineering assignments requiring application of engineering techniques and skills.
- Is individually responsible for the planning, coordinating and carrying out of projects.
- Periodically directs the work of other engineers, draftsmen, or technicians as assigned.
- Is responsible for cost estimations.
- Writes progress and technical reports on assigned projects.

Minimum Requirements: B.S. Degree in Engineering
Four years of specialized engineering experience.
PROJECT MANAGER – CAPITAL VENTURES

The Project Manager – Capital Ventures is under the general supervision of the Manager of Capital Projects Chemicals, and is responsible for directing capital project activity in the Ohio Valley.

The Project Manager – Capital Ventures responsibilities include:

- Insuring the Capital Workflow Process is followed
- Assigning appropriate resources to project activity (Engineering)
- Monitoring capital project activity
- Overall control of the capital budget

Minimum Requirements: B.S. in Engineering.
Significant industrial experience.
PROJECT ENGINEER – CAPITAL VENTURES

The Project Engineer – Capital Ventures is under the direct supervision of the Project Manager – Capital Ventures, and is responsible for individual capital project activity on site.

The Project Engineer – Capital Ventures responsibility includes:

- Developing the scope of capital projects.
- Purchasing for capital projects.
- Monitoring the construction phase.
- Insuring CWP (Capital Workflow Process) is followed.
- Closing capital projects.

Minimum Requirements: B.S. in Engineering.
3 to 5 years of industrial experience.
CONTRACTED ON-SITE MAINTENANCE

Contracted on-site maintenance personnel are periodically required to come into contact with hazardous waste through maintenance, repair and/or handling procedures.

Maintenance and repair may include disassembly or replacement of mechanical and electrical equipment, such as:

Centrifugal Pumps, Centrifugal Pump Seal Gate, Globe and Ball Valve Piping, Fittings and Flange Instrumentation Sensors (gauges, thermometers), Miscellaneous Electrical Components.

Handling includes use of equipment and labor for cleanup of coarse, solid and/or liquid material and subsequent packaging in DOT-approved containers for shipment and off-site disposal by others.

All contracted on-site personnel have received appropriate training and instructions for safe handling of hazardous waste materials in accordance with Section 40 CFR 264.16, OAC 3745 54-16 personnel training.
CONTRACTED ON-SITE SECURITY

Contracted on-site security personnel are periodically required to come into contact with hazardous waste. Their duties include checking all traffic in and out, including weighing trucks which may contain hazardous waste.

When an emergency occurs, security personnel will assist the emergency coordinators by directing traffic, transporting people to the fire, keeping unauthorized persons out of the affected area, etc.

The on-site security also answers all phone calls during off hours. Therefore, they must know who to contact should an emergency occur.

All contracted on-site personnel have received appropriate training and instructions for safe handling of hazardous waste materials in accordance with Section 40 CFR 264.16, OAC 3745 54 16 personnel training.
Attachment H-2

Contract Service Providers and Third Party Worker Oversight
**Contract Service Providers and Third Party Worker Oversight**

**Document Number:** HAV-PSM-PRO-006

**Issuing Dept:**
- Safety

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- Safety Department

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- HES Administrative Assistant

## 1. Purpose/Scope

The purpose of this document is to define the process for contract service provider and third party worker oversight relative to legal requirements and the OEMS HES&OI Policy and Expectations. The requirements of this document apply to all contract service providers and third party workers performing work for the Haverhill Plant.

The scope of this OEMS document applies to the Haverhill Plant's activities involved in the procurement of raw materials and supplies and the manufacturing, transportation, and delivery of the Haverhill Plant's products.

## 2. Definitions

† **Contract Administrator** – A Sunoco or contract employee who is responsible for contract administration and oversight of one or several contract service providers. The Contract Administrator must provide day-to-day oversight and be the primary contact with the Contract Service Provider Management to ensure that work is performed according to contract and compliance, provider understands Sunoco's standards, and that assessments and self-inspections are conducted and reviewed.

† **Contract Manager** – A Sunoco employee who is responsible for pre-qualifying a contract service provider and developing terms of the contract.

† **Contract Service Provider** – Any party who performs a service for or provides goods to Sunoco under a contract and who is not a Sunoco employee.

**Contract Service Provider HES&OI Representative** – A contract service provider employee at the worksite who is directly responsible for HES&OI oversight.

**HES&OI** – Health, Environment, Safety & Operations Integrity

**IDLH** – Immediate Danger to Life and Health

**Incident/Near Miss** – An undesired event that causes, or which under slightly different circumstances, could have caused harm to people, damage to property, loss of process, an effect on the community or environment; or, government agency inspections.

**Multi-Facility Contract** – A contract, which is generated or expanded for use by more than one Sunoco Chemicals facility.
Sunoco Representative – The Plant employee, in many cases the Contract Administrator, responsible for oversight of a contractor or the Plant contact point for a contractor.

Third Party Workers – Employees of any outside company who are working in a Sunoco facility but whose activity does not directly impact the safety, reliability or operation of the facility (i.e. visitors, Telephone Company, janitorial service, delivery companies, etc.)

PSM Covered Contract Service Provider – Any contract service provider who performs work on or adjacent to a PSM covered process.

Refer to the CHM-MS-STD-003, Sunoco@Work Management System Definitions Library, for definitions common to this management system, including but not limited to those words in italics.

3. General Requirements

Systems must be in place for:

- Evaluating and selecting contract service providers, which assesses capabilities and competencies, and monitors and ensures HES performance consistent with Sunoco’s expectations.

- Specifying accountability and responsibilities of on-site contract service providers for HES&OI practices, assuring compliance, required reporting to regulatory agencies, and corrective actions implemented.

- Identifying, interpreting, and effectively communicating HES&OI requirements to affected on-site contract service providers, and ensuring that activities conform to those requirements.

- Establishing and maintaining procedures related to the identified aspects of goods, equipment and services purchased and/or used by the organization and communicating relevant procedures and requirements to suppliers and contractors.

- Periodic (at least annual) evaluation of the contract service provider safety process, including incorporating the results of the assessment into program improvements, revisions to the document, and communicating findings and action plans to affected employees, and contract service providers.

- Providing oversight of third party workers.

4. Key Responsibilities

Contract Manager – Responsible for administering the pre-qualification process, maintaining records and documents required by this procedure, and developing terms and conditions of the contract.

Contract Administrator (or Sunoco Representative) – Provides day-to-day oversight of the contract service provider’s activities. The contract administrator provides the primary contact with contract service provider management.

Contract Service Provider Management – Responsible to assure contract service provider employees, and subcontractor employees, are trained and qualified to perform the work contracted, and that they do so in a safe and environmentally responsible manner, meeting, at a minimum, requirements specified by the Haverhill Plant. Contract Service Provider management shall ensure that all employees, sub-contractors, agents, suppliers, etc. comply with all rules and regulations including Sunoco, Inc. general and local facility safety rules.

Ohio EPA DMWM DEC 16 2011
Safety Department — The Haverhill Plant Safety Department is responsible for approving contract service providers, auditing the requirements of this document, assessing PSM training programs, keeping the facilities fully informed regarding the names and dates of contract service providers which have been removed from jobs for cause, and developing HES&OI data and coordinating the monthly and quarterly meetings.

5. Procedure

5.1 Contract Service Provider Evaluation and Selection

All contract service providers are pre-qualified. Contract service provider HES&OI performance evaluation criteria and forms are contained in Appendix A. Pre-qualification information must be fully updated every three years to remain a "qualified contractor." Pre-qualified contract service providers are approved with input from the appropriate maintenance, safety, environmental, and engineering managers.

The Plant develops an initial evaluation of the environmental aspects and health and safety risks of a job. The evaluation is provided to prospective bidders in the bid package.

Contract service providers must submit all forms and HES&OI performance evaluation criteria in order to be considered for the job. Training qualifications based on the environmental aspects and health and safety risks of those who will be performing the job must also be provided. Contract service providers may be disqualified if they fail to meet these standards. The nature of the work to be performed and the associated HES&OI aspects are also considered in the contract service provider evaluation.

The Haverhill Plant shall not consider any contract service provider for employment if they have been removed from any other Sunoco facility for HES&OI violations or exceptions within the previous twelve months. After this period, the contract service provider must demonstrate improvement in safety performance before being considered for employment.

Contract service providers selected should have a target Experience Modification Rate (EMR) of 1.0 or less for at least two of the three previous years. Should a contract service provider’s EMR exceed 1.0 for any of the three years submitted, the contract service provider shall provide an explanatory report accounting for the high EMR. The report must also describe the corrective steps being taken.

Contract service providers should have a target OSHA Recordable Incident Rate of 4.0 or less for at least two of the three previous years. Should a contract service provider’s rate exceed 4.0 for any of the three years submitted, the contractor must provide an explanatory report accounting for the higher rate and explaining the improvement steps being taken. Plant managers may qualify contractors with a higher OSHA recordable incident rate provided there are measures in place to carefully monitor performance and a plan to help assure improvement.

Contract service providers not required to maintain OSHA Incidence Rates (10 employees or less), or are unable to submit an EMR, must submit information that describes their safety experience and occupational injury/illness performance for the prior three years.

Contract service providers shall list any current or past work performed at other Sunoco facilities and submit occupational injury/illness data and information from all jobs performed for those facilities.

Selection of the contract service provider is based on past and potential HES&OI performance as well as technical expertise, experience and commercial standing.

The Plant Contract Manager and the Safety Department maintain a list of approved contractors and related documentation.

5.2 Contract Service Provider Expectations and Controls

5.2.1 Compliance

All contract service providers must be in compliance with:
• All applicable legal requirements that relate to the work they are performing, including but not limited to 29 CFR 1910.119, Process Safety Management.
• OEMS Policy and Expectations
• Sunoco Chemicals standards for performing work in a safe and environmentally responsible manner
• Applicable Haverhill Plant Safety Procedures

5.2.2 Reporting Incidents

Contract service providers must immediately report all HES&OI incidents (i.e., fires, spills, vehicle accidents, injuries, property damage, near misses, etc.) to the Plant emergency phone number for the necessary emergency action and subsequently to the assigned Sunoco Contract Administrator for investigation follow-up as required by the facility incident investigation requirements.

Incident investigations must begin immediately and must be documented in the Sunoco Incident Reporting and Investigation System (SIRIS) that shall generate and maintain a log of all contract service provider injuries.

5.2.3 Contract Service Provider Supervisory and Management Staff

All contract service providers must demonstrate they have a supervisory and management staff that is trained and understand the applicable legal requirements, and the OEMS policy and expectations.

5.2.4 Contract Service Provider HES&OI Representative

All contract service providers must have a designated, on-site HES&OI representative who is responsible for contract service provider HES&OI management and performance.

5.2.5 Full Time HES&OI Representative

A full time qualified safety representative shall be required when:

• Contract service providers have 20 or more employees on site; or,
• The contract service provider is the primary contractor during turnaround; or,
• Performing work in an existing or potential IDLH atmosphere; or,
• Plant management determines it is appropriate relative to the tasks to be performed

Appointment of the HES&OI Representative shall be subject to Haverhill Plant Safety Department approval.

5.2.6 Site Safety Program

The Contract Administrator and Safety Department must review and approve all Contractors' Site Safety Programs prior to commencing work. Refer to Appendix D – Suggested Contractor Site Safety Program Criteria.

The Contractors' Site Safety Program must comply with the procedures contained in the Haverhill Plant Fire & Safety manual.

All contract service provider employees must be familiar with the Contractors' Site Safety Program. Supporting documentation may be requested by the Haverhill Plant Safety Department.

5.2.7 Daily HES&OI Briefing (also known as Pre-Shift Safety Instructions)

The contract service provider must hold daily HES&OI briefings prior to the start of each shift. The agenda of the briefing should include such items as the work permit requirements, pre-task HES&OI review, special conditions, general notices and procedures, Safe Plan of Action, site requirements and conditions, emergency procedures, alarms, environmental issues, incident learnings, etc.
5.2.8 Pre-task HES&OI Review

The contract service provider prior to the start of each new task involving a potentially hazardous environment or involving the generation of waste materials covered under Haverhill Plant operating permits must conduct a pre-task HES&OI reviews. The review must include the work permit and authorization requirements and a Task Hazard Analysis. The Task Hazard Analysis must contain:

- The steps to perform the task
- The potential hazards or HES&OI aspects associated with each step
- The actions to eliminate the hazards or HES&OI aspects associated with each step
- Identification of any waste materials expected from the job and a recommended disposal plan. This includes material that may be drained to the plant sewer or collected for offsite disposal.
- Identify of environmental permitting requirements and a plan for how the permits will be obtained and how compliance with the appropriate permits will be maintained.

The Task Hazard Analysis must be documented and forwarded to the Contract Administrator. The Task Hazard Analysis documentation shall be retained for one yr.

5.2.9 HES&OI Training

5.2.9.1 Training for PSM Covered Contract Service Providers

PSM covered contract service providers must provide certification indicating their employees, including management, have received appropriate Process Safety Management (PSM) training. Minimum topics to be included in this training are contained in Appendix C, Contractor Process Safety Training Criteria.

The certification must document that each PSM covered contract service provider employee has received and understood the training. The contract service provider must prepare a training record that shall contain:

- The identity of the contract service provider employee
- The subject of the training
- The date of the training
- The trainer’s name
- The trainer’s company or organization
- The means used to verify that the employee understood the training

The contract service provider must keep these records on file for a period of one year. The Haverhill Plant Safety Department shall periodically audit these records.

PSM training organizations with programs currently acceptable to Sunoco are listed in Appendix C, Contractor Process Safety Training Criteria. Equivalent training is acceptable but subject to approval by the Haverhill Plant Safety Department.

After initial assessment and approval of PSM training programs, the Haverhill Plant Safety Department shall reassess PSM training programs every 3 years thereafter.

For contract service provider field service engineers and technical representatives, the PSM training certification may be waived. This PSM training exception is for short duration jobs or visits only (<2 days). If the certification is waived, a Sunoco employee must accompany the contract service provider employee at all times. The Sunoco employee must be knowledgeable of the process, able to recognize hazards, and familiar with the Plant’s HES&OI requirements and procedures. The Haverhill Plant Safety Department must approve all exceptions. The contract service provider field service engineer or technical representative may not enter a respirator-required area, a confined space or perform other jobs that require special training unless appropriate training documentation is provided to the Haverhill Plant’s Safety Department.
5.2.9.2 General Orientation

The Contract Administrator or designee will orient the contract service provider supervision on applicable safe work rules and the emergency response plan provisions using the Contractor Supervisors Safety Orientation Manual.

All contract service provider supervision must orient their employees in the general HES&OI requirements prior to entry into the facility. This orientation shall include the applicable safe work rules and the emergency response plan provisions given in the Contractor Supervisors Safety Orientation Manual.

Each contract service provider employee must receive a refresher orientation on a rolling 12-month basis. Access cards shall not be renewed unless the orientation is current.

A comprehensive orientation test, covering the key points of the orientation, must be given at the completion of the orientation. Each contract service provider employee must successfully complete all questions of the evaluation prior to gaining admittance to the work site.

The orientation must be recorded through the use of signed roster sheets and the orientation test shall be filed in the Haverhill Plant Safety Department.

5.2.9.3 Job Specific Orientation (job site requirements)

Prior to beginning work, each contract service provider employee must be provided training regarding the following topics:

- Contract Service Provider Site HES&OI Plan
- Emergency Action Plans, and unit specific information related to the job

The orientation date, leader, agenda, and attendees must be recorded and sent to the Contract Administrator and the Haverhill Plant Safety Department.

5.2.10 Weekly “ToolBox” Meetings

Contract service providers must meet with their employees on a weekly basis to:

- Review current HES&OI issues
- Review the facts/learning from incidents or other postings, flashes or flyers
- Perform necessary training refreshers or updates
- Review emergency action plans (alarms, evacuation routes, etc)
- Communicate any requirements received from Sunoco

The meeting date, leader, agenda, and attendees must be recorded and sent to the Contract Service Provider HES&OI Representative.

5.2.11 Monthly Meetings

The Haverhill Plant Safety Department shall meet with representatives of nested contract service providers at least monthly to:

- Review current HES&OI issues
- Review the facts/learning from incidents or injuries
- Review performance items such as OSHA recordable rates and other elements
- Discuss improvement initiatives

The Safety Department may invite other on-site contract service providers to attend. The monthly meeting shall be recorded by the Sunoco Safety Department and forwarded to the Contract Administrator and the Contract Service Provider HES&OI Representative.
5.2.12 Chemical Inventory Material Safety Data Sheets

Prior to bringing chemicals into the Haverhill Plant, contractor service providers shall obtain approval from the Contract Administrator. The contractor service provider must provide to the Contract Administrator Material Safety Data Sheets containing information about the chemicals that they will be using. The Contract Administrator shall follow the procedure for new chemicals stated in OV-SAF-PRO-001 to obtain the approval of the Haverhill Environmental Department, and the Haverhill Safety Department before the chemical can be brought onto the plant site.

Contract service providers shall maintain, on-site, a chemical inventory for all hazardous substances that they use. The contract service provider must have a Material Safety Data Sheet for every substance listed on the chemical inventory and must properly label all chemical containers. The contractor service provider must provide information regarding the possible effects of hazardous substances to the contractor service provider’s own employees. The Contract Administrator must provide information regarding the possible effects of hazardous substances that the contractor service provider will be using to the supervision of any Haverhill Plant employees that could possibly be affected.

Contract service providers shall be informed that any information regarding the Haverhill Plant Hazard Communication Information and Material Safety Data Sheets (MSDS) can be secured through the Contract Administrator.

5.2.13 Personal Protective Equipment

All contract service providers must wear the following minimum personal protective equipment (PPE) when performing tasks within operating and maintenance areas of the Haverhill Plant:

- Safety Glasses with side shields
- Nomex or other comparable Fire Retardant Clothing (preferably not same color worn by Haverhill Plant employees)
- Hardhat
- Safety-toe work boots (over-the-ankle)
- Job specific PPE as prescribed on the work permit.

All PPE utilized must meet the requirements of 29 CFR 1910, 29 CFR 1926 and any other applicable codes and regulations; or, Haverhill Plant procedures.

Contract service provider whose work requires the use of respiratory protection must be adequately trained, medically cleared and fit tested for its use. Before the start of work, the Contract service provider shall substantiate these requirements by providing a letter (or a copy of the records) to the Contract Administrator.

5.2.14 Inspections and Audits

The Contract Administrator, along with the contractor service provider representative, shall conduct a pre-job site safety inspection prior to work beginning.

At least weekly, PSM covered contract service providers shall conduct a safety inspection and work practice audit of the worksite and the work being performed.

A record shall be made of all safety inspections and audits, including the findings and corrective action taken. This documentation shall be provided by the contractor service provider and forwarded to the Contract Administrator.

The contract service provider must promptly take corrective action to address all deficiencies found.

The contractor service provider must continually audit the worksite to ensure compliance with all rules and regulations. The contractor shall inform the Contract Administrator of any unique hazards presented by the contractor service provider employer’s work, or any hazards found by the contractor service provider employer’s work in the work environment.
The Contract Administrator shall conduct weekly inspections of plant work practices. The Contractor Safety Inspection and Work Practice Checklist (Appendix F) shall be used when conducting this inspection.

A Haverhill Plant Safety Department representative and a representative from the nested contractors will conduct a weekly inspection of the nested contractors. The Contractor Safety Inspection and Work Practice Checklist (Appendix F) shall be used when conducting this inspection.

5.2.15 Substance Abuse

The use and/or possession of alcohol, illegal drugs, or the improper use of legal drugs are prohibited within the Haverhill Plant. Contract service providers’ employees, agents, or suppliers shall not enter the Haverhill Plant while under the influence of illegal drugs, alcohol, or the improper use of legal drugs.

Prior to initial entry, contract service providers shall provide proof of substance abuse testing with negative results or verification of each employee's status in an accepted substance abuse testing program (i.e. L.E.A.D., CUDAP, MOST, etc.). The record of proof must contain:

- Company letterhead
- Worker name(s)
- Worker SSN
- Date of testing, current within one year

A chain of custody letter for a recent test may be used on an interim basis as proof of testing until the results are received (within 5 days).

Entry onto the property of the Haverhill Plant constitutes consent on the part of all contract service provider employees to submit to a substance test at such time as reasonable cause warrants such testing. Such testing is conducted at the direction of Sunoco and at the sole expense of the contract service provider. Any contract service provider employee testing positive for alcohol, illegal drugs or the improper use of legal drugs shall be removed from, and not allowed to re-enter the Haverhill Plant, for a period of not less than one year or until rehabilitated according to local building trades agreements.

For testing, the laboratory will follow DOT protocol for testing levels, testing procedures and split sample requirements.

Any contract service provider employees using prescription medicine must notify their supervisor. Where the medication could affect the safe performance of the work, job reassignment shall be made.

5.2.16 Medical Screening and Treatment

The contract service provider shall ensure that all personnel are physically and psychologically capable of performing the job tasks assigned.

Contract service providers shall provide for emergency first aid and medical treatment of any personnel who may suffer an injury or illness while at the job site. Contract service provider personnel who may perform first aid treatment must be adequately trained and records of this training provided upon request.

The contract service provider (or Sunoco – through mutual agreement) shall provide for medical surveillance and guidance (industrial hygiene monitoring, etc.) to ensure employees are not exposed to hazards while working; including verifying that the personal protective equipment being used is the proper type.

5.3 Communication of Contract Service Provider Requirements

The Sunoco Contract Administrator shall communicate the Haverhill Plant’s HES&OI policies, standards and relevant procedures to the contract service provider management and designated HES&OI representative prior to work being performed. A discussion shall also be held on the HES&OI legal requirements related to the job and how the contract service provider will assure compliance to the legal requirements.
Contract service provider representatives must be competent in their knowledge of the work and the proper procedures to be followed.

The Contract Administrator shall explain to contract service provider representatives the applicable provisions of the Plant's emergency action plan.

Prior to the commencement of field work, the Contract Administrator and contract service provider shall tour the Plant with particular attention to the job site and associated operating areas.

The Contract Administrator shall advise the contract service provider of any known hazardous chemicals in the unit or facility to which the contractor's employees may be exposed as well as any special precautions to be followed.

The Contract Administrator shall review safe work practices in place for the control of hazards with contract service provider representatives including, but not limited to:

- Permits
- Lockout/tagout
- Confined space entry
- Opening process equipment or piping
- Control over the entry, presence and exit of contract service provider employees in covered areas

The Contract Administrator shall document the agenda, attendees, and outcomes of these discussions. This documentation will be sent to the Safety Department.

The topics and timing of communications are contained in Appendix B, Communication Worksheet and Timeline. Sections of appendix B should be used if applicable.

5.4 Identify and Train Contract Administrators

The Contract Administrator's qualifications include:

- They are Sunoco employees or contract service provider employees assigned Contract Administrator responsibilities.
- They have at least part time responsibility for overseeing contract work.
- They understand the commercial contract management process.
- They have undergone Contract Administrator training or orientation.

5.5 Contract Administrator Oversight Responsibilities

The Contract Administrator shall provide oversight to give assurance that:

- Contract service provider work is performed in accordance with contract terms.
- Contract service provider work is performed in compliance with legal requirements.
- Contract service provider employees understand Sunoco's health, safety and environmental standards and, as a minimum, follow those standards when performing on-site work.
- Contract service provider audits and self-inspections are conducted and the results are reviewed between the contract service provider and contract administrator.
- Contract Service Provider man-hours are reported to the Safety Department for the development of safety statistics.
The Contract Administrator shall participate in contract service provider HES&OI inspections and audits as defined by this and other facility procedures.

The Contract Administrator shall conduct a post job assessment with the contract service provider to assure any HES&OI deficiencies have been mitigated or removed. The post job assessment shall include a final review of the quality of work and performance against expectations. The Contract Administrator shall document this assessment.

5.6 Evaluation of Contract Service Provider Performance

5.6.1 Semi-Annual Meeting for Long-Term and Nested Contract Service Providers

The Contract Administrator shall meet at least semi-annually with long-term or nested contract service provider management to review HES&OI performance. During these reviews HES&OI statistical data shall be reviewed as well as the results of contract service provider self-inspections and audits.

Other agenda items shall include:

- HES issues that have occurred since the previous meeting
- HES record to date including injuries, accidents and spills
- Status report of inspections and audits
- Training activities and plans
- Injuries that have occurred since the prior meeting
- Changes in job scope that may impact safety and health
- HES performance of all sub-contract service providers
- Action to be taken prior to next meeting

The HES&OI Performance Review meeting results shall be documented and kept in the Safety Department files.

Variances with agreed upon performance, as well as corrective actions to be taken shall be discussed. In the event a contract service provider fails to meet expectations, appropriate consequences shall be imposed as allowed by contract or law, up to and including termination of the contract.

5.6.2 Violations of HES&OI Requirements

Contract Administrators and/or the Safety Department shall use the Contractor Safety Violation Notification Procedure in Appendix E to formally notify contract service provider of rules violations.

Imminent danger safety violations are grounds for the immediate removal of the contract service provider employee and the contractor employee's supervisor from the Haverhill Plant. Examples of imminent danger violations are listed in Appendix E.

Contract service providers who have been removed from one Sunoco facility will be considered for termination of work at the Haverhill Plant. The Haverhill Plant Safety Department shall communicate any such action to other Sunoco business units for their consideration.

Any contract service provider removed from the Haverhill Plant or other business unit for cause shall not be able to bid for work for a period of 12 months or until performance improvement is demonstrated whichever is greater. The Haverhill Plant Safety Department shall be responsible for communicating to all Plants and other business units when a contract service provider has been removed for failure to meet expectations.

5.6.3 Post-Job Assessment

Upon completion of the work, the Haverhill Plant Contract Administrator and the contract service provider shall conduct a site audit to assure all hazards or chemicals have been removed or mitigated and the site has been cleaned up. The Contract Administrator shall conduct a final review of:
• Job scope
• The quality of work performed
• Hazards involved
• Injuries and illnesses that occurred
• Contractor’s overall safety performance including any sub-contractor’s safety performance

The Contract Administrator shall document the Post Job Assessment using the form in Appendix G, Contractor Post Job Assessment, and forward it to the Haverhill Plant Safety Department for the contractor safety file.

5.7 Third Party Worker Oversight

Third party workers shall be given an orientation related to the HES&OI aspects they may encounter while on the Haverhill Plant property. This orientation shall be provided prior to the start of any work, and a record of this orientation shall be filed with the Plant Safety Department.

The orientation consists of:
• Emergency action plans
• Entry, presence and exit rules
• Driving and access rules
• Hazard communication overview

Third party workers shall follow the Haverhill Plant HES&OI rules and standards while on-site. A Haverhill Plant contact person shall be assigned to assure that the orientation has been given, to provide coordination of their work, to answer questions as they may arise, and to align third party workers with Haverhill Plant HES&OI rules, standards and practices.

6. Key Documents/Tools/References

- Fire & Safety Manual
- Contractor Supervisors Safety Orientation Manual
- Contractor Supervisors Safety Orientation Checklist
- OV-SAF-PROC-001 New Chemical Approval Procedure
- APPENDIX A Sunoco Contractor Pre-Qualification Form, HAV-PSM-FRM-007
- APPENDIX B Communication Requirements and Timeline
- APPENDIX C Contractor Process Safety Training Criteria
- APPENDIX D Sample Site or Job HES&OI Plan
- APPENDIX E Contractor Safety Violation Notification Procedure
- APPENDIX F Contractor Safety Inspection and Work Practice Audit, HAV-PSM-CHK-008
- APPENDIX G Contractor Post Job Assessment, HAV-PSM-FRM-008
- CHM-MS-STD-003, Sunoco@Work Management System Definitions Library
- CHM-MS-STD-020, Contract Service Provider and Third Party Worker Oversight Standard
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Appendix A

Sunoco Contractor Pre-Qualification Form (PQF)

GENERAL INFORMATION

1. Company Name:

2. Officers: Years with Company:

3. a. How many years has your organization been in business under your present firm name?
   b. What other names do you trade under?

4. Parent Company Name:

   City: State: Zip:
   Subsidiaries:

5. Under Current Management Since (Date):

6. Contact for Insurance Information: Title:

   Telephone: Fax: E-mail:

7. Insurance Carrier(s):

   Name: Type of Coverage: Telephone

8. Are you self-insured for Worker's Compensation Insurance? ☐ Yes ☐ No

9. Contact Person for Requesting Bids: Title:

   Telephone: Fax: E-mail:

10. This PQF is being completed by:

    Title: Date:

    Telephone: Fax: E-mail:

   CC310
11. Form of Business:  
- [] Sole Owner  
- [] Partnership  
- [] Corporation  

12. SIC Code:  
- [ ] Percent Minority/Female Owned:  
- [ ] EEO Category:  

13. Describe Services Performed:  
- [ ] Construction  
- [ ] Construction Design  
- [ ] Original Equipment Manufacturer and Installer  
- [ ] Maintenance  
- [ ] Original Equipment Manufacturer & Maintenance  
- [ ] Service work (i.e., janitorial, clerical, etc.)  
- [ ] Manpower and Resource  
- [ ] Other:  

14. Work Categories: Check the categories in which you are interested in bidding and in which you are qualified to perform work. Feel free to attach additional information clarifying your capabilities and specialties.

(C) Denotes work done by company employees  
(S) Denotes work done by subcontractors  

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15. Attach a list of major equipment (e.g. cranes, JLGs, forklifts) your company has available for work at this facility and the method of establishing competency to operate.
16. Describe additional Services Performed:

17. List other types of work within the services you normally perform that you subcontract to others:

18. Do you normally employ? □ Union Personnel □ Non-Union Personnel □ Leased Personnel
   List union trades and locals:

19. List average number of employees for each of the last three years:
   
<table>
<thead>
<tr>
<th>Year</th>
<th>Year</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>Number</td>
<td>Number</td>
</tr>
</tbody>
</table>

**COMPANY WORK HISTORY**

20. Annual Dollar Volume for the Past Three Years:
    
    | Year | Year | Year |
    |------|------|------|
    | $     | $    | $     |

21. Largest Job During the Last 3 Years: $ 

22. Your Firm's Desired Project Size:
    
    | Maximum: $ | Minimum: $ |
    |------------|-----------|

23. D&B Financial Rating:
    
    | Annual Sales: | Net Worth: |
    |--------------|------------|
    | $            | $          |

24. Major jobs in progress:
    
    | Customer/Location | Type of Work | Size $M | Customer Contact | Telephone |
    |-------------------|--------------|---------|------------------|-----------|
    |                    |              |         |                  |           |
    |                    |              |         |                  |           |

25. Major jobs completed in the past three years:
    
    | Customer/Location | Type of Work | Size $M | Customer Contact | Telephone |
    |-------------------|--------------|---------|------------------|-----------|
    |                    |              |         |                  |           |
    |                    |              |         |                  |           |

26. Are there any judgments, claims, or suits pending or outstanding against your company?  
   □ Yes (If yes, please attach details)  
   □ No

27. Are you now or have you ever been involved in any bankruptcy or reorganization proceedings?  
   □ Yes (If yes, please provide details)  
   □ No

Ohio EPA DMWM DEC 16 2011
## SAFETY AND HEALTH PERFORMANCE

### 28. Workers Compensation Experience Modification Rate (EMR) Data

- **a. EMR is:**
  - [ ] Intrastate rate
  - [ ] Interstate rate
  - [ ] Monopolistic State rate
  - [ ] Dual rate
  - **c. State of origin:**

- **b. EMR for three last completed years:**
  - Year: Rate
  - Year: Rate
  - Year: Rate

- **d. EMR Anniversary Date:**

### 29. Injury and Illness Data

- **a. The OSHA 200 or 300 Logs are maintained by:**
  - The Logs are kept at:
  - and reflect the injuries and illnesses of the entire Company unless otherwise described.

- **b. Employee hours worked last 3 years (excluding sub-contractors):**

<table>
<thead>
<tr>
<th>Hours/Year</th>
<th>Year:</th>
<th>Year:</th>
<th>Year:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Hours</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Hours</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **c. Provide the following data (excluding subcontractors) using your OSHA 200 or 300 Forms from the past 3 years:**

<table>
<thead>
<tr>
<th>Injury/Illness related fatality</th>
<th>No.</th>
<th>Rate</th>
<th>Year:</th>
<th>Year:</th>
<th>Year:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Total Col. 1+8 for 200 Log or Col. G for 300 Log) x 200,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Employee Hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lost workday case involving days away from work</th>
<th>No.</th>
<th>Rate</th>
<th>Year:</th>
<th>Year:</th>
<th>Year:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Total Col. 3+10 for 200 Log or Total Col. G for 300 Log) x 200,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Employee Hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Job transfer or restriction case not involving days away from work</th>
<th>No.</th>
<th>Rate</th>
<th>Year:</th>
<th>Year:</th>
<th>Year:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Total for Col. 2-3+9-10 for 200 Log or Total Col. J for 300 Log) x 200,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Employee Hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Medical treatment only/other recordable case</th>
<th>No.</th>
<th>Rate</th>
<th>Year:</th>
<th>Year:</th>
<th>Year:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Total Column 6+13 for 200 Log or Col. J for 300 Log) x 200,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Employee Hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 30. Have you received any regulatory (OSHA, EPA, etc.) citations in the last three years?

- [ ] Yes (If yes, please attach copies)
- [ ] No

---

Note 1: If your company is not required to maintain OSHA 200 or 300 forms, please provide information from your Worker's Compensation insurance carrier itemizing all claims for the last three years.

Note 2: If data is specific to a certain area or division, please describe the distinction:
SAFETY & HEALTH MANAGEMENT

31. Highest ranking safety/health professional in the company: Name:
    Title: 
    Telephone: 
    Fax:
    Site Safety Contacts for work performed at other Sunoco facilities
    Name: 
    Title: 
    Telephone: 
    Fax:
    E-mail: 
    Mobile Phone/Pager:
    Name: 
    Title: 
    Telephone: 
    Fax:
    E-mail: 
    Mobile Phone/Pager:

34. Name:
    Title: 
    Telephone: 
    Fax:
    E-mail:
    Mobile Phone/Pager:

35. Do you have or provide:
   a. Full-time Company Safety/Health Director
   b. Full-time Site/Facility Safety/Health Supervisor
   c. Full-time Job/Project Safety/Health Coordinator

36. Do you have or provide:
   a. Company paid safety/health training
   b. Safety/health incentive program

SAFETY & HEALTH PROGRAMS & PROCEDURES

37. Do you have a written Safety and Health Program?
   Does the program address the following key elements?
   • Management commitment and expectations
   • Employee participation
   • Accountability and responsibilities for managers, supervisors, and employees
   • Resources for meeting safety & health requirements
   • Periodic safety & health performance appraisals for all employees
   • Hazard recognition and control
   • Safety Performance Recognition Program
   Does the program satisfy your responsibility under the law for:
   • Ensuring employees follow the safety rules of the facility?
   • Advising the facility owner of any unique hazards presented by the contractor's work and any of the hazards found by the contractor?
38. Does the program include work practices and procedures such as:
   a. Equipment Lockout and Tagout (LOTO) [ ] Yes [ ] No [ ] N/A
   b. Confined Space Entry [ ] Yes [ ] No [ ] N/A
   c. Injury & Illness Reporting and Recording [ ] Yes [ ] No [ ] N/A
   d. Fall Protection [ ] Yes [ ] No [ ] N/A
   e. Personal Protective Equipment [ ] Yes [ ] No [ ] N/A
   f. Portable Electrical/Power Tools [ ] Yes [ ] No [ ] N/A
   g. Vehicle Safety [ ] Yes [ ] No [ ] N/A
   h. Compressed Gas Cylinders [ ] Yes [ ] No [ ] N/A
   i. Electrical Equipment Grounding Assurance [ ] Yes [ ] No [ ] N/A
   j. Powered Industrial Vehicles (Cranes, Forklifts, JLGs, etc.) [ ] Yes [ ] No [ ] N/A
   k. Housekeeping [ ] Yes [ ] No [ ] N/A
   l. Accident/Incident Reporting [ ] Yes [ ] No [ ] N/A
   m. Unsafe Condition Reporting [ ] Yes [ ] No [ ] N/A
   n. Emergency Preparedness, including evacuation plan [ ] Yes [ ] No [ ] N/A
   o. Waste Disposal [ ] Yes [ ] No [ ] N/A
   p. Back Injury Prevention [ ] Yes [ ] No [ ] N/A

39. Do you have written programs for the following:
   a. Hearing Conservation [ ] Yes [ ] No
   b. Respiratory Protection [ ] Yes [ ] No
      Where applicable for respiratory protection work, have employees been:
      - Medically approved [ ] Yes [ ] No
      - Trained [ ] Yes [ ] No
      - Fit tested [ ] Yes [ ] No

   c. Hazard Communication
      - Have employees been trained? [ ] Yes [ ] No

   d. Program to support the contractor requirements of the OSHA Process Safety Management of Highly Hazardous Chemicals, Explosives and Blasting Agents Standard (29 CFR 1910.119) [ ] Yes [ ] No

40. Do you have a substance abuse program?
   If yes, does it include the following?
   - Pre-employment Testing [ ] Yes [ ] No
   - Random Testing [ ] Yes [ ] No
   - Testing for Cause [ ] Yes [ ] No
   - DOT Testing [ ] Yes [ ] No

41. Do all of your employees read, write, and understand English such that they can perform their job tasks safely without an interpreter?

   If no, provide a description of your plan to assure that they can be properly trained and can safely perform their jobs.

42. Medical
   a. Do you conduct medical examinations for:
      Pre-placement (General) [ ] Yes [ ] No [ ] N/A
      Pre-placement Job Capability (Specific) [ ] Yes [ ] No [ ] N/A
      Hearing Function (Audiograms) [ ] Yes [ ] No [ ] N/A
      Pulmonary Function [ ] Yes [ ] No [ ] N/A
      Respiratory [ ] Yes [ ] No [ ] N/A

43. Describe how you will provide first aid and other medical services for your employees while on-site:
   a. Specify who will provide this service:

   b. Do you have personnel trained to perform CPR and First Aid? [ ] Yes [ ] No [ ] N/A
44. Do you hold site safety and health meetings for:
   a. New Hires       Yes       No       Frequency:
   b. Field Supervisors Yes       No       Frequency:
   c. Other Employees  Yes       No       Frequency:
   d. Subcontractors   Yes       No       Frequency:
   e. Are the safety and health meetings documented? Yes       No

45. Personal Protective Equipment (PPE)
   a. Is applicable PPE provided for employees? Yes       No
   b. Do you have a program to assure that PPE is inspected and maintained? Yes       No

46. Do you have a corrective action process for addressing individual safety and health performance deficiencies? Yes       No

47. Equipment and Materials:
   a. Do you have a system for establishing applicable health, safety, and environmental specifications for acquisition of materials and equipment? Yes       No       N/A
   b. Do you conduct inspections on operating equipment (i.e., cranes, forklifts, JLGs) in compliance with regulatory requirements? Yes       No       N/A
   c. Do you maintain operating equipment in compliance with regulatory requirements? Yes       No       N/A
   d. Do you maintain the applicable inspection and maintenance certification records for operating equipment? Yes       No       N/A

**NOTE:** All Subcontractors are required to have an approved PPE Qualification Form onsite with Sunoco.

48. Subcontractors
   a. Do you use Subcontractors? (If No, skip to Question 49) Yes       No
   b. Do you use safety and health performance criteria in selection of subcontractors? Yes       No
   c. Do you evaluate the ability of subcontractors to comply with applicable health and safety requirements as part of your selection process? Yes       No
   d. Do your subcontractors have written Safety & Health Programs? Yes       No
   e. Do you include your subcontractor in:
      - Safety & Health Orientation
      - Safety & Health Meetings
      - Safety & Health Inspections
      - Safety & Health Program Audits

49. Inspections and Audits
   a. Do you conduct safety and health inspections? Yes       No
   b. Do you conduct safety and health program audits? Yes       No
   c. Are corrections of deficiencies tracked and documented? Yes       No

**NOTE:** OWNER RESERVES THE RIGHT TO CONDUCT SITE AUDITS OF YOUR WORKSITE.

SAFETY AND HEALTH TRAINING

50. Craft Training
   a. Have employees been trained in appropriate job skills? Yes       No
   b. Are employees' job skills certified where required by regulatory or industry consensus standards? Yes       No
   c. List crafts which have been certified:

Ohio EPA DMWM DEC 1 6 2011

Control Level – Haverhill Procedure
Revision Date: 05/07/2006
Print Date: 05/01/2007

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51. Safety and Health Orientation

<table>
<thead>
<tr>
<th></th>
<th>New Hires</th>
<th>Supervisors</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Do you have a Safety and Health Orientation Program for new hires and newly hired or promoted supervisors?</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>b. Does program provide instruction on the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• New Worker Orientation</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>• Safe Work Practices</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>• Safety Supervision</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>• Toolbox Meetings</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>• Emergency Procedures</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>• First Aid Procedures</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>• Incident Investigation</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>• Fire Protection and Prevention</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>• Safety Intervention</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>• Hazard Communication</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>c. How long is the orientation program?</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>d. Are written exams given?</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
</tr>
</tbody>
</table>

If No, how do you verify comprehension?

52. Safety and Health Training

<table>
<thead>
<tr>
<th></th>
<th>New Hires</th>
<th>Supervisors</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Do you know the regulatory safety and health training requirements for your employees?</td>
<td>□ Yes □ No</td>
<td></td>
</tr>
<tr>
<td>b. Have employees received the required safety and health training and retraining?</td>
<td>□ Yes □ No</td>
<td></td>
</tr>
<tr>
<td>c. Do you have a specific safety and health training program for supervisors?</td>
<td>□ Yes □ No</td>
<td></td>
</tr>
<tr>
<td>d. Are all employees trained in the work practices needed to safely perform his/her job?</td>
<td>□ Yes □ No</td>
<td></td>
</tr>
<tr>
<td>e. Is each employee instructed in the known potential fire, explosion, or toxic release hazards that are related to his/her job?</td>
<td>□ Yes □ No</td>
<td></td>
</tr>
<tr>
<td>f. Is each employee instructed in the applicable provisions of the emergency action plan?</td>
<td>□ Yes □ No</td>
<td></td>
</tr>
<tr>
<td>g. Do you have documentation that the employees have received and understood the training?</td>
<td>□ Yes □ No</td>
<td></td>
</tr>
<tr>
<td>h. Do you assure that your employees will follow the safety rules of the Sunoco Facility in which they will work?</td>
<td>□ Yes □ No</td>
<td></td>
</tr>
<tr>
<td>i. Will you advise Sunoco of any unique hazards presented by your work?</td>
<td>□ Yes □ No</td>
<td></td>
</tr>
<tr>
<td>j. Will you advise Sunoco of any hazards found while working in the Sunoco Facility?</td>
<td>□ Yes □ No</td>
<td></td>
</tr>
</tbody>
</table>

53. Employee Background Investigations

<table>
<thead>
<tr>
<th></th>
<th>New Hires</th>
<th>Supervisors</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Does your company perform background investigations on all employees in compliance with the Fair Credit Act (if No, please explain)?</td>
<td>□ Yes □ No</td>
<td></td>
</tr>
<tr>
<td>b. Are you willing to do background investigations on your employees?</td>
<td>□ Yes □ No</td>
<td></td>
</tr>
<tr>
<td>c. Background investigations are conducted by:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Name of agency):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Location):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Telephone number):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Contact name):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Background investigations include which of the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Employment history?</td>
<td>□ Yes □ No</td>
<td></td>
</tr>
<tr>
<td>• Social Security Trace (TRUSST)?</td>
<td>□ Yes □ No</td>
<td></td>
</tr>
<tr>
<td>• Criminal records’ check for federal and all counties (if No, what is checked)?</td>
<td>□ Yes □ No</td>
<td></td>
</tr>
<tr>
<td>Number of years:</td>
<td>□ Yes □ No</td>
<td></td>
</tr>
<tr>
<td>• State Motor Vehicle Verification (MVR)?</td>
<td>□ Yes □ No</td>
<td></td>
</tr>
<tr>
<td>• Verification of Military Service?</td>
<td>□ Yes □ No</td>
<td></td>
</tr>
<tr>
<td>• Outstanding Arrest Warrants?</td>
<td>□ Yes □ No</td>
<td></td>
</tr>
</tbody>
</table>
**QUALITY ASSURANCE QUALITY CONTROL**

54. Do you have a Quality Assurance/Quality Control System?  
   □ Yes  □ No

A. If yes, does the system meet a national or international quality standard?  
   □ Yes  □ No

B. Check all that apply:
   - [ ] ASME S
   - [ ] ASME PP
   - [ ] ASME U
   - [ ] ASME UZ
   - [ ] ASME V
   - [ ] National Board R
   - [ ] National Board VR
   - [ ] ISO 9001
   - [ ] ISO 9002
   - [ ] ISO 9003
   - [ ] NFPC
   - [ ] API
   - [ ] Other: ____________________________

**INFORMATIONAL SUBMITTAL**

Please provide copies of the following checked (√) items with the completed PQF:

- [ ] Quality Assurance/Quality Control System
- [√] EMR documentation from your insurance carrier
- [√] Insurance Certificate(s)
- [√] OSHA 200 or 300 Logs (Past 3 Years)
- Company Safety & Health Program
- Lockout/Tagout Program
- Confined Space Entry Program
- Hazard Communication Program
- Respiratory Protection Program
- Housekeeping Policy
- Accident/Incident Investigation Procedure
- Unsafe Condition Reporting Procedure
- Jobsite Safety and Health Inspection Form(s)
- Safety & Health Program Audit Procedure and Form(s)
- Safety & Health Training Program (Outline)
- Safety & Health Orientation Training (Outline)
- Example of Employee Safety & Health Training Records
- Safety & Health Training for Supervisors (Outline)
- Substance Abuse Program (including substances tested for and levels)
- Safety Recognition/Incentive Program
- Other: ______________________________________
- Other: ______________________________________
### PQF EVALUATION

<table>
<thead>
<tr>
<th>Safety and Health Performance</th>
<th>Acceptable</th>
<th>Not Acceptable</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSHA Injury/Illness Fatality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA Lost Work Day Case Rate Involving Days Away From Work</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA Job Transfer/Restriction Case Rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA Other Recordable Case Rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA Total Recordable Injury/Illness Rate</td>
<td></td>
<td></td>
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<tr>
<td>EMR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Citations</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Quality Assurance/Quality Control Process</th>
<th>Acceptable</th>
<th>Not Acceptable</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASME VIII Div 1 Appendix 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NBIC Part RA 2151</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### PQF APPROVAL

**Contractor is:**
- [ ] Acceptable for Approved Contractor List
- [ ] Conditionally Acceptable for Approved Contractor List

**Conditions:**

- [ ] Not Approved

**Reasons:**

**Reviewer 1:**
(Materials Management) Printed Name Signature Date: __________

**Reviewer 2:**
(Requestor) Printed Name Signature Date: __________

**Reviewer 3:**
(Responsibility Department) Printed Name Signature Date: __________

**Approved:**
(Safety Department) Printed Name Signature Date: __________
APPENDIX B

Communication Worksheet and Timeline
JOB MEETING STAGES AND DOCUMENTS PRESENTED TO CONTRACT SERVICE PROVIDERS

1. Prequalification
- Access Control Requirements
- CHEMS HES&OI Policy And Expectations
- Terms And Conditions
- Insurance Requirements
- Local Safety And Security Requirements
- CHEMS Contract Service Providers And Third Party Workers Document
- Quality Assurance/Quality Control Requirements
- PQF And Instructions

2. Prebid
- Access Control Requirements
- CHEMS HES&OI Policy And Expectations
- Site Or Job HES&OI Plan Requirements
- TA Best Practices (If Applicable)
- Emergency Action Plan
- Job Site Tour
- CHEMS Contract Service Providers And Third Party Workers Requirements
- Facility Safety And Security Requirements (See Appropriate Appendix)
- Preliminary HES&OI Risk Evaluation And Legal Requirements
- Nomex And Other PPE
- Drug Testing Requirements
- Background Security Checks
- Requirements To Perform Work
- Medical Screening And Treatment

3. Pre Award Review with Contractor
- Preliminary HES&OI Plan, incl. Job Hazard Analysis
- Permits, LOTO, CS Entry, Opening Equipment
- Work Execution Plan
- Quality Assurance/Quality Control Requirements
- Clarification And Exception Review

4. Pre-Job And Safety Review
- HES&OI Plan, including Job Hazard Analysis
- Job Site Tour
- Site Specific Training Plan
- Local Procedures Review
- Security Requirements Review
- Sunoco organization and personnel
- Permits, LOTO, CS Entry, Opening Equipment
- Point Of Work Cards

5. Service Contract Issued
- Terms And Conditions (includes insurance)
- Facility Safety And Security Requirements
- Drug Testing Requirements
- Government Compliance
- Inquiry Package
- Standards
- Contractor Proposal
- Amendments And Clarifications
APPENDIX C

Contractor Process Safety Training Criteria

To fulfill the requirements of PSM training, contract service providers must be trained in the following topics. Any deviation from this list must be discussed with the Sunoco Safety Department.

<table>
<thead>
<tr>
<th>Subject</th>
<th>OSHA Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overview of the OSHA PSM Standard</td>
<td>1910.119</td>
</tr>
<tr>
<td>Hazard Communication Standard</td>
<td>1910.1200</td>
</tr>
<tr>
<td>Personal Protective Equipment (Hearing, Respiratory, Eye)</td>
<td>1910.132, 133, 135, 136, 138</td>
</tr>
<tr>
<td>Confined Space Entry</td>
<td>1910.146</td>
</tr>
<tr>
<td>Lockout/Tagout Control of Hazardous Energy Sources</td>
<td>1910.147</td>
</tr>
<tr>
<td>Drug and Alcohol Policy</td>
<td>1926.352</td>
</tr>
<tr>
<td>Fire Prevention Plans</td>
<td>1926.352</td>
</tr>
<tr>
<td>Excavation/Trenching</td>
<td>1926.650-651</td>
</tr>
<tr>
<td>Fall Protection/Walking Working Surfaces</td>
<td>1910 Subpart M and Subpart D</td>
</tr>
<tr>
<td>Scaffolding</td>
<td>1926.461</td>
</tr>
<tr>
<td>Work Permits</td>
<td>1910.119</td>
</tr>
<tr>
<td>Hoisting and use of Personnel Baskets</td>
<td>1928.251</td>
</tr>
<tr>
<td>Electrical Safety</td>
<td>1910.331-335</td>
</tr>
<tr>
<td>Specialized Work*</td>
<td></td>
</tr>
</tbody>
</table>

*Contractors who are performing specialized work activities in the Plant, must have documentation confirming that an individual has been trained to perform that type of work. For short duration/emergency jobs, a Sunoco employee must be with the contractor at all times.

---

Approved Programs

- ABB Service, Inc.
- Bay Area Safety Training Program
- BUILT-RITE
- Contractor Safety Council of the Coastal Bend, Inc.
- Fisher-Rosamon
- Furmanite Safety Course
- Glasgow, Inc.
- ITS Intertek Testing Services – Caleb Brett
- Los Angeles Plant Safety Overview
- Louisiana Building & Construction Trades Council's Safety Orientation Program
- M.O.S.T.
- Med-Tex Services, Inc.
- OCCUSAFE, Inc.
- Oklahoma State Building and Construction Trades Council
- OSHA 40-hour HAZWOPER
- OSHA 500 – 10 hour Courses
- PINS Programs
- Professional Safety Training Services (Safety training for compliance with PSM)
- SHECN
- State of NJ AFL-CIO Program
- Three Rivers Safety Council (5/2002)

Unapproved

South Jersey Chemical Association

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NOTE: This list is as of July 17, 2002. There are other programs throughout the country that may be acceptable. These other programs would have to be reviewed by the Sunoco Safety Department in order to determine their acceptability.
APPENDIX D

Suggested Contractor Site Safety Program Criteria

Areas to be covered by the Contractor’s written Site Safety Program, Examples should be provided – i.e., forms, reports, checklists, schedules, etc.

A. Management Commitment and Leadership
   1. Policy Statement
   2. Safety rules and procedures for the site
   3. Organization and Responsibilities (org chart)
   4. Communications and Incentives

B. Assignment of Health and Safety Responsibilities
   1. Knowledgeable safety representative on site
   2. Supervisors understand health and safety responsibilities
   3. Employees follow all rules
   4. Sub-contractors informed of health and safety responsibilities

C. Identification and Control of Hazards
   1. Planned Inspections and audits
   2. Personal Protective Equipment
   3. Preventative controls
   4. Pre Job and Task Hazard Analysis, including industrial hygiene monitoring
   5. Material and equipment delivery procedures – routing, escort requirements, etc
   6. Emergency Procedures
   7. Confined Spaces and Preplans
   8. Lockout Tagout
   9. Work Permits and Unit access
   10. Fall Protection
   11. Scaffolding
   12. Cranes and Lifting
   13. Hearing Protection
   14. Asbestos or Lead handling
   15. Excavations and Trenching
   16. MOC/Variances to procedures

D. Training and Education
   1. Orientations -- General and Site
   2. Safety meetings
   3. Specialized training (Hazard Communication, “Toolbox”, etc.)
   4. Schedule and agenda of safety meetings
   5. Access Requirements

E. Accident/Incident Reporting
   1. Accidents/Incidents reported
   2. OSHA 300 Log maintained onsite
   3. Prepare monthly reports

F. Employee Health Care Provisions
   1. Arrangements for First Aid and medical services
   2. Emergency procedures and training provided
   3. Medical Screening and Surveillance

G. Hazard Communication Program
   1. Written program
   2. Chemical approval procedure followed
   3. Inventory and MSDSs maintained and provided

H. Respiratory Protection Program
   1. Written program
   2. Fit testing/medical certification
APPENDIX E

Contractor Safety Violation Notification Procedure

Upon identification of a contractor violating a Sunoco Safety or Security rule, either by notification or actual observation, the following procedure shall be used:

A. Immediately correct the unsafe condition identified and shut down the work if needed.

B. The Sunoco, Inc. personnel (Originator) identifying the violation shall notify the following individuals:
   1. Contractor Safety Representative
   2. Contract Administrator
   3. Operating supervisor of the area
      (Note: operators need only notify their supervisor. The supervisor must notify the Contractor Safety Representative and the Contract Administrator):

C. If deemed necessary, the Contract Administrator may:
   1. Provide immediate verbal warning to the violating Contractor
   2. Prepare a record of the violation and actions taken.
   3. Notify their supervisor of the problem

D. A violation review meeting may be held to discuss the violation occurrence to determine the appropriate corrective action (i.e., verbal warning, written warning, discharge, etc.). The following should be in attendance:
   1. Originator
   2. Safety Representative
   3. Contract Administrator
   4. Contractor Supervision/Management
   5. Others as necessary

E. When a written warning is deemed necessary, the following warning procedure shall be used as a guideline:
   1. The Safety Department (or designee) will issue a letter to the contractor. The letter will include the corrective actions determined in the review board meeting.
   2. A record of all letters written along with the pertinent background information will also be kept by the Safety Department Manager

F. A second written violation notice shall be stronger and contain stricter recommendations. After a second warning letter is sent, a meeting will be held with the contractor's executives/owners to ensure that the seriousness of the situation is understood.

G. A third written violation notice shall be grounds for dismissing the contractor from Sunoco facilities. Dismissal will be for a minimum of one year.
   a. Dismissal on the third written violation notice may be modified as deemed appropriate during the violation review meeting. For example: A serious violation could result in dismissal on the first occurrence. Also, dismissal may not be deemed appropriate for a third minor violation over an extended period of time.
   b. If a contractor, dismissed for safety violations, is working in more than one Sunoco facility, senior management shall determine if the dismissal should apply to all the Sunoco facilities in which the contractor is working. The Safety Department or Contract Manager will notify all other Sunoco facilities.

H. The Safety Department or Contract Manager shall send a draft copy of the termination letter to the Manager of Maintenance prior to issuance.

I. Copies of all letters shall be sent to:
   a. Originator
   b. Originator's supervisor/manager
   c. Contractor Administrator
   d. Safety Representative
   e. Facility Safety Supervisor
   f. Maintenance Manager
   g. Manager of Materials Management
   h. Central Materials Management
   i. All other CHEMICALS Facilities
   j. Other Business Unit Materials Management

Ohio EPA DRAWN DEC 1-6 2011

Control Level – Haverhill Procedure

Revision Date: 06/07/2005
Print Date: 05/01/2007

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IMMINENT DANGER SAFETY VIOLATIONS

Committing an Imminent Danger safety violation will be grounds for immediate removal of any contractor and the employee's supervisor from the Plant and preclude them from working at another SUNOCO facility for a minimum of one year.

Listed are examples of Imminent Danger safety violations:

- Working at heights without fall protection
- Working on improper platforms or scaffolds (i.e. placing a board on handrails to be used as a work platform)
- Entering confined space without a permit, or without a qualified standby, or without proper PPE
- Working without permits
- Failure to follow permit requirements
- Working without carbon monoxide monitors on air compressors supplying breathing air
- Jamming a dead man switch
- Smoking in unauthorized area
- Circumventing Lockout/Tagout procedure
- Improper shoring/sloping in trench/excavation
- Knowingly using defective equipment
- Any situation/condition deemed likely to cause serious physical harm or death
# Appendix F

## Contractor Safety Inspection and Work Practice Checklist

<table>
<thead>
<tr>
<th>Audit Items (Check appropriate box)</th>
<th>OIC</th>
<th>NI</th>
<th>NA</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workers are wearing proper eye protection</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individuals are wearing hard hats</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Individuals are wearing proper footwear</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Individuals are wearing fire retardant clothing covering exposed areas</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individuals are wearing hearing protection where required</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individuals are wearing respiratory protection where required</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Confined Spaces</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Stand-by has a Confined Space Work Permit</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Stand-by is aware of his/her responsibilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuous air monitors are in place where required</td>
<td></td>
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</tr>
<tr>
<td>Sign-in log is at the entry point and is accurately maintained</td>
<td></td>
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</tr>
<tr>
<td>Hot Work</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire watches are in place where required</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Fire watches are aware of their duties and permit requirements</td>
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</tr>
<tr>
<td>Combustibles removed or are guarded at a minimum of 35 feet</td>
<td></td>
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</tr>
<tr>
<td>Control of Hazardous Energy</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Equipment has been properly isolated and locks and tags are installed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lockboxes have energy isolation tags and proper locks installed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scaffolding and Fall Protection</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work is being performed on properly tagged scaffolds</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Individuals working on scaffolds are adhering to requirements of the tagging system</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individuals are wearing proper fall protection where required</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scaffolds over ten feet have toe-boards</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permits</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contractor crew is in possession of a permit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crews are executing jobs according to the condition of the permit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrical</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment has been properly grounded</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Cords are in good condition (no fraying, temporary repairs, etc.)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Electric cords are configured so as to not present tripping hazards</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Extension cords have GFCI and twist lock as needed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electric cords are away from water</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lighting is adequate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment/Material</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas cylinders are properly secured</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guards for power tools are in place</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Back-up alarms are operational on vehicles where required</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stored O₂ and acetylene tanks are separated by a firewall or are at least 20 feet apart</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hoses are in good condition and have cotter pins or wire in place at fittings where needed (air hoses)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cylinders not in use have valves closed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cranes are clear of power lines</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extension ladders are tied off or being held by another worker</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Control Level – Haverhill Procedure

Revision Date: 06/07/2006
Print Date: 05/01/2007

Paper copies are uncontrolled. This copy valid only at the time of printing. The controlled version of this document can be found on the Sunoco@work.
<table>
<thead>
<tr>
<th>Hazard Communication/Labels/Signs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Containers are properly marked</td>
</tr>
<tr>
<td>Workers are aware of MSDS location</td>
</tr>
<tr>
<td>General Housekeeping and Miscellaneous</td>
</tr>
<tr>
<td>Walkways are clear to provide access from and to emergency equipment</td>
</tr>
<tr>
<td>Crane's radius is properly barricaded around outriggers</td>
</tr>
<tr>
<td>Gas test instruments have been calibrated</td>
</tr>
<tr>
<td>Fire and safety equipment is accessible to all workers</td>
</tr>
<tr>
<td>Equipment and machinery are clear of unnecessary material</td>
</tr>
<tr>
<td>Equipment and work areas are clear of oil and product</td>
</tr>
<tr>
<td>Material is properly piled and arranged in storage areas</td>
</tr>
<tr>
<td>Proper tools being used and tools being used properly</td>
</tr>
<tr>
<td>Tools and equipment are properly stored</td>
</tr>
<tr>
<td>Emergency alarm systems are in place and tested periodically</td>
</tr>
<tr>
<td>Crane lifts are monitored to assure that loads are not lifted over people</td>
</tr>
</tbody>
</table>

Additional Comments:

NI – Not Inspected  NA – Not Applicable
# APPENDIX G

## Contractor Post Job Assessment

<table>
<thead>
<tr>
<th>Contractor:</th>
<th>Job Title:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract #:</td>
<td>Location:</td>
</tr>
<tr>
<td>Date Complete:</td>
<td>Evaluated By:</td>
</tr>
<tr>
<td>Project Description:</td>
<td></td>
</tr>
</tbody>
</table>

**Type of Contract (circle one)**

- [ ] Maintenance
- [ ] Repairs
- [ ] Construction
- [ ] Special Repairs

**Other**

**Rate Applicable Categories**

<table>
<thead>
<tr>
<th>Comments</th>
<th>Poor</th>
<th>Circle One</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Injury and Illness Performance</strong></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
<tr>
<td><strong>Safety Programs</strong></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
<tr>
<td><strong>Adherence to Safety Rules</strong></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
<tr>
<td><strong>Housekeeping</strong></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
<tr>
<td><strong>Equipment</strong></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
<tr>
<td><strong>Key Field Personnel</strong></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
<tr>
<td><strong>Execution of Work</strong></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
<tr>
<td><strong>Quality of Craft Labor</strong></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
<tr>
<td><strong>Project Manager</strong></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
<tr>
<td><strong>Cost Within Expectations</strong></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
<tr>
<td><strong>Schedule</strong></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
<tr>
<td><strong>Labor Relations</strong></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
<tr>
<td><strong>Service</strong></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
<tr>
<td><strong>Overall General Performance</strong></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
</tbody>
</table>

Do you recommend contractor for further work?  **YES**  **NO**

Other Comments:

---

Ohio EPA DMWM DEC 16 2011
1. PROSECUTION OF THE WORK

1.1. Contractor shall furnish the services, and/or all materials, labor, construction equipment, tools and/or supplies as specified in this Contract (the “Work”), and shall carry out all obligations, duties and responsibilities imposed on Contractor by this Contract.

1.2. Contractor represents to Sunoco that it has the necessary expertise, skill and ability to perform the Work. Contractor agrees that, in carrying out all the Work required by this Contract, Contractor will exercise the skill, expertise, and diligence normally exercised by similar licensed contractors in carrying out work of a similar nature and scope (“Required Standard of Care”).

1.3. If Sunoco has permitted Contractor to begin any Work before this Contract has been issued and executed by Contractor, and that work is within the definition of “Work”, Contractor agrees that said work shall be governed by, and shall be deemed to have been carried out in accordance with, the terms and conditions of this Contract.

1.4. Contractor shall not employ any subcontractors to carry out all, or portions of, the Work, without Sunoco’s prior written consent, which may be withheld in Sunoco’s discretion. In the event that Contractor subcontracts any of the Work, Contractor shall be solely responsible for the engagement and management of its subcontractors in the performance of the Work in accordance with the terms of this Contract, for the performance of the Work by its subcontractors and for all acts or omissions of subcontractors. Contractor shall ensure that all Work furnished or performed by its subcontractors conforms to the requirements of this Contract. No contract or agreement with any permitted subcontractor shall bind, or purport to bind, Sunoco, or give the subcontractor a right to seek compensation or damages from Sunoco. Contractor shall remain responsible for all Work performed by its subcontractors.

1.5. Contractor shall comply with all applicable local and federal safety and health requirements, including OSHA. Contractor shall also comply with Sunoco’s Safety and Security Requirements, which are available for inspection, or any safety directions or rules reasonably issued by Sunoco to prevent injury or assure compliance with applicable law, whether or not Contractor agrees that those directions or rules are actually required in order to comply with applicable law, and do so without demanding further compensation from Sunoco for such compliance. Sunoco, at its sole option and without liability to Sunoco, may require Contractor to remove from its property any and all personnel of Contractor or its subcontractors who violate such practices and requirements.

1.6. Contractor shall comply with all local, state and federal rules, regulations, orders, directives and statutes applicable to wage and employment practices and shall act in the best interest of Sunoco on matters which affect area labor practices and might lead to or set precedent. Contractor agrees all work performed incident to this Contract and all goods furnished under this Contract shall conform with all applicable federal, state and local laws. Contractor warrants and agrees that it has used and will continue to use due diligence to ensure that during the performance of this Contract, no officer, employee, agent or other representative of Contractor has made or will make any payment in violation of any applicable federal, state, or local law or regulation, and all amendments therein. Contractor shall supply such evidence of compliance as Sunoco may require.

1.7. Contractor represents that, before executing this Contract, it has, acting as a skilled and experienced contractor, conducted a careful investigation and examination of the Project site to ascertain the nature and location of the site and other reasonably discoverable conditions that may affect its Work, including topographical features, water on or near the site, roads, the size and shape of the site and its ability to accommodate the various trades and any required storage, features affecting transportation, vegetation or physical barriers, rocks, rubble, or existing structures or impediments to construction, and the like. Contractor also represents that it has, before executing this Contract, carefully examined all information provided by Sunoco concerning soils or subsurface conditions, as-built conditions, location of existing underground utilities and services at the site, and any other information concerning the site or structures on it, and has independently verified the location of all utilities.

1.8. Contractor represents and warrants that: (1) it has received, reviewed and completed the Sunoco Contractor Prequalification Package, which includes the Sunoco Contractor Prequalification Form (collectively, the “CPP”); (2) all of the representations, warranties and other information provided by Contractor in the CPP are complete and accurate as of the date of the execution of this Contract; and (3) if any facts or circumstances arise that render
Contractor's representations and warranties in the CPP inaccurate or incomplete, Contractor will provide prompt written notice to the Contract Specialist, updating the information in the CPP and explaining the circumstances requiring the update. Contractor's failure to comply with the requirements of this Section shall constitute a material breach of this Contract and justify termination. Further, Sunoco, in its sole discretion, may terminate this Contract if it determines that the updated information provided by Contractor impacts Contractor's qualifications or ability to perform the Work. The CPP completed by Contractor and all updates thereto are incorporated into this Contract by reference.

2. PAYMENT

2.1. Sunoco shall make payment of all sums due and owing to Contractor after Contractor's timely submission of invoices to Sunoco's Accounts Payable Department.

2.2. Sunoco will not pay for materials purchased and stored for use in the Work, but not yet incorporated into the Work, unless Sunoco has expressly agreed to such payments, in writing, and then only on the following conditions: (1) Contractor shows that payment is being requested only for a reasonable amount of material, necessary to support its prompt performance of the Work; (2) the material has been properly stored on the Project site or other property approved by Sunoco; (3) Contractor certifies that it has inspected the material and that it is not subject to any defect or non-conformity that could reasonably be discovered by careful inspection; and (4) upon Sunoco's request, Contractor will execute documentation to confirm that good title to Sunoco will pass upon payment.

2.3. Neither progress payments, nor partial or entire use or occupancy of the Work by Sunoco, shall constitute an acceptance or approval of any of Contractor's Work that is defective or otherwise is not in accordance with the Contract, or constitute a waiver of any claim or right that Sunoco may then or thereafter have against Contractor.

2.4. Contractor warrants that title to all the Work covered by an invoice will pass to Sunoco at the earlier of incorporation into the Project or the time of payment. Contractor also warrants that, upon submittal of an invoice, all Work for which payments have been received from Sunoco will be free and clear of liens, claims, security interests or encumbrances in favor of Contractor or any other person or entity performing construction at the Project site or furnishing materials or equipment relating to the Work.

After Sunoco has acknowledged final acceptance of the Work, Contractor shall submit to Sunoco its invoice for final payment. As a condition precedent to final payment, Contractor shall deliver (1) a full release of liens in such form as Sunoco may require; (2) all warranty and guarantee documents required by this Contract; (3) any instruction or operation manuals or instructions required by this Contract; and (4) all other documents delivery of which is required by provisions elsewhere in the Contract Documents. If any liens have been threatened or asserted against Sunoco or its property as a result of the Work and have not been removed by Contractor, Contractor may be required to post a bond, or other form of security acceptable to Sunoco, covering liability and costs (including attorneys' fees) arising from the lien claim as a condition of receiving final payment.

2.6. Acceptance of final payment shall constitute a waiver of all of Contractor's claims and liens relating to or arising from the Work or this Contract.

2.7. Sunoco may withhold payments if any of the following occurs: (1) the Work is defective and the defects have not been remedied; (2) Contractor's fails to perform the Work in accordance with this Contract; (3) Contractor has failed to pay subcontractors or suppliers promptly, or has made false or inaccurate certifications that payments to subcontractors or suppliers are due or have been made; (4) any construction lien or mechanic's lien claim has been filed against Sunoco, the Project site or any portion thereof or interest therein, or any improvements on the Project site in violation of the terms of this Contract, and Contractor, upon notice, has failed to remove the lien, by bonding it off or otherwise, within the time allowed by this Contract; or (5) Sunoco has reasonably determined that Contractor's progress has fallen behind the Project Schedule, and Contractor fails, within five (5) business days of Sunoco's written demand, to provide Sunoco with a realistic and acceptable plan to recover the delays or to accelerate the Work as directed.

2.8. Sunoco shall be entitled to offset from any sum due Contractor hereunder against any past due obligation Contractor may owe to Sunoco under any other contract with Contractor.

3. RECORDS AND AUDIT

Contractor shall keep accurate daily records of account for all Work performed, and shall provide copies to Sunoco (except Work for which a fixed price has been quoted), which itemize the names of employees, the hours worked by each, the type of work performed, the wages paid, equipment and materials used and any other item of cost for which
Sunoco is required to reimburse Contractor. Sunoco shall have the right, at all reasonable times during regular business hours, to inspect and audit such records. Contractor shall preserve such records for 36 months after completion, cancellation or termination of this Contract.

1. If the audit discloses that either party owes money to the other, any sums due will be paid within thirty (30) days after the sum due is agreed upon by the parties or determined by a court or other dispute resolution tribunal. In any event, Contractor’s right to recover any alleged underpayment shall be waived, unless a claim in writing with full support documents is received by Sunoco within 180 days after the end of the particular contract year, or the contract term, if less than a year.

4. WARRANTIES

4.1. Contractor warrants that it shall perform the Work: (1) with due diligence and in a safe, workmanlike, and competent manner and in accordance with sound construction practices and standards; (2) in compliance with all applicable laws, codes, regulations or other standards applied by any governmental entity having jurisdiction over the Work; (3) in accordance with all applicable manufacturer’s requirements; (4) in accordance with all applicable standards and codes; and (5) in accordance with the provisions of this Contract. Contractor’s warranty shall extend for twelve (12) months from final inspection and acceptance by Sunoco. If the Contract requires warranty terms that are of longer duration or require a higher standard of performance than is set forth in this Section, the more stringent or extensive warranty requirements shall apply. This warranty shall be in addition to, and shall not limit, any warranty of materials provided by any manufacturer or supplier of equipment or materials incorporated in the Work, and any other remedies Sunoco may have pursuant to applicable law. The warranty shall not be deemed to establish a period of limitation or prescription within which such other rights or remedies must be asserted.

4.2. If Contractor is supplying materials or equipment under this Contract, Contractor shall obtain standard commercial warranties from all material or equipment manufacturers. If Sunoco so requests, Contractor shall also provide reasonable assistance in determining whether superior warranty terms are available from a vendor and in obtaining such terms for Sunoco. If warranty terms are available, but only at increased cost, and Sunoco elects to obtain such terms, Sunoco shall pay the additional cost, over and above the Contract sum.

4.3. Within five (5) days after being notified in writing by Sunoco of any breach of Contractor’s warranties, Contractor shall commence, and thereafter complete as rapidly as reasonably possible, repair or replacement of the defective or non-conforming Work, at Contractor’s sole expense. In addition, Contractor shall, at its sole expense, repair or replace any portions of the Work (or work of other contractors) damaged by the non-conforming Work or which becomes damaged in the course of repairing or replacing defective Work. For any Work so corrected, Contractor’s obligation hereunder to correct defective Work shall be reinstated for longer of (1) the remainder of the original warranty period or (2) six (6) months from the date on which the corrected Work is accepted. Final payment by Sunoco or final acceptance of the Work shall not relieve Contractor from its responsibilities under this Section.

4.4. Alternatively, if in the sole discretion of Sunoco, the defective or non-conforming Work creates an immediate risk to person or property or is critical to Sunoco’s operations, Sunoco may undertake the repair or replacement of the defective or non-conforming Work and backcharge Contractor for all reasonable costs associated with the repair or replacement of the defective or non-conforming Work. In no event, will any work undertaken pursuant to this Section limit, impair or void any warranties provided by Contractor.

4.5. The warranties set forth herein shall not affect or limit any of Sunoco’s other rights or remedies provided by the Contract or applicable law and shall not be deemed to establish a period of limitation or prescription within which such other rights or remedies must be asserted.

5. TITLE TO PROPERTY. Sunoco shall have title to all Work completed or in progress and to all machinery, equipment, materials and supplies, the cost of which has been paid to Contractor. All studies, specifications, test results, reports, in whatever state of completion prepared by Contractor in exchange for consideration hereunder shall be the property of Sunoco upon completion or termination of this Contract. Sunoco shall have the right to use same for any purpose whatsoever without right on the part of Contractor to any additional compensation therefor.

6. INFRINGEMENT Contractor warrants that neither the Work nor use thereof by Sunoco will infringe any U.S. or foreign patent, copyright, trade secret, trade mark or any other property right. Contractor shall (1) defend, indemnify and hold Sunoco harmless from any claim, suit, action or proceeding for infringement or misappropriation of trade secrets in which Sunoco, its parents and/or its respective subsidiaries and/or affiliates, is made a defendant whether for an alleged infringement of any U.S. or foreign patent, trademark or copyright or other property right arising out of the
Work or use of the Work, and (2) either (a) procure for Sunoco the right to continue to use the Work, (b) replace the Work with an equivalent non-infringing product; or (e) with the approval of Sunoco, remove the Work and refund all payments made by Sunoco for the Work. Contractor also shall pay and discharge any and all judgments or decrees which may be rendered in any such suit, action or proceeding against Sunoco, its parents or their respective subsidiaries and affiliates including reasonable attorneys’ fees.

7. INDEPENDENT CONTRACTOR. Contractor and its subcontractors shall be independent contractor with respect to the Work, and neither Contractor nor its subcontractors, nor any person employed by any of them shall be deemed to be Sunoco’s employees, servants, or agents in any respect. Nothing in this Contract shall be construed as creating a joint venture or partnership between Sunoco and Contractor. Contractor, as an independent contractor under this Contract, shall assume all of the rights, obligations and liabilities, applicable to it as such independent contractor hereunder and any provisions in this Contract which may appear to give Sunoco the right to direct Contractor as to details of doing the Work herein covered or to exercise a measure of control over the Work shall be deemed to mean that Contractor shall follow the desires of Sunoco in the results of the work only.

8. NO THIRD PARTY BENEFICIARIES. Nothing in this Contract, express or implied, is intended or shall be construed to confer upon or give to any person, firm, corporation, or legal entity, other than the parties, any rights, remedies or other benefits under or by reason of this Contract.

9. TAXES AND FEES. Unless otherwise required by law, Contractor has exclusive liability for sales, use, excise and other taxes, charges or contributions with respect to or imposed on any material or equipment supplied or Work performed by Contractor, including such taxes or contributions imposed on the wages, salaries or other payments to persons employed by Contractor or its subcontractors in the performance of this Contract. Contractor shall pay all such taxes, charges, or contributions before delinquency or discount date and shall indemnify and hold Sunoco harmless from any liability and expense by reason of Contractor’s failure to pay such taxes, charges or contributions.

Sunoco shall not be responsible for the direct payment of any withholding taxes, social security payments, payment under workers’ compensation or other insurance premiums, or other charges of any kind or nature, except as specifically outlined herein. Contractor hereby certifies that he will deduct and pay over to the proper governmental authority any withholding taxes or similar assessment which an employer is required to deduct and pay over. Contractor accepts exclusive liability for any payroll taxes or contributions imposed by any federal, state or other governmental authority, covering its agents or employees.

10. MATERIAL SAFETY DATA SHEET REQUIREMENTS.

10.1. Contractor shall contact Sunoco’s Safety and Health or Risk Management Departments or other Sunoco’s authorized representative to request access to Material Safety Data Sheets (MSDS) for areas where Work is to be performed prior to commencing any Work. Contractor shall review the MSDS and ensure that its employees are advised of the location and accessibility of this hazard information.

10.2. Contractor shall furnish copies of MSDS to Sunoco for all substances to be used while performing Work at Sunoco’s facility prior to use of such substances. Contractor shall maintain duplicate copies of said MSDS in its field office at the Work site.

10.3. Contractor shall not specify for use in the project any hazardous materials, including, without limitation, asbestos or PCBs, unless expressly authorized to do so in a writing signed by Sunoco.

11. INSPECTION, TESTING AND ACCEPTANCE. When any system or component of the Work is completed and ready for testing, Contractor shall so notify Sunoco, and Sunoco at its option may witness any tests to be performed. If any of the Work fails to meet any specified tests, Contractor shall remedy any defect and repeat such tests until the specified tests are successfully completed. When all Work is completed and tested as required, Contractor shall so notify Sunoco and Sunoco shall have the right to a final inspection of the Work and to review any and all test records and reports maintained by Contractor. Sunoco shall promptly either notify Contractor of its acceptance of the Work or issue to Contractor a listing of additional tests required in order for the Work to conform to the drawings and specifications. Upon satisfactory completion of such additional tests by Contractor, Sunoco shall be deemed to have accepted the Work, subject to the other terms and conditions of this Contract.
12. BONDS. If requested by Sunoco, Contractor shall furnish performance and payment bonds covering the faithful performance of this Contract. Such bonds shall be in a form and amount and with a surety satisfactory to Sunoco. The cost of such bonds, without mark-up, shall be paid by Sunoco.

13. INDEMNITY. Contractor agrees to defend, indemnify, and hold harmless Sunoco, its parents, their subsidiaries and affiliates, as well as the employees, agents, officers, directors, invitees, partners and assigns, and successors in interest of any of them ("Indemnities") from and against any and all claims, liabilities, expenses (including reasonable attorneys’ fees), losses, damages, demands, fines and causes of action caused by or arising out of (i) Contractor's failure to comply with applicable laws and regulations; or (ii) the Work performed under this Contract; or (iii) the acts or omissions of Contractor, that of its suppliers, subcontractors, agents, servants or employees, as well as any joint negligence or fault of the Indemnities, whether or not such actions or omissions occur jointly or concurrently; provided, however, that Contractor’s obligations hereunder shall not apply only to any claim, liability, expense, loss, damage, demand, fine or cause of action established to be the result of the sole negligence of an Indemnitee. Contractor’s defense, hold harmless and indemnity requirements, as set forth above, shall also extend to injuries sustained by Contractor’s employees and shall not be limited by any applicable workers’ compensation law or similar statute. If this Contract relates to Work of any kind performed in Ohio, CONTRACTOR EXPRESSLY AND SPECIFICALLY WAIVES ITS STATUTORY AND CONSTITUTIONAL WORKERS’ COMPENSATION IMMUNITY UNDER OHIO LAW, INCLUDING ANY AMENDMENTS TO THIS CONTRACT. This Section shall survive termination or cancellation of this Contract.

14. INSURANCE. Contractor shall procure and maintain with reputable insurers with AM Best Company’s of not less than “A-:VII” policies of insurance written on an occurrence basis or on claims made basis (in which event insurance shall be maintained during the term of this Contract and for a period of two years following expiration or earlier termination of this Contract), or self-insurance acceptable to Sunoco, with limits not less than those indicated for the respective items as follows:

14.1. Statutory Workers’ Compensation and Occupational Disease Insurance, including Employer’s Liability Insurance and, if applicable, coverage under the Longshoremen and Harbor Workers’ Compensation Act, the Jones Act or other Maritime Employer’s Liability, complying with laws of each jurisdiction in which any work is to be performed or elsewhere as may be required. Employer’s Liability Insurance (and Maritime Employer’s Liability, if applicable) shall be provided with a limit not less than: $2,000,000 each occurrence;

14.2. Commercial Liability Insurance, including but not limited to all Premises and Operations, Contractual Liability, Products-Completed Operations Liability, Fire Legal Liability, Explosion, Collapse and Underground Damage Liability, Broad Form Property Damage Liability, and if applicable, Watercraft and Aircraft Liability, as well as coverage on all Contractor’s mobile equipment (other than motor vehicles licensed for highway use) owned, hired or used in the performance of this Contract with limits not less than: $5,000,000 Bodily Injury, Personal Injury & Property Damage combined each occurrence and aggregate;

14.3. Commercial Automobile Liability Insurance, including Contractual Liability, covering all motor vehicles licensed for highway use and employed in the performance of this Contract, with limits not less than: $5,000,000 Bodily Injury, Personal Injury & Property Damage combined each occurrence and aggregate.

14.4. Contractor shall provide to the Contract Specialist certificates of insurance acceptable to Sunoco prior to commencement of performance hereunder. All insurance shall (i) provide that coverage shall not be suspended, voided, canceled, non-renewed, reduced in scope or limits except after thirty (30) days’ prior written notice has been given to Sunoco; and (ii) apply separately to each insured and additional insured against whom a claim is made or suit is brought, except with respect to the limits of the insurer’s liability.

14.5. The Commercial General Liability and Automobile Liability policies shall be endorsed to add, or shall have an existing blanket endorsement so as to add, Sunoco as an additional insured; provided, however, that Sunoco shall be named as an additional insured only with respect to any claims arising out of or related to this Contract and/or Contractor’s obligations hereunder; and shall provide that the coverage afforded to Sunoco as an additional insured will be primary to any other coverage available to it, and that no act or omission of Sunoco shall invalidate the coverage.

14.6. The insurance requirement set forth herein shall not in any way limit Contractor’s liability arising out of this Contract, or otherwise, and shall survive the termination/cancellation of this Contract.
15. **USE OF PREMISES.** All Work shall be performed in such a manner as to cause minimum interference with Sunoco’s operations and the operations of other contractors on the premises. Contractor shall take all necessary and proper precautions to protect the premises and all persons and property thereon from damages or injuries. Contractor shall at all times keep the premises clean and free from accumulation of water, waste materials and rubbish. Upon completion of the Work, Contractor shall remove all tools, equipment, materials and rubbish and shall restore existing premises such as roads, other paved surfaces, fencing, curbing and the like to their original conditions.

16. **LIENS.** To the full extent allowed by law, Contractor hereby waives its right to assert any mechanic’s lien or similar lien claim against Sunoco, the project site, or improvements thereon. Upon completion of the Work and as a condition precedent to final payment, Contractor shall deliver a full release of liens in such form as Sunoco may require. Contractor agrees that it shall defend, indemnify and hold Sunoco harmless from all resulting costs and attorneys’ fees from all such claims or any mechanic’s lien claim that is brought by any person supplying labor or materials for the Work. If any mechanic’s lien is placed upon any portion of, or interest in, Sunoco, its facilities or any improvements thereon arising out of or relating to the Work, Contractor will promptly take all action to remove the lien, upon receiving notice from Sunoco or, failing that, will be liable for Sunoco’s costs and attorneys’ fees for doing so. Contractor agrees to insert a similar clause in all of its subcontract and supply agreements. In addition to any rights Sunoco may have under the law, Sunoco may withhold a retainage from each payment it makes to Contractor, to be paid Contractor after (1) the Work is completed as required and the retainage period required by applicable law has expired without issuance of a lien or claim, or (2) Sunoco is satisfied that all claims have been paid and liens removed. In addition, Sunoco may, at any time, require that Contractor post a bond, at no cost to Sunoco, to remove any claims or liens, or Sunoco may discharge or remove any such claims or liens by bonding, payment or otherwise, all of which are chargeable to Contractor, together with all attorney’s fees and costs. Provided Sunoco agrees in writing, Contractor may provide an irrevocable standby letter of credit, naming Sunoco as beneficiary and in form and substance satisfactory to Sunoco, satisfaction of Contractor’s obligations and liabilities as aforesaid and in substitution of any retainage.

17. **TIME.**

17.1. Contractor shall perform the Work in a prompt, efficient, safe and diligent manner.

17.2. If, because of force majeure, either party hereto is unable to carry out any of the obligations under this Contract, other than the obligations to pay money due hereunder, and if such party promptly gives to the other party hereto written notice of such force majeure, then the obligations of the party giving such notice shall be suspended to the extent made necessary by such force majeure and during its continuance, provided that the party giving such notice shall use its best efforts to remedy such force majeure insofar as possible with all reasonable dispatch. The term "force majeure" as used herein shall mean acts of God, acts of public enemy, insurrections, riots, strikes, lockouts, labor disputes, fires, explosions, floods, breakdowns or damage to plants, equipment or facilities, embargoes, orders, or acts of civil or military authority, or other causes of a similar nature which are beyond the reasonable control of the party affected thereby. Upon the cessation of the force majeure event, the party that had given original notice shall again promptly give notice to the other party of such cessation.

18. **CONFIDENTIALITY.** All plans, drawings, design and specifications supplied by Sunoco to Contractor shall remain the property of Sunoco, and any information derived therefrom or otherwise communicated to Contractor from Sunoco, shall be regarded by Contractor as confidential and shall not be disclosed to any third party without the prior written consent of Sunoco. Should Sunoco elect to provide Contractor with access to Sunoco’s computer systems or network in connection with this Contract, Contractor agrees that upon termination or cancellation of this Contract, it shall immediately discontinue any further use of such systems or network and return to Sunoco any information related to such systems or network. Further, Contractor agrees to abide by all of Sunoco’s policies and procedures applicable to such use and access.

19. **TERMINATION, CANCELLATION AND SUSPENSION.**

19.1. Sunoco may terminate this Contract for default if Contractor fails materially to perform any of its duties or obligations under this Contract. In particular, but without limitation, Sunoco may terminate this Contract if: (1) Contractor fails to prosecute the Work diligently, in accordance with the Project Schedule or to make such progress in the Work as Sunoco reasonably believes is necessary to complete the Work within the time required by this Contract; or (2) Contractor fails to perform the Work in accordance with the Required Standard of Care or (3) Contractor fails to
perform the Work in a good and workmanlike manner, or fails to correct defects in the Work promptly upon notice by Sunoco; or (4) Sunoco reasonably determines that Contractor has abandoned the Work, or has failed to pay any subcontractors, suppliers, or laborers when payment is due; or (5) Contractor becomes insolvent, makes a general assignment for the benefit of creditors, files a voluntary petition under any chapter of the Bankruptcy Code, has an involuntary petition filed against it, has a receiver appointed, or files for dissolution or otherwise is dissolved; or (6) Contractor fails to pay its debts in a timely manner, or (7) Sunoco has reasonably determined that Contractor does not have the financial ability to carry out its obligations under this Contract and Contractor fails to give Sunoco prompt and reasonable assurances of its ability to perform.

19.2. Except as provided in this Section, Sunoco will provide Contractor with written notice of its intent to terminate this Contract, under Section 19.1, five (5) days before actually putting the termination into effect. If Contractor has begun its curative action and has made progress satisfactory to Sunoco within the five (5) days, Sunoco may so notify Contractor and the termination will not take effect. Otherwise, the termination shall take effect after five (5) days without further notice or opportunity to cure. If Sunoco terminates this Contract for default, no further payment shall be due to Contractor and Sunoco will have the right to take over the Work, to take and use all tools, equipment and supplies then being used in connection with the Work, and to finish the Work by whatever method it deems expedient, including accepting assignment of any or all outstanding purchase orders or subcontracts. Sunoco may terminate this Contract without prior notice or an opportunity for Contractor to cure the default, if the default involves risk of personal injury or property damage, violation of Sunoco’s Safety and Security Requirements, environmental issues or violations of any applicable laws, codes, regulations or other standards applied by any governmental entity having jurisdiction over the Work.

19.3. Sunoco may, upon five (5) days’ written notice to Contractor, terminate this Contract for its convenience in whole or in part at any time without cause for such termination. After issuance of said written notice, Contractor shall terminate the Work as instructed by Sunoco. If Sunoco terminates this Contract for convenience, Contractor shall receive, as its sole and exclusive remedy, payment for the Work performed up to the date of the termination and all reasonable documented wind-up costs, including, without limitation, the costs of canceling open purchase orders and demobilizing from the project site. Contractor shall use reasonable efforts to mitigate wind-up costs. Contractor shall not be entitled to recover any amounts for unabsorbed overhead, anticipated profits on the unperfomed portion of the Work, or lost opportunity. After receiving a notice of termination for convenience, Contractor shall place no further orders for material or equipment, issue no further subcontracts, and shall stop Work on the date given in the notice. Contractor shall consult with Sunoco regarding the disposition of existing orders and subcontracts, and use its best efforts to terminate them on terms favorable to Sunoco. Contractor shall likewise consult with Sunoco to decide what actions should be taken to protect Work in place and equipment or materials that have been delivered and not yet installed, and to render the project site safe.

19.4. If this Contract is terminated for cause, and it is later determined by the final order or judgment of a court of competent jurisdiction, arbitration entity or administrative proceeding of any type that Contractor was not in default, the parties agree that the termination shall then be considered a termination for convenience and Contractor shall receive, as its sole and exclusive remedy, those costs as set forth in Section 19.3.

19.5. Sunoco reserves the right to suspend the Work of Contractor at any time in Sunoco’s sole discretion. Sunoco shall give Contractor written notice of such suspension of Work. Sunoco agrees to pay Contractor for Work performed and obligations incurred prior to the suspension and for costs that Contractor directly incurs in suspending the Work, provided that Sunoco has authorized such payments in advance. In no event shall Sunoco be liable for any costs, claims, damages or liabilities whatsoever of Contractor or its subcontractors including, without limitation, consequential, special or indirect damages, loss of anticipated profit or reimbursement, relating to unperformed Work.

20. **DISPUTE RESOLUTION.**

20.1. If Contractor disagrees with any action or decision by Sunoco, or any claim or dispute otherwise arises involving this Contract, Contractor shall proceed with the Work, without interruption or delay, shall follow Sunoco’s directions, and may bring a claim as provided in this Section. Contractor’s failure to proceed with the Work as directed during the pendency of any claim or dispute shall constitute a material breach of this Contract.

20.2. The parties agree that any dispute that cannot be resolved amicably shall first be submitted to mediation before a mutually acceptable mediator, prior to either party’s resorting to legal action. If the mediation has not concluded within 60 days of the initial demand for mediation, either party may then pursue litigation in accordance with this Section, without further recourse to mediation. If the parties are unable to agree upon a mediator within thirty (30)
days after either notifies the other in writing of its intent to mediate, the mediator shall be appointed by the American Arbitration Association located in closest proximity to the project. Each party will bear its out-of-pocket costs of the mediation; all other costs of the mediation, e.g., mediator fees and related charges, will be shared equally. If the parties are unable to agree upon a site, the mediation will be held at a location selected by the mediator. A request for mediation will immediately suspend the running of any statute of limitations, until the mediation is completed or abandoned by either party, upon giving written notice to the other.

20.3. All disputes not resolved by mediation shall be decided by litigation in the federal or state courts of Philadelphia County. BOTH PARTIES EXPRESSLY WAIVE THE RIGHT TO JURY TRIAL IN ANY LEGAL PROCEEDING IN ANY WAY ARISING OUT OF OR RELATED TO THIS CONTRACT, AND EXPRESSLY SUBMIT TO THE PERSONAL JURISDICTION OF THE COURTS NAMED IN THIS SECTION.

21. GOVERNING LAW. This Contract shall be governed by and construed in accordance with the laws of the Commonwealth of Pennsylvania without regard to that state’s otherwise applicable conflict of laws principles.

22. AMENDMENTS. No amendment, modification or supplement to this Contract shall be binding unless it is in writing, signed by both parties or their authorized representative. All notices under this Contract shall be in writing and addressed to Sunoco or Contractor as the case may be, and directed to the individual specified on the face of this Contract.

23. WAIVERS. No waiver by either party of any breach of any of the covenants or conditions herein contained shall be construed a waiver of any succeeding breach of the same or of any other covenant or condition.

24. ASSIGNMENT. Neither this Contract nor any claim against Sunoco arising directly or indirectly out of or in connection with this Contract shall be assignable by Contractor without Sunoco’s consent in writing.

25. SEVERABILITY. If any provision, or any part thereof, of this Contract is found by any court or governmental agency of competent jurisdiction to be invalid or unenforceable for any reason whatsoever, such invalidity or unenforceability shall not affect the remainder of such provision or any other provision hereof which shall remain in full force and effect.

26. CAPTIONS. Captions used in this Contract are not part of this Contract and are for convenience of reference only and shall not affect the meaning or construction of any of its provisions.

END OF GENERAL TERMS AND CONDITIONS
PROFESSIONAL SERVICES CONTRACT
GENERAL TERMS AND CONDITIONS

Notwithstanding any acceptance, offer, proposal, quotation, acknowledgment or other writing sent by Contractor containing additional or different terms and conditions, commencement of Work by Contractor or any other reasonable form of acceptance shall be deemed an acceptance of all terms hereof. Any additional or different terms and conditions proposed by Contractor shall be deemed rejected unless specifically accepted in writing by Owner.

1. COMMENCEMENT AND PROSECUTION OF THE WORK: Contractor shall commence and carry on the Work under this Contract and shall supply and be represented by competent supervision acceptable to Owner, who shall be authorized to act for Contractor in all matters. All directions concerning the Work given in writing to such supervisor shall be as binding as if given directly to Contractor. All skilled personnel employed in connection with this Contract shall qualify therefor by experience and ability. Owner may require Contractor to submit proof of such experience and qualifications.

Contractor shall employ such safety and security practices as are normal or as required by law for the type of Work authorized hereunder. Should Owner so require, Contractor shall comply with Owner’s Safety and Security Requirements.

Contractor shall replace any of its personnel whose Work, at the discretion of Owner, is contrary to the requirements of this Contract. Contractor shall not subcontract any obligations hereunder without prior written approval of Owner.

Contractor shall comply with all local, state and federal rules, regulations, orders, directives and statutes applicable to wage and employment practices and he shall act in the best interest of Owner on matters which affect area labor practices and might tend to set precedents.

No overtime except spot overtime shall be worked without Owner’s prior written approval.

2. RECORDS AND AUDITS: Contractor shall keep accurate records of account for all Work performed hereunder, and shall provide copies of same (except of that Work for which a fixed price has been quoted) to the Owner as required by Owner. Owner shall have the right, at all reasonable times during regular business hours, to inspect and audit such records. Contractor shall preserve such records for 36 months after termination/cancellation/completion of this Contract.

If the audit discloses that either party owes money to the other, any sums due will be paid within thirty (30) days after the sum due is agreed upon by the parties or determined by a court of appropriate jurisdiction. In any event, Contractor’s failure to recover any alleged underpayment shall be waived, unless a claim in writing (all supporting documents is received by Owner within 150 days after the end of the contract year or the contract term, if less than a year.

3. GUARANTEES AND REMEDIES: Contractor guarantees that all professional services performed by Contractor hereunder shall be in accordance with sound and currently accepted practices and principles normally employed in the industry for the services provided and shall conform to the basic information furnished by Owner.

Owner shall notify Contractor if and in what respect Owner determines that any of said Guarantees have not been met. Contractor, at its expense, shall promptly provide the professional services required to meet the Guarantees. The performance of additional professional Services to meet the Guarantees shall not constitute Owner’s exclusive remedy under this Contract.

4. TITLE TO PROPERTY: Owner shall have title to all Work completed or in progress and to all machinery, equipment, materials and supplies, the cost of which has been paid to Contractor. All studies, designs, drawings, plans, specifications, test results, reports, computer software, inventions, patent rights (including data produced by computer or other electronic means and stored on disc, tape or any other form), copyrights (all of which are hereby considered to be and are created as work made for hire and Contractor agrees to assign said copyright upon request) and other data in any form and in whatever state of completion prepared by Contractor shall be the property of Owner upon completion or termination of this Contract. Owner shall have the right to use same for any purpose whatsoever without right on the part of Contractor to any additional compensation therefor.

5. INFRINGEMENT: Contractor agrees to defend, indemnify and hold Owner harmless from any claim, suit, action or proceeding for infringement in which Owner, its parent or its respective subsidiaries and affiliates, is made a defendant whether for actual or alleged infringement of any U.S. or foreign patent, trademark or copyright, or any other property right arising out of Work performed by Contractor under this Contract, and Contractor further agrees to pay and discharge any and all judgments or decrees which may be rendered in any such suit, action or proceeding against Owner, its parent or its respective subsidiaries and affiliates including reasonable attorney’s fees.

6. TERMINATION, CANCELLATION AND SUSPENSION: If Contractor shall be adjudged bankrupt, or become insolvent, or file for voluntary bankruptcy or be subjected to involuntary bankruptcy proceedings, or enter receivership proceedings, or make an assignment for the benefit of creditors, or if Contractor should persistently or repeatedly refuse or should fail, except in cases for which extension of time is provided, to supply enough properly skilled personnel or proper materials, or if Contractor should fail to perform the Work, or any part thereof, with the diligence necessary to insure its progress and completion as prescribed by the time schedule and fail to take such steps to remedy such default within fifteen (15) days after written notice thereof from Owner as Owner shall direct; or, should Contractor fail to make prompt payment to vendors or subcontractors for materials or labor, or otherwise is guilty of a violation of any provision of this Contract, then Owner, without prejudice to any other rights or remedies expressly provided for herein, may terminate this Contract, or any part hereof, by written notice to Contractor and shall have the right thereafter to take possession of all materials, equipment and the like. In such cases of termination, Owner shall be relieved of all further obligations hereunder and Contractor shall be liable to Owner for all costs incurred by Owner in completing such Work in excess of the total compensation herein defined.

Upon prior written notice, Owner, at its option, may cancel this Contract at any time, whether or not Contractor is in default of any of its obligations hereunder. Upon any such cancellation, Contractor agrees to waive any claim for damages, including loss of anticipated profit on account thereof. However, provided that the Contractor is not in default of its obligation hereunder, Owner agrees that Contractor shall be paid an amount which when added to all installments previously paid will equal the sum of all costs properly incurred prior to date of cancellation, plus earned profit on such incurred costs, but in no event shall such amount be greater than the Contract price. Such earned profit shall bear the same relationship to such incurred costs as the profit increment of the Contract price bears to the cost increment of such Contract price. Owner reserves the right to verify the amounts of such costs and profit increments through an audit of Contractor’s records.

Owner reserves the right to suspend the Work of the Contractor at any time in the sole discretion. Owner shall give Contractor written notice of said suspension of Work. Owner agrees to pay Contractor for its costs, charges and expenses arising out of the suspension of this Contract caused by the exercise of Owner’s rights set forth herein. Costs, charges and expenses shall be exclusive of anticipated profit.

Contractor shall include the foregoing provisions in all subcontracts in which it enters to the extent that Owner and Contractor shall have the rights therein set forth with respect to each subcontractor.

7. INDEPENDENT CONTRACTOR: Contractor agrees that it is an independent Contractor in the performance of any Work hereunder and that neither it nor its employees shall be considered employees of Owner. Contractor hereby shall maintain control or direction of the manner and method of performance of Work under this Contract and Owner shall have the right of supervision merely as to the result of the Work. Owner shall not be responsible for the direct payment of any withholding taxes, social security payments, payments under workmen’s compensation or other insurance premiums, or other charges of any kind, except as specifically outlined herein.

Contractor hereby certifies that it will deduct and pay over to the proper governmental authority any withholding taxes or similar assessments which an employer is required to deduct and pay over and Contractor accepts exclusive liability for any payroll taxes or contributions imposed by any federal, state or other governmental authority, covering its agents or employees.

8. TAXES: Unless otherwise required by law, Contractor has exclusive liability for all sales, use, excise and other taxes, charges, or contributions with respect to or imposed on any material or equipment supplied or Work performed by Contractor, including such taxes or contributions imposed on the wages, salaries or other payments to persons employed by Contractor or its subcontractors in the performance of this Contract. Contractor shall pay all such taxes, charges, or contributions before delinquency or discount date and shall hold Owner harmless from any liability and expense by reason of Contractor’s failure to pay such taxes, charges or contributions.

9. COMPLIANCE WITH LAWS: Seller agrees all work performed incident to the Contract and all goods furnished under this Contract shall conform with all applicable federal, state and local laws. Specifically, the Seller agrees to comply with the regulations set forth in the Equal Opportunity Clause at 41 CFR 60-250.5(a), 41 CFR 60-741.5(a), 41 CFR 60-1.4 and Section 202 of the Executive Order 11246, and all amendments thereto, unless specifically exempt.

Seller warrants and agrees that it has used and will continue to use due diligence to ensure that during the performance of this Contract, no officer, employee, agent or affiliate of Seller is in violation of any such laws.
other representative of Seller has made or will make any payment in violation of any applicable federal, state, or local law or regulation, and all amendments thereto. Seller shall supply such evidence of compliance as Owner may require.

0. MATERIAL SAFETY DATA SHEET REQUIREMENTS: Contractor shall contact Owner’s Safety and Health or Risk Management Departments or other Owner’s authorized representative to request access to Material Safety Data Sheets (MSDS) in the area where Work is to be performed prior to commencing any Work. Contractor shall review these sheets and ensure that its employees are advised of the location and accessibility of this hazardous information. Contractor shall furnish copies of Material Safety Data Sheets to Owner for all chemicals to be used while performing Work at Owner’s facility prior to use of such chemicals. Contractor shall maintain duplicate copies in its field office at the Work site.

1. ACCEPTANCE: When all Work is completed Contractor shall so notify Owner, and Owner shall have the right to a final review of the Work including any and all records and reports maintained by Contractor in connection with the Work. Owner shall either notify Contractor of its acceptance of the Work or issue to Contractor a description of deficiencies requiring correction in order for the Work to conform to the Contracts requirements. Upon correction to Owner’s satisfaction of such additional deficiencies by Contractor, Owner shall be deemed to have accepted the Work, and Contractor shall be relieved of any further responsibility subject to the other terms and conditions herein.

2. PERFORMANCE BOND: If requested by Owner, Contractor shall furnish a performance and payment bond covering the faithful performance of this Contract. Such bond shall be in the form and amount with a surety satisfactory to Owner. The cost of such bond shall be paid by Owner.

3. LIABILITY AND INDEMNITY: CONTRACTOR AGREES TO DEFEND, HOLD HARMLESS AND INDEMNIFY OWNER, ITS PARENT, THEIR SUBSIDIARIES AND AFFILIATES, AS WELL AS THE EMPLOYEES, AGENTS, OFFICERS, DIRECTORS, INVITEES, PARTNERS AND THE ASSIGNS, AND SUCCESSORS IN INTEREST OF ANY OF THEM ("INDEMNITIET) FROM AND AGAINST ANY AND ALL CLAIMS, LIABILITIES, EXPENSES (INCLUDING REASONABLE ATTORNEYS’ FEES), LOSSES, DAMAGES, DEMANDS, FINES AND CAUSES OF ACTION CAUSED BY, ARISING OUT OF, OR RELATED TO THE WORK, OR THE TUAL OR ALLEGED ACTS OR OMISSIONS OF CONTRACTOR OR OF ITS SUPPLIERS, SUBCONTRACTORS, AGENTS, SERVANTS OR EES, AS WELL AS ANY JOINT NEGLIGENCE OR FAULT OF THE INDEMNITIES, WHETHER OR NOT SUCH ACTIONS OR OMISSIONS OCCUR JOINTLY OR CONCURRENTLY: PROVIDED, HOWEVER, THAT CONTRACTOR’S OBLIGATIONS HEREBUNDER SHALL NOT APPLY TO ANY CLAIM, LIABILITY, EXPENSE, LOSS, DAMAGE, DEMAND, FINE OR CAUSE OF ACTION ESTABLISHED TO BE THE RESULT OF THE SOLE NEGLIGENCE OF AN INDEMNITEE. THE CONTRACTOR’S DEFENSE, HOLD HARMLESS AND INDEMNITY REQUIREMENTS, AS SET FORTH ABOVE, SHALL ALSO EXTEND TO INJURIES SUSTAINED BY CONTRACTOR’S EMPLOYEES AND SHALL NOT BE LIMITED BY ANY APPLICABLE WORKERS’ COMPENSATION LAW OR SIMILAR STATUTE, THE APPLICATION OF WHICH ARE WAIVED, TO THE EXTENT THAT STATE AND/OR FEDERAL LAW LIMITS THE TERMS AND CONDITIONS OF THIS CLAUSE, IT SHALL BE DEEMED SO LIMITED TO COMPLY WITH SUCH STATE AND/OR FEDERAL LAW.

TO THE EXTENT THAT THIS CONTRACT RELATES TO ACTIVITIES OF ANY KIND OR CHARACTER ATTRIBUTABLE TO OHIO, THIS LIABILITY AND INDEMNITY CLAUSE IS AMENDED TO ADD THE FOLLOWING PARAGRAPH:

CONTRACTOR EXPRESSLY AND SPECIFICALLY WAIVES ITS STATUTORY AND CONSTITUTIONAL WORKERS’ COMPENSATION IMMUNITY UNDER OHIO LAW, INCLUDING AMENDMENTS THERETO.

THIS ARTICLE 13 SHALL SURVIVE THE TERMINATION/CANCELLATION OF THIS CONTRACT.

USE OF OWNER’S PREMISES: All Work shall be performed in such a manner as to cause a minimum of interference with Owner’s operations and the operations of other Contractors on the premises. Contractor shall take all necessary and proper precautions to protect the premises and all persons and property thereon from damage or injury.

"NS: Upon completion of the Work and as a condition precedent to final payment, Contractor shall deliver to Owner a full release of liens in such form as may require. Contractor shall not permit any lien, including a tax lien, or charge to attach to the Work or the premises upon which the Work is being performed. If any such lien does so become attached, Contractor shall promptly procure its release and hold Owner harmless from such losses, cost, damages or expenses incidental thereto including court costs and attorney’s fee.

16. FORCE MAJEURE: If, because of force majeure, either party is unable to carry out any of its obligations under this Contract, other than the obligations to pay money due hereunder, and if such party promptly gives to the other party hereto written notice of such force majeure, then the obligations of the party giving such notice shall be suspended to the extent made necessary by such force majeure and during its continuance, provided that the party giving such notice will use its best efforts to remedy such force majeure insofar as possible with all reasonable dispatch. The term "force majeure" as used herein shall mean any cause beyond the reasonable control of the party affected thereby, such as, but not limited to, acts of God, acts of public enemy, insurrections, riots, strikes, lockouts, labor disputes, fires, explosions, floods, breakdowns or damage to plants, equipment or facilities, embargoes, orders or acts of civil or military authority, or other causes of a similar nature. Upon the cessation of the force majeure event, the party that had given original notice shall again promptly give notice to the other party of such cessation.

17. NONDISCLOSURE AND OWNERSHIP: Contractor agrees that all inventions, patents, rights and developments or other rights of any nature and all materials, products and techniques which resulted from the services rendered by Contractor hereunder are to be vested in Owner as its exclusive property; and all information and records relating thereto, shall belong exclusively to Owner. Contractor agrees whether or not then employed by Owner to execute and deliver at the request of Owner any document that Owner may deem necessary to establish and maintain its aforesaid exclusive rights and property. There shall be no publication of any information arising from Contractor’s services without the express written permission of Owner. All materials, information, data, papers, drawings and other records belonging to Owner in Contractor’s possession shall be returned to Owner upon termination of this Contract or at any earlier time upon its request. Contractor agrees to receive and hold in confidence any information imparted to it or its subcontractors by Owner which pertains to Owner’s business activity in any manner, and which is not the subject of general public knowledge, including without limitation proprietary processes, technical information and how, management policies, economic policies, financial and other data, customer lists, computer software and the like. Should Owner elect to provide Contractor with access to Owner’s computer systems or network in connection with this contract, Contractor agrees that upon termination or cancellation of this Contract, it shall immediately cease any further use of such system or network and return to Owner any information related to such system or network. Further, Contractor agrees to abide by all of Owner’s policies and procedures applicable to such use and access. Contractor shall include the foregoing provisions in all subcontracts in which it enters so that Owner and Contractor shall have the same rights herein set forth with respect to each subcontractor. This clause shall survive termination of this Contract.

18. AMENDMENTS: This Contract may be modified only if such modification is in writing and signed by a duly authorized representative of both parties. All notices under this Contract shall be in writing and addressed to Owner or Contractor as the case may be, and directed to the individuals specified on the face of this Contract.

19. WAIVERS: No waiver by either party of any breach of any of the covenants or conditions herein contained shall be construed a waiver of any succeeding breach of the same or of any other covenant or condition.

20. EFFECT OF OWNER’S APPROVAL: Any approval of Owner shall not relieve Contractor of any duty, responsibility or obligation imposed on it by any provision of this Contract.

21. ASSIGNMENTS: Neither this Contract nor any claim against Owner arising directly or indirectly out of or in connection with this Contract shall be assignable by Contractor without Owner’s consent in writing.

22. SEPARABILITY OF PROVISIONS: The invalidity, illegality and unenforceability of any provision(s) of this Contract shall in no way affect or impair the validity, legality and enforceability of the remaining provisions hereof.

23. CAPTIONS: Captions used in this Contract are not a part of this Contract and are for convenience of reference only and shall not affect the meaning or construction of any of its provisions.

24. SET-OFF: Contractor grants Owner the right to set-off and apply any accounts owed by Owner to Contractor or Contractor’s successors or assigns against any accounts owed by Owner to Contractor or Contractor’s successors or assigns to Owner or any collateral held by Owner as security for any indebtedness owed by Contractor to Owner.

25. INSURANCE: Contractor shall take out, carry and maintain in insurance company or companies, and in policies of insurance written on an occurrence basis or self-
insurance acceptable to Owner, the following primary insurance with limits not less than those indicated for the respective items:

a) Statutory Worker's Compensation and Occupational Disease Insurance, including Employer's Liability Insurance* and, if applicable, coverage under the Longshoremen and Harbor Worker's Compensation Act, the Jones Act or other Maritime Employer's Liability*, complying with laws of each jurisdiction in which any work is to be performed or elsewhere as may be required. Employer's Liability Insurance* (and Maritime Employer's Liability*, if applicable) shall be provided with a limit not less than:

$2,000,000 each occurrence

b) Commercial Liability Insurance*, including all Premises and Operations, Contractual Liability, Products-Completed Operations Liability, Fire Legal Liability, Explosion, Collapse and Underground Damage Liability, Broad Form Property Damage Liability, and, if applicable, Watercraft and Aircraft Liability, as well as coverage on all Contractor's mobile equipment (other than motor vehicles licensed for highway use) owned, hired or used in the performance of this Contract with limits not less than:

$5,000,000 Bodily Injury, Personal Injury & Property Damage combined each occurrence and aggregate

c) Automobile Liability Insurance*, including Contractual Liability, covering all motor vehicles licensed for highway use and employed in the performance of this Contract, with limits not less than:

$5,000,000 Bodily Injury, Personal Injury & Property Damage combined each occurrence and aggregate

d) Professional Liability Insurance, including Contractual Liability with limits not less than:

$2,000,000 Bodily Injury, Personal Injury and Property Damage combined each occurrence and aggregate

*Must cover Owner, its parent, subsidiaries and affiliates and their respective officers, directors and employees as additional insureds. All insurance coverages shall include a waiver of subrogation in favor of Owner, its parents, subsidiaries and affiliates and their respective officers, directors and employees.

Contractor shall provide certificates of insurance acceptable to the Owner prior to commencement of performance hereunder. Such certificates shall provide that thirty (30) days' advance written notice shall be given to Owner in the event of any material change in, or cancellation of, such insurance. Upon the request of the Owner, Contractor shall also provide certificates of insurance to the Owner evidencing such insurance covering periods subsequent to the term of this Contract.

The insurance requirements set forth herein shall not in any way limit the contractor's liability arising out of this Contract or otherwise, and shall survive termination of this Contract.

6. ENTIRETY OF CONTRACT: The parties agree that this Contract sets forth their entire Agreement and there are no promises or understandings other than those stated herein.

7. MEDIATION. The parties agree that any dispute that cannot be resolved amicably shall be first submitted to mediation before a mutually agreed mediator, prior to either party's resorting to legal action. If the parties are unable to agree upon a mediator within thirty (30) days after either notifies the other in writing of its intent to mediate, the mediator shall be appointed by the highest ranking officer of the American Arbitration Association Office located in closest proximity to the offices of the party requesting mediation. Each party will bear its out-of-pocket costs of the mediation; all other costs of the mediation; e.g. mediator fees and related charges, will be shared equally. The mediation will be held at a location selected by the mediator, if the parties are unable to agree upon a site. A request for mediation will immediately suspend the running of any statute of limitations, until the mediation is completed or abandoned by either party, upon giving written notice to the other.

END OF GENERAL TERMS AND CONDITIONS
TO WHOM IT MAY CONCERN:

Aristech Chemicals, a subsidiary of Sunoco, Inc. (R & M), has identified certain requirements that must be met by vendors providing services at the Haverhill, Ohio and Neal WV facilities (Ohio Valley Region). These requirements involve safety, health, and environmental concerns, contractor or general liability insurance coverage, as applicable, and various conditions related to performing work on Aristech property.

To simplify the process of providing our needs, our intent is to first provide you with the necessary documents. These are Sunoco Chemicals Contract Service Providers and Third Party Worker Oversight Document Number: HAV-PSM-PRO-006, and Sunoco's applicable Terms and Conditions. You will retain these documents with the understanding that they are applicable to all purchase orders or contracts for in-plant services. Our individual purchase orders or contracts will reconfirm this or indicate any instances where the documents are specifically excluded, or amended. By doing this, we will not have to send the documents with each purchase order or contract. Due to the fact that your services are sometimes required on short notice, we also eliminate the need for Materials Management to ensure that all of these requirements have been satisfied in each instance.

The instructions for completing and returning the necessary documents are provided on an enclosed acknowledgement form. We ask that you complete the documents to the best of your ability and, if necessary, return them with a list of questions. The Regional Health, Environmental and Safety Departments will review and resolve the questions. Your cooperation in this matter is greatly appreciated.

Timely completion of our requirements will improve the acquisition of services for Haverhill and Neal and concurrently, the coordination between your company and Aristech Chemicals. We look forward to you working with us in a healthy, safe, and environmentally acceptable manner.

Sincerely,

R. J. Rudmann
Procurement Analyst
Ohio Valley Region
Phone 740-533-5229
Electronic Fax 866-414-9852

Enclosure(s)

Revised: 2/15/07
ARISTECH CHEMICAL CORPORATION
C/O SUNOCO INC (R&M)
IN-PLANT SERVICE VENDORS
ACKNOWLEDGEMENT FORM

DATE__________________

Please comply with each requirement checked below. To acknowledge receipt of the following documents, please return a copy of this form to R. A. MARTIN by ________________.

Thank You.

____ Review Sunoco Chemicals Contract Service Providers and Third Party Worker Oversight, Document Number: HAV-PSM-PRO-006, and complete and return Appendix A.

____ Review "Professional Services Contract General Terms and Conditions" and complete and return the Professional Services Contract General Terms and Conditions Signature Form.

____ Provide a copy of your current Commercial General Liability, Automobile Liability, and Worker’s Compensation Insurance Certificate as referenced in Article 25 of our terms and conditions. Note: Additional Insured and Waiver of Subrogation language requirements in bold type.
Certificate Holder Name: Sunoco Inc. (R&M), P.O. Box 180, Haverhill, Ohio 45636

____ Indicate vendor status:

_____Union       _____Non-Union       _____Either

Returned by: Print Name _______________________________________

Signature _____________________________________________________

Company _____________________________________________________

Date _________________________________________________________

Rev 1/20/06
ARISTECH CHEMICAL CORPORATION
C/O SUNOCO INC (R&M)
IN-PLANT SERVICE VENDORS
ACKNOWLEDGEMENT FORM

DATE____________________

Please comply with each requirement checked below. To acknowledge receipt of the following
documents, please return a copy of this form to R. A. MARTIN by ________________.
Thank You.

____ Review Sunoco Chemicals Contract Service Providers and Third Party Worker
Oversight, Document Number: HAV-PSM-PRO-006, and complete and return
Appendix A.

____ Review “Field Services Contract General Terms and Conditions” and complete and
return the Field Services Contract General Terms and Conditions Signature
Form.

____ Provide a copy of your current Commercial General Liability, Automobile Liability,
and Worker’s Compensation Insurance Certificate as referenced in Article 25 of our terms
and conditions. Note: Additional Insured and Waiver of Subrogation language
requirements in bold type.
Certificate Holder Name: Sunoco Inc. (R&M), P.O. Box 180, Haverhill, Ohio 45636

____ Indicate vendor status:

____ Union    ____ Non-Union    ____ Either

Returned by:  Print Name_________________________________________

Signature_____________________________________________________

Company_______________________________________________________

Date__________________________________________________________

Rev 1/20/06
SECTION I

CLOSURE PLANS, POST-CLOSURE PLANS, AND FINANCIAL REQUIREMENTS
## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>SECTION I. CLOSURE PLANS, POST-CLOSURE PLANS, AND FINANCIAL REQUIREMENTS</td>
<td>I-1</td>
</tr>
<tr>
<td>I-1</td>
<td>INTRODUCTION</td>
</tr>
<tr>
<td>I-2</td>
<td>PARTIAL AND FINAL CLOSURE [OAC 3745-55-12]</td>
</tr>
<tr>
<td>I-3</td>
<td>MAXIMUM WASTE INVENTORY: [OAC 3745-55-12]</td>
</tr>
<tr>
<td>I-4</td>
<td>SCHEDULE FOR CLOSURE: [OAC 3745-55-12; 3745-55-13]</td>
</tr>
<tr>
<td>I-4.1</td>
<td>Time Allowed for Closure</td>
</tr>
<tr>
<td>I-4.2</td>
<td>Extension for Closure Time</td>
</tr>
<tr>
<td>I-5</td>
<td>CLOSURE PERFORMANCE STANDARD: [OAC 3745-55-11]</td>
</tr>
<tr>
<td>I-5.1</td>
<td>Disposition of Waste and Residue</td>
</tr>
<tr>
<td>I-5.2</td>
<td>Disposition of Equipment</td>
</tr>
<tr>
<td>I-6</td>
<td>CLOSURE PROCEDURES: [OAC 3745-55-12(B)]</td>
</tr>
<tr>
<td>I-6.1</td>
<td>Storage Tank Closure</td>
</tr>
<tr>
<td>I-6.2</td>
<td>Boiler Closure</td>
</tr>
<tr>
<td>I-7</td>
<td>CLOSURE OF CONTAINERS: [OAC 3745-55-78; OAC 3745-55-12]</td>
</tr>
<tr>
<td>I-7.1</td>
<td>Other Closure Requirements</td>
</tr>
<tr>
<td>I-8</td>
<td>Personnel Safety and Fire Prevention</td>
</tr>
<tr>
<td>I-9</td>
<td>CERTIFICATION OF CLOSURE: [OAC 3745-55-16; 3745-54-28]</td>
</tr>
<tr>
<td>I-10</td>
<td>CLOSURE COST ESTIMATE: [OAC 3745-50-44; 3745-55-42]</td>
</tr>
<tr>
<td>I-11</td>
<td>FINANCIAL ASSURANCE MECHANISM FOR CLOSURE: OAC 3745-50-44; 3745-55-43; 3745-55-51</td>
</tr>
<tr>
<td>I-12</td>
<td>POST-CLOSURE PLAN/CONTINGENT POST-CLOSURE: OAC 3745-50-44; 3745-50-44(c)(3); 3745-50-44(c)(4); 3745-50-44(c)(5); 3745-50-44(c)(7); 3745-50-44(c)(9); 3745-55-18; 3745-55-97; 3745-55-97; 3745-56-28; 3745-56-28; 3745-56-58; 3745-56-58; 3745-56-80; 3745-57-10; 3745-57-93</td>
</tr>
<tr>
<td>I-13</td>
<td>POST-CLOSURE COST ESTIMATE: OAC 3745-50-44; 3745-55-44</td>
</tr>
</tbody>
</table>
SECTION I. CLOSURE PLANS, POST-CLOSURE PLANS, AND FINANCIAL REQUIREMENTS

TABLE OF CONTENTS (CONTINUED)

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-14</td>
<td>FINANCIAL ASSURANCE MECHANISM FOR POST-CLOSURE CARE: OAC 3745-50-44; 3745-55-45; 3745-55-51</td>
</tr>
<tr>
<td>I-15</td>
<td>LIABILITY REQUIREMENTS: OAC 3745-50-44; 3745-55-47</td>
</tr>
<tr>
<td>I-16</td>
<td>PHENOLIC WASTEWATER TREATMENT SYSTEM</td>
</tr>
</tbody>
</table>
SECTION I. CLOSURE PLAN, POST-CLOSURE PLANS, AND FINANCIAL REQUIREMENTS

LIST OF TABLES

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-1</td>
<td>Maximum Waste Inventory</td>
<td>I-2</td>
</tr>
<tr>
<td>I-2</td>
<td>Closure Schedule</td>
<td>I-3</td>
</tr>
<tr>
<td>I-3</td>
<td>Analytical Parameters and Methods</td>
<td>I-9</td>
</tr>
<tr>
<td>I-4</td>
<td>Closure Cost Estimate Summary</td>
<td>I-13</td>
</tr>
</tbody>
</table>
SECTION I. CLOSURE PLANS, POST-CLOSURE PLANS,  
AND FINANCIAL REQUIREMENTS

LIST OF ATTACHMENTS

Attachment I-1     Location Map
Attachment I-2     Site Plan
Attachment I-3     Maximum Waste Capacity Calculations
Attachment I-4     Soil Sampling Plan
Attachment I-5     Closure Cost Estimate Calculation
Attachment I-6     Financial Assurance Liability
SECTION I. CLOSURE PLANS, POST-CLOSURE PLANS, AND FINANCIAL REQUIREMENTS

I-1 INTRODUCTION
The Haverhill Plant is a chemical production facility located in Scioto County, Ohio. The plant consists of several production units that produce the following primary products: phenol, bisphenol A, acetone, alpha-methyl styrene, and phenol intermediates. Another material: Light Hydrocarbons (LHC), may be produced as a product or burned as a non-hazardous waste. The main feedstock used is cumene. Hazardous wastes are generated, stored, and destroyed at the plant.

This section of the permit application describes how the plant will perform RCRA closure of the hazardous waste management units at the plant. This section has been prepared in accordance with the requirements of OAC Title 3745: 50-44-(A)(13) through (17), 55-10 through 19, 55-42, 55-43, 55-12(A)(1),(2),(4), and (20), 55-14, 55-13(A), 55-97, 57-51, 55-44, and 55-47. This Closure Plan provides an overview of the units to be closed, the proposed closure procedures, and related information. The plant will maintain a copy of the approved Closure Plan and all revisions to the plan on site for the duration of the permit.

Three aboveground storage tanks (2003-F, 2104-F, AND 2105-F) and two hazardous waste-burning boilers (2001- UC/UE)\(^1\) manage hazardous waste at the plant and are considered in this Closure Plan: A location map and site plan showing the location of these hazardous waste management units are provided in Attachments I-1 and I-2.

I-2 PARTIAL AND FINAL CLOSURE: [OAC 3745-55-12]
As provided in 3745-50-10, the following definitions apply:

**Partial closure** means the closure of a hazardous waste management unit in accordance with the applicable closure requirements of Chapters 3745-54 to 3745-57 and 3745-205 or 3745-65 to 3745-69 and 3745-256 of the Administrative Code at a facility that contains other active hazardous waste management units. For example, partial closure may include the closure of a single tank (including its associated piping and underlying containment systems), boiler, or other hazardous waste management unit, while other units at the facility continue to operate.

\(^1\) Ohio EPA approved the clean closure of Boilers 2001-UA and UB in June, 2012.
Final closure means the closure of all hazardous waste management units at the facility in accordance with all applicable closure requirements so that hazardous waste management activities under Chapters 3745-54 to 3745-57 and 3745-205 or 3745-65 to 3745-69 and 3745-256 of the Administrative Code are no longer conducted at the facility unless subject to the provisions in rule 3745-52-34 of the Administrative Code.

Therefore, partial closure refers to the closure of any one or more of the hazardous waste units at the plant without closing all of the units at the plant. Final closure refers to the closure of all or the last hazardous waste units at the plant. Actual closure activities will be the same, independent of partial or final closure.

I-3 MAXIMUM WASTE INVENTORY: [OAC 3745-55-12]
The maximum inventory of RCRA-regulated wastes stored in each of the permitted storage tank units is summarized in Table I-1. Capacity calculations for each unit are presented in Attachment I-3.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Maximum Waste Capacity (gallons)</th>
<th>Type of Waste Handled</th>
<th>Hazardous Waste Code(s)²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tank 2104-F</td>
<td>200,548</td>
<td>HHC</td>
<td>D018, K022</td>
</tr>
<tr>
<td>Tank 2105-F</td>
<td>249,962</td>
<td>HHC</td>
<td>D018, K022</td>
</tr>
<tr>
<td>Tank 2003-F</td>
<td>200,548</td>
<td>LHC</td>
<td>D001, D018, D035</td>
</tr>
</tbody>
</table>

The maximum waste inventory of Boilers 2001-UC/UE consists of the volumetric capacity of the waste fuel piping between the storage tanks and the boilers. The boilers cannot be filled with liquid waste; therefore, the volume of the combustion chamber (2,051 ft³/boiler) is not considered as potential inventory volume. The total amount of piping that may contain hazardous waste is approximately 1,000 lineal feet of 2” diameter pipe. The volume of hazardous waste in this piping is less than 200 gallons, which is less than 0.1% of each of the tank’s inventory and is therefore not considered separately.

The hazardous waste contained in the permitted units consists of either heavy hydrocarbons (HHC) which is a listed hazardous waste (K022) and exhibits a hazardous waste characteristic

---
² Waste codes D018 and D035 were generated prior to 2011. They are no longer being generated.
(D018), or light hydrocarbons (LHC) which exhibits several hazardous waste characteristics (D001, D018, and D035). More information regarding the wastes is provided in Section C of this permit application.

I-4 SCHEDULE FOR CLOSURE: [OAC 3745-55-12; 3745-55-13]

OAC 3745-55-13 defines the time periods allowable for closure. Table I-2 summarizes the requirements and provides a general schedule for the closure of the facility or any of the active units. The schedule includes the total time required to close any or all of the units. The plant intends to operate the facility indefinitely and closure of the entire operation is not anticipated. For regulatory purposes, however, Haverhill has estimated a tentative final closure date for the tanks of 30 years from the present (approximately 2040).

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Scheduled Completion (Days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Plant notifies Ohio EPA that closure will begin</td>
<td>No later than 45 days prior to beginning closure activities</td>
</tr>
<tr>
<td>2</td>
<td>Beginning of Closure (receipt of final volume of hazardous waste)</td>
<td>Day 0</td>
</tr>
<tr>
<td>3</td>
<td>Plant prepares sub-contracts, /material, and equipment to begin closure</td>
<td>Day 30</td>
</tr>
<tr>
<td>4</td>
<td>Last waste disposal in boilers or removal off-site</td>
<td>Day 90</td>
</tr>
<tr>
<td>5</td>
<td>Engineering assessment of secondary containment structures for leakage/spills</td>
<td>Day 90</td>
</tr>
<tr>
<td>5</td>
<td>Cleaning and decontamination of hazardous waste units</td>
<td>Day 150</td>
</tr>
<tr>
<td>6</td>
<td>Soil sampling and analysis beneath secondary containment, if necessary</td>
<td>Day 150</td>
</tr>
<tr>
<td>7</td>
<td>Removal of all hazardous waste and debris off-site</td>
<td>Day 180</td>
</tr>
<tr>
<td>8</td>
<td>Submittal of certification of closure</td>
<td>Day 240</td>
</tr>
</tbody>
</table>

I-4.1 Time Allowed for Closure

As indicated above, the plant anticipates that all hazardous wastes will be removed from the site in accordance with the approved closure plan within 90 days from receipt of the final volume of waste at the unit or facility. The plant also anticipates that all closure activities will be completed within 180 days from receipt of the final volume of waste at the unit or facility.

The process operations at Haverhill are continually being improved. These changes may result in extended periods of time where hazardous wastes are not generated and therefore do not need to be stored. These periods may last for a period of months to more than one year. Haverhill also anticipates that future changes may result in conditions where hazardous wastes are again generated and need to be stored and/or burned at the plant. OAC Section 3745-55-12(d)(2)
provides for an extension of the time allowed for closure, if a management unit may receive additional waste in the future.

Given the circumstance that hazardous waste may not be generated for a period of more than one year, but may be generated later, Haverhill requires an extension of the period between the time a volume of hazardous waste is received and the time closure should begin.

Haverhill will maintain the storage tanks and boilers in a condition suitable to receive and destroy additional hazardous wastes when they are generated. Therefore, Haverhill will have the capacity to receive additional hazardous waste. In addition, Haverhill will continue to operate in compliance with the existing permit and will restart operation, maintenance, and inspection requirements for the tanks and boilers described in the permit prior to their receipt of additional hazardous waste. Therefore, Haverhill will meet the requirements described above to allow an extension of the time period between receiving wastes and closure.

I-4.2 Extension for Closure Time

Haverhill may require additional time for both the 90-day waste removal limit and the 180-day limit for completing all closure activities. If an unanticipated need does develop, Haverhill will submit a petition to Ohio EPA for a revised schedule for closure which justifies the additional time required. If a petition is submitted, the request will be justified by demonstrating one of the following:

- Waste removal or closure activities require longer than 90 or 180 days, respectively.
- The unit or facility has capacity to receive additional wastes.
- Closure would be incompatible with continued operation. If this does occur, Haverhill will demonstrate that all steps have and will be taken to prevent threats to human health and the environment from the unclosed but inactive facility.

I-5 Closure Performance Standard: [OAC 3745-55-11]

This closure plan is designed to ensure that the waste management units at the site will be “clean-closed” so that

- The need for further maintenance or controls after closure is eliminated, and
- The need for post-closure activity is eliminated.

The plan is also designed to minimize the release of hazardous waste, leachate, or impacted rainfall to the air, groundwater, surface water, and surrounding land during the closure activities.
Haverhill intends to remove all of the hazardous waste from the RCRA-permitted tanks and boilers during closure of those units. All hazardous waste on-site at the time of closure for any unit will be properly disposed. Haverhill also believes that its use of best management practices to minimize spills and releases throughout the life of the facility will minimize the possibility of contamination that could require post-closure care. Good housekeeping is continuously emphasized to reduce decontamination and clean-up requirements for closure to the extent possible.

I-5.1 Disposition of Waste and Residue

Any hazardous waste remaining at the start of closure will either be burned in the boilers or disposed of off-site, at a hazardous waste treatment facility.

Any residue in the piping is either LHC or HHC or material that has been mixed with those materials; therefore any residue in the piping will need to be disposed of as hazardous waste subject to the land disposal restrictions (LDR).

Ash removed from Boiler UC will be considered as K022. Ash removed from Boiler UE will only be considered hazardous waste if it exhibits a hazardous characteristic. However, in accordance with 3745-270-40, the ash may not be subject to the LDR and may be disposed of at a permitted hazardous waste landfill.

The table in 3745-270-40 (A)(1) defines the following values for wastes that carry the D001, D018, D035, and K022 waste codes:

<table>
<thead>
<tr>
<th>EPA hazardous waste number</th>
<th>Waste description and treatment/regulatory subcategory</th>
<th>Regulated hazardous constituent</th>
<th>Wastewaters</th>
<th>Nonwastewaters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Common name</td>
<td>CAS number</td>
<td>Concentration(^1) in mg/l, or technology code (^1)</td>
<td>Concentration(^2) in mg/l, or technology code (^2)</td>
</tr>
<tr>
<td>D001 (^8)</td>
<td>Ignitable characteristic wastes, except for the paragraph (A)(1) of rule 3745-51-21 of the Administrative Code high TOC subcategory.</td>
<td>NA</td>
<td>NA</td>
<td>DEACT and meet standards in rule 3745-270-48 of the Administrative Code (^2) or RORGS; or CMBST</td>
</tr>
<tr>
<td></td>
<td>High TOC ignitable characteristic liquid subcategory based on paragraph (A)(1) of rule 3745-51-21 of the Administrative Code greater than or equal to ten percent total organic carbon. (Note: This subcategory consists of nonwastewaters only.)</td>
<td>NA</td>
<td>NA</td>
<td>RORGS; CMBST; or POLYM</td>
</tr>
<tr>
<td>D018 (^8)</td>
<td>Wastes that are TC for Benzene based on the TCLP in SW-846 method 1311.</td>
<td>Benzene</td>
<td>71-43-2</td>
<td>0.14 and meet standards in rule 3745-270-48 of the Administrative Code (^2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.0 and meet standards in rule 3745-270-48 of the Administrative Code (^2)</td>
</tr>
<tr>
<td>D035 (^8)</td>
<td>Wastes that are TC for Methyl ethyl ketone based on the TCLP in SW-846 method 1311.</td>
<td>Methyl ethyl ketone</td>
<td>78-93-3</td>
<td>0.28 and meet standards in rule 3745-270-48 of the Administrative Code (^2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>36.0 and meet standards in rule 3745-270-48 of the Administrative Code (^2)</td>
</tr>
<tr>
<td>Substance</td>
<td>CAS number</td>
<td>TCH</td>
<td>TCLP</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>------------------</td>
<td>-----</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>0.98</td>
<td>10.0</td>
<td></td>
</tr>
<tr>
<td>Acetophenone</td>
<td>96-85-2</td>
<td>0.01</td>
<td>9.7</td>
<td></td>
</tr>
<tr>
<td>Diphenylamine (difficult to distinguish from diphenylthiourea)</td>
<td>122-38-4</td>
<td>0.92</td>
<td>13.6</td>
<td></td>
</tr>
<tr>
<td>Diphenylthiourea (difficult to distinguish from diphenylamine)</td>
<td>86-30-6</td>
<td>0.92</td>
<td>13.6</td>
<td></td>
</tr>
<tr>
<td>Phenol</td>
<td>106-20-5</td>
<td>0.03</td>
<td>6.2</td>
<td></td>
</tr>
<tr>
<td>Chromium (total)</td>
<td>7440-47-3</td>
<td>2.77</td>
<td>0.6 mg/l TCLP</td>
<td></td>
</tr>
<tr>
<td>Nickel</td>
<td>7440-02-0</td>
<td>3.98</td>
<td>11.0 mg/l TCLP</td>
<td></td>
</tr>
</tbody>
</table>

Samples will be collected of the ash that is removed from the boilers. The samples will be analyzed for the constituents listed in the above table. If the sample results indicate that the ash meets the limits, then the ash can be disposed of in a permitted hazardous waste landfill.

The facility will evaluate the waste generated at the time of closure and will use a legal means of disposal that is compatible with the waste.

### I-5.2 Disposition of Equipment

The following discussion provides the regulatory framework for the disposition of the equipment after closure. Haverhill anticipates continuing to operate the tanks and boilers using non-hazardous materials after RCRA closure is complete and approved.

#### I-5.2.1 Tanks, Piping, and Other Fuel Handling Components

This closure plan assumes that, after RCRA closure is complete and approved, Haverhill will continue using the tanks for non-hazardous material storage and to reuse, the metal piping and components of the fuel delivery system to the boilers. Haverhill will apply the standards provided in 3745-51-07(A) and (B). Piping and components that contained hazardous waste will be deemed empty and free of waste by pumping or removing all material from the system with the existing conveyance components and practices.

#### I-5.2.2 Boiler Internals

The internal boiler components that have been in contact with the fuels consist of the inner surface of the refractory and the boiler tubes in the combustion zone. The inner surface of the refractory likely has both ash and fused material adhering to the surface. The boiler tubes in the
combustion zone will also likely have ash adhering to the surface. Any residue (ash or fused material) in Boiler UC is considered K022 as described above. Residue and ash in Boiler UE will only be considered hazardous waste if it exhibits a characteristic.

Any refractory that has ash or fused material that cannot be removed would be considered hazardous debris, based on Section 3745-270-02.

This closure plan assumes that, after RCRA closure is complete and approved, Haverhill will continue to use the boilers for the generation of steam, using non-hazardous fuel.

I-5.2.3 Other Components

Other boiler components, including the boiler shell, stack, and other miscellaneous pieces, have not been in contact with the hazardous waste fuels or residues, and have not been contaminated by spills or leakage. These components will not require decontamination during closure and will continue to be used for ongoing boiler operations after RCRA closure is complete.

I-6 CLOSURE PROCEDURES: [OAC 3745-55-12(B)]

This section of the closure plan describes the specific step-by-step procedures to be followed in closing the hazardous waste units at the facility. Specifically, it addresses inventory removal; disposal or decontamination of all related equipment, structures, and residuals; and the closure procedures for each major type of the permitted units: tanks and boilers. Minor equipment (i.e.: piping and pumps) are discussed within each major type of equipment.

I-6.1 Storage Tank Closure

I-6.1.1 Inventory Removal

To the extent possible, at closure, the plant will stop filling the storage tanks and will process the waste stored in the tanks through the boilers in accordance with the closure schedule described in Section I-4. The last quantity of hazardous waste will be consumed in the on-site boilers or disposed.

I-6.1.2 Decontamination

In order to safely clean and decommission the tanks and ancillary systems, the following tasks will be performed during the closure activities:

- Clean the concrete secondary containment dikes by dry sweeping.
- Seal any cracks in the containment dike.
- Remove any excess material from the tank.
- Decontaminate the tank interior, using one of the following decontamination methods (steam cleaning, detergent washing, grit-blasting, scarification, or vacuuming).
- Decontaminate all appurtenant piping and pumping equipment.
- Transport/properly dispose of all waste material (rinseate, PPE, etc.) generated during the decontamination process.

The pumps and piping associated with the tanks will be emptied so they can be reused, recycled, or disposed.

The plant may select one or more of many cleaning and decontamination methods to remove any remaining hazardous wastes and to clean the tanks, equipment, and containment, as necessary. The methods may include steam cleaning; pressure washing; detergent washing or solvent washing; grit-blasting; scarification; vacuuming; mechanical scraping; or other similar means.

Haverhill anticipates that, after decontamination, the tanks and associated equipment will be used for the storage and handling of other non-RCRA-regulated industrial chemicals. In accordance with section 3.10 of Ohio EPA closure guidance, if the equipment will be used for industrial uses or recycled, it may not require cleaning to the level of established decontamination standards.

If Haverhill decides to use the equipment for other purposes after RCRA closure, and these purposes would require additional cleaning, then Haverhill will submit a revised closure plan as a permit modification that will further describe additional decontamination methods and any applicable cleanup standards.

Rinsates generated during closure will be recycled into other plant processes if possible. If it is not possible to recycle the rinsates, they will be characterized as to whether they exhibit a hazardous characteristic or if they must be considered a “listed” hazardous waste. Based on the characterization, the rinsates will either be manifested and shipped off site for treatment/disposal as a hazardous waste, or disposed of as a non-hazardous material. If detergent washing is used, the area surrounding the equipment or containment to be decontaminated will be prepared to capture the washing and rinse liquids and prevent them from reaching the ground surface.
Haverhill records the types of waste stored in each unit; therefore, the specific analytical parameters for each unit will depend on the waste(s) stored in the unit. Table I-3 summarizes the analytical parameters and analytical methods used in analyzing the final rinseate and soil samples (if necessary) for the known constituents from each unit.

**TABLE I-3. ANALYTICAL PARAMETERS AND METHODS**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Constituent</th>
<th>Preparation Method (SW 846)</th>
<th>Analytical Method (SW-846)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ignitibility</td>
<td>NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metals and Chlorine</td>
<td>Antimony</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Arsenic</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Barium</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Beryllium</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cadmium</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chromium</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lead</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Silver</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Thallium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mercury</td>
<td></td>
<td>1311</td>
<td>7470A</td>
</tr>
<tr>
<td>Total Chlorine/Chloride</td>
<td></td>
<td>SW-846 9075 or ASTM D4208</td>
<td>Method 9075 (XRF) or 9056 (IC)</td>
</tr>
<tr>
<td>Volatile Organics</td>
<td>Acetone</td>
<td></td>
<td>5030B/5035</td>
</tr>
<tr>
<td></td>
<td>Benzene</td>
<td></td>
<td>8260b</td>
</tr>
<tr>
<td></td>
<td>n-Butylbenzene</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>sec-Butylbenzene</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>tert-Butylbenzene</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ethylbenzene</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Isopropylbenzene</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>p-Isopropyltoluene</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Methylene Chloride</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>n-Propylbenzene</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Styrene</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tetrachloroethene</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Toluene</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1,2,4-Trimethylbenzene</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>m- &amp; p-Xylene</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE I-3. ANALYTICAL PARAMETERS AND METHODS (CONTINUED)

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Constituent</th>
<th>Preparation Method (SW 846)</th>
<th>Analytical Method (SW-846)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semivolatile Organs</td>
<td>Acetophenone</td>
<td>3540/3541</td>
<td>8270d</td>
</tr>
<tr>
<td></td>
<td>Aniline</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bis(2-Chloroethyl) Ether</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bis(2-Chloroisopropyl) Ether</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>para-para bis-phenol A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ortho-para bis-phenol A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>p-Chloro-m-Cresol</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1,2-Dichlorobenzene</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1,3-Dichlorobenzene</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1,4-Dichlorobenzene</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2,4-Dimethylphenol</td>
<td>3540/3541</td>
<td>8270d</td>
</tr>
<tr>
<td></td>
<td>2,4-Dinitrotoluene</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diphenylamine</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2-Methylphenol</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$\alpha$-Methyl Styrene</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3-Nitroaniline</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4-Nitrophenol</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>n-Nitrosodiphenylamine</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pentachlorophenol</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Phenol</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Phenolic Polymers</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1,2,4-Trichlorobenzene</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cumyl Phenol</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I-6.1.3 Soil Sampling

If a spill or leak occurred and a failure of the secondary containment was evident concurrent with the spill or leak, or if there is any visible indication that a release may have occurred which could have impacted soil or water, Haverhill will perform soil sampling in accordance with Attachment I-4 to evaluate the possible impact to soils. Samples will be analyzed for the constituents listed in Table I-3.

I-6.1.4 Disposal

As described above, after being cleaned, the tanks, piping and other metal components may be reused, or they may be recycled without being considered as a hazardous waste.

I-6.1.5 Remedial Activities

If contamination is found and possible remediation of environmental media needs to be considered, Haverhill will submit a more detailed sampling plan as a revision to this Closure Plan and as a permit modification, in accordance with OAC 3745-55-12(c). The sampling plan will describe the sampling protocols, constituents to be analyzed, analytical methods, quality
assurance/quality control procedures, and clean-up standards that will be compared against the sampling results. Following plan approval, sample(s) will be collected from each area that may require remediation.

If remediation is required, Haverhill will submit an amendment to the closure plan that will cover remediation under OAC 3745-55-12(C) and (D) for approval by Ohio EPA at that time.

If Haverhill can provide documentation that no releases have been made to the secondary containment or document that if releases have occurred they have been removed and the affected areas decontaminated, and that no failures to the secondary containment existed when the release occurred, then further decontamination of the secondary containment may not be required. The registered engineer described above will make the assessment of whether or not additional decontamination is required.

I-6.2 Boiler Closure

I-6.2.1 Inventory Removal
As described above, to the extent possible, Haverhill will destroy all hazardous waste on-site in the boilers. The last quantity of hazardous waste will be removed by burning in the boilers or by disposal.

All ash deemed to be hazardous waste will be removed from the firebox by dry vacuuming or other mechanical means.

I-6.2.2 Decontamination
After the hazardous waste is removed from the piping and boilers, they will be decontaminated using one of the decontamination methods (steam cleaning, detergent washing, grit-blasting, scarification, vacuuming, or other equivalent means) mentioned in I-6.1.2.

I-6.2.3 Disposal

Refractory
As described above, any refractory that has ash or fused material on it that cannot be removed should be considered as hazardous debris as defined in 3745-51-03. Table 1 of 3745-270-45 provides information related to the treatment standards for hazardous debris. Since the refractory surfaces that are contaminated with the hazardous waste have been subjected to the thermal
destruction listed in Table 1 of 3745-270-45, the refractory surfaces meet the exclusion listed in 3745-51-03(F)(1). Therefore, the refractory can be landfilled as a hazardous waste that meets the land disposal restriction without further cleaning.

I-7 CLOSURE OF CONTAINERS: [OAC 3745-55-78; OAC 3745-55-12]
Not applicable; Haverhill’s container storage areas are generator status and not permitted.

I-7.1 Other Closure Requirements
The Haverhill site does not include the following management units: Waste Piles: OAC 3745-56-58; Surface Impoundments via Waste Removal: OAC 3745-56-28; Incinerators: OAC 3745-57-51; Landfills: OAC 3745-56-80; Land Treatment Facilities: OAC 3745-56-80; and Miscellaneous Units: §270.23(a)(2), OAC 3745-57-91 through 93. Therefore, closure requirements associated with those units do not apply.

I-8 PERSONNEL SAFETY AND FIRE PREVENTION
All closure activities must comply with plant policies and procedures that govern worker safety, contractor safety, and obtaining and using safe operating permits. These procedures may be found in the plant’s operating procedures (refer to section g: contingency plan for more details regarding the plant’s operating procedures. Haverhill anticipates that a specific Health and Safety Plan will be prepared prior to the initiation of actual closure activities and that the work will be managed according to that plan.

I-9 CERTIFICATION OF CLOSURE: [OAC 3745-55-16; 3745-54-28]
The independent professional engineer and/or his/her representative will be on site during all critical closure activities shown in Table I-2. Haverhill will notify the Ohio EPA in writing prior to each critical closure activity.

Within 60 days of completion of the closure of any hazardous waste management unit on the facility, Haverhill will submit to the Director of OEPA a certification signed by both a corporate official and an independent professional engineer stating that the closure has been conducted in accordance with the approved closure plan. Documentation supporting the engineer’s certification will be maintained at the Haverhill Plant, and furnished to the Director until the Director releases Haverhill from the financial assurance requirements for closure.
I-10 CLOSURE COST ESTIMATE: [OAC 3745-50-44; 3745-55-42]

The cost estimate to implement this Closure Plan includes the activities described in the Closure Procedures discussed above:

- Removal of waste inventory;
- Decontamination;
- Disposal of wastes, residues and materials; and
- The oversight and certification of closure.

To provide a conservatively high, worst-case estimate of the closure costs, the plant will assume that the tanks are full and the boilers are not able to destroy the remaining inventory, so it must be shipped off-site for disposal at a commercial Hazardous Waste Combustor. Basic assumptions include:

- Third-party operators will implement the closure plan.
- Major on-site equipment and structures will be functional.
- Necessary off-site reclamation facilities are within 200 miles of the facility.
- Catastrophic release causing widespread degradation has not occurred.
- Operating records delineating the contents of the waste management units are available.

Closure cost estimate calculations are provided in Attachment I-5 for each hazardous waste management unit. A summary of the estimated closure cost for each unit is presented in Table I-4. The estimates in Table I-4 are provided in 2012 dollars.

<table>
<thead>
<tr>
<th>TABLE I-4. CLOSURE COST ESTIMATE SUMMARY(^{(1)})</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2012 DOLLARS)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unit</th>
<th>Closure Cost Estimate ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tank 2003-F</td>
<td>163,793</td>
</tr>
<tr>
<td>Tank 2104-F</td>
<td>305,768</td>
</tr>
<tr>
<td>Tank 2105-F</td>
<td>338,263</td>
</tr>
<tr>
<td>Sub-Total for Tanks</td>
<td>807,815</td>
</tr>
<tr>
<td>Boiler 2001-UC</td>
<td>79,534</td>
</tr>
<tr>
<td>Boiler 2001-UE</td>
<td>46,225</td>
</tr>
<tr>
<td>Sub-Total for Boilers</td>
<td>125,759</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Total Closure Cost</td>
<td>933,574</td>
</tr>
</tbody>
</table>

(1) Closure cost estimate calculations are included for the active units only.

Annual updates to the closure cost estimates will be provided as required by OAC 3745-55-42(B). The closure cost estimate will be kept on file at the Haverhill plant, and will be revised whenever changes in the closure activities or the closure plan increase the cost of closure. If, during a calendar year, the closure cost estimate is not affected by changes in closure activities, the closure cost estimate will be adjusted to reflect changes brought about by economic inflation. Adjustments due to inflation will be calculated and submitted as a Class 1 permit modification at the end of the first quarter of each year.

I-11  **FINANCIAL ASSURANCE MECHANISM FOR CLOSURE:** OAC 3745-50-44; 3745-55-43; 3745-55-51

Haverhill will use one of the allowable instruments to demonstrate financial responsibility for closure of its hazardous waste management units and liability coverage. The instrument Haverhill uses is clearly specified in Attachment I-6. The information in Attachment I-6 will be updated on an annual basis for the duration of the permit.
I-12 **POST-CLOSURE PLAN/CONTINGENT POST-CLOSURE**: OAC 3745-50-44; 3745-50-44(c)(3); 3745-50-44(c)(4); 3745-50-44(c)(5); 3745-50-44(c)(7); 3745-50-44(c)(9); 3745-55-18; 3745-55-97; 3745-55-97; 3745-56-28; 3745-56-28; 3745-56-58; 3745-56-58; 3745-56-80; 3745-57-10; 3745-57-93

A post closure plan will not be needed for the tanks or the boilers because they will be clean closed and no post-closure care will be required.

I-13 **POST-CLOSURE COST ESTIMATE**: OAC 3745-50-44; 3745-55-44

A post closure cost estimate will not be needed for the tanks or the boilers because they will be clean closed and no post-closure care will be required.

I-14 **FINANCIAL ASSURANCE MECHANISM FOR POST-CLOSURE CARE**: OAC 3745-50-44; 3745-55-45; 3745-55-51

A post closure cost estimate will not be needed for the tanks or the boilers because they will be clean closed and no post-closure care will be required.

I-15 **LIABILITY REQUIREMENTS**: OAC 3745-50-44; 3745-55-47

The Haverhill Plant has selected the financial test to demonstrate financial responsibility for closure of its hazardous waste management units and liability coverage. An updated copy of the required documentation is included in Attachment I-6.

I-16 **PHENOLIC WASTEWATER TREATMENT SYSTEM**

This unit has been RCRA closed and is no longer in this permit application.
Attachment I-1

Location Map
Attachment I-2

Site Plan
Attachment I-3

Maximum Waste Capacity Calculations
CALCULATIONS OF MAXIMUM WASTE INVENTORY

Tank 2003-F

Dimensions: 32.67 feet inside diameter
32.00 feet high

Calculation:

Total Volume = \[ \frac{3.14 \times (32.67 \text{ feet})^2 \times 32 \text{ feet} \times 7.48 \text{ gallons}}{4 \text{ feet}^3} \]

= \[ \frac{3.14 \times (1067.33 \text{ feet}^2) \times 32 \text{ feet} \times 7.48 \text{ gallons}}{4 \text{ feet}^3} \]

Total Volume = 200,548 gallons
Tank 2003-F
CALCULATIONS OF MAXIMUM WASTE INVENTORY

Tank 2104-F

Dimensions: 32.67 feet inside diameter
32.00 feet high

Calculation:

Total Volume = \( \frac{3.14 \times (32.67 \text{ feet})^2 \times 32 \text{ feet} \times 7.48 \text{ gallons}}{4} \)

= \( \frac{3.14 \times (1067.33 \text{ feet}^2) \times 32 \text{ feet} \times 7.48 \text{ gallons}}{4} \)

Total Volume = 200,548 gallons
Tank 2104-F

Tank 2105-F

Dimensions: 36.33 feet inside diameter
32.25 feet high

Calculation:

Total Volume = \( \frac{3.14 \times (36.33 \text{ feet})^2 \times 32.25 \text{ feet} \times 7.48 \text{ gallons}}{4} \)

= \( \frac{3.14 \times (1320 \text{ feet}^2) \times 32.25 \text{ feet} \times 7.48 \text{ gallons}}{4} \)

Total Volume = 249,962 gallons
Tank 2105-F
Attachment I-4

Soil Sampling Plan
Attachment I-4 Soil Sampling Plan

I. Objectives: Soil Sampling

1. Project/Task Description/Overview
   Haverhill is required to sample, analyze, and evaluate the soil at the plant in accordance with release investigation and remediation.

2. What Information or Analysis are Needed?

   Sample Matrix – Aqueous, Soil, Sludge, etc.
   Parameter – What chemical or property analyzing for
   Detection Level – What is the needed detection level (1/mg/kg, 1mg/l, 1 ug/kg, 1ug/l, etc)
   Analytical Method – What EPA method is required

<table>
<thead>
<tr>
<th>Sample Matrix</th>
<th>Parameter</th>
<th>Detection Level</th>
<th>Analytical Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>Various</td>
<td>Various</td>
<td>Method 6010, 7471, 8260, 8270</td>
</tr>
</tbody>
</table>

II. Sampling Strategy and Specifications:

1. Sampling Strategy: Soil sampling is performed when the contamination level of the soil is unknown. The decision to sample the soil is based on personnel knowledge and release history.

2. Type of Sample: The sample collected is a grab or composite sample, depending on the analysis being performed.

3. Volume of Sample required: The volume of the jar depends upon the analyses to be performed and shall be coordinated with the laboratory performing the analysis.

4. Type of Sample Container: Samples are placed in precleaned glass jars with Teflon lined lids.

5. Sample Collection Method: Samples are collected from trowel, core sampler or similar apparatus.

6. Field Sample Preparation Requirements: Field sample preparation includes obtaining sample jars, coolers, packing materials, and sampling equipment.

III. Quality Assurance and Quality Control:

1. Blanks and Additional Samples
   1.1. Field Blank (bias due to field or sampling conditions): N/A
   1.2. Equipment Blanks or Sampling Blanks (Bias due to equipment used): N/A
   1.3. Trip Blanks (bias due to sample transportation and handling): Trips blanks are grabbed if applicable to the sampling methodology.
   1.4. Duplicate Samples (Variability of non-homogeneous samples or laboratory precision on homogeneous samples): N/A
1.5. Spiked Samples (Laboratory Accuracy): N/A

1.6. Field Split Samples (Laboratory precision or reproducibility): N/A

2. Specific Sampling or Field Equipment Decontamination Procedures: New bottles are used for each sample. Reusable sampling equipment will be thoroughly washed, rinsed and rinsed with deionized water.

IV. Pre-Sampling Event Planning

1. Document specific sampling and collection procedures:
   1.1. Haverhill’s Environmental Department will determine if soil analysis will be necessary.
   1.2. Sampling of soil is performed according to protocol similar to that outlined in EPA’s Test Methods for Evaluating Solid Waste (SW-846) and Methods for Chemical Analysis of Water and Wastes (EPA600/4-79-020).
   1.3. Soils are sampled from undisturbed areas as much as practicable.
   1.4. Samples are placed in precleaned glass jars with plastic or Teflon lined lids.
   1.5. The sampler shall fill out a written chain of custody listing sample identification numbers, sample name, time and date collected accompanies the samples.
   1.6. A bound blank book shall be maintained in the plant Environmental Office.
      1.6.1. Any samples sent to an off-site laboratory for the purpose of environmental compliance or assessment shall be recorded in the log book.
      1.6.2. Information in the sample log book shall be sufficient to allow another person to return to the sampling site and reconstruct the sampling in the absence of the original collector.
   1.7. The sampler shall prepare the samples to be transported according to DOT requirements.
   1.8. After the sample courier leaves the site, copies of the completed Chain of Custody (COC) forms shall be filed.
   1.9. The Environmental Department shall maintain the file of all COCs in the analytical data file.

2. Sampling Equipment Needed: The sampling equipment needed can vary depending on the physical state of the soil and the analysis being performed. Sampling equipment may include trowel, core sampler or similar apparatus. All samples are placed in precleaned glass jars with Teflon lined lids. Volumes sizes will vary.

3. Field Equipment Needed: Field equipment may include trowel, core sampler or similar apparatus to complete this sample.

4. Sampling &/or Field Equipment Decontamination Procedures: The sampler uses a precleaned or new jar each time a sample is taken. New equipment will be used each time a sample is collected where possible. Other equipment will be washed thoroughly, rinsed and then rinsed again with DI water for each sample.

5. Sample types, numbers, volumes, containers, labels: Soil samples can vary depending upon the type of analysis being performed. Regardless of the type of sample, the jars are labeled properly, the log book in the Environmental Department is filled out, and the (COC) is completed.

6. Sample preservatives and holding times: As per sampling methodology.

7. Sample Security and Shipping procedures: Sample security is provided by the COC completed by the person performing the sampling. Shipping procedures will vary depending upon laboratory and type of analysis.

8. Sampling Event Documentation
   8.1. Person performing the sampling: The person performing the sampling can vary however they should be an environmental department member or in direct supervision of an environmental department member.
8.2. **Weather Conditions and any other Significant Observations:** Observations are noted in the log book. Conditions such as odor or appearance are recorded.

8.3. **Specific Analytical Tests Sampling for:** The specific analytes being tested are determined by the situation driving the soil sampling and the appropriate analysis that needs to be performed. Depending upon the sample, EPA's Test Methods for Evaluating Solid Waste (SW-846) and Methods for Chemical Analysis of Water and Wastes (EPA600/4-79-020) are used.

8.4. **Sample Identification, Location, Date, Time, Type (grab or composite), and Appearance:** Sample name, date, time, type of sample, appearance, suspected contaminants, etc. are filled out on the sample log book.

8.5. **Number of Containers, volumes, preservatives:** Number of containers, volumes, and preservatives can vary depending upon the type of analysis. All analyses are performed within the specifications of the EPA's Test Methods for Evaluating Solid Waste (SW-846) and Methods for Chemical Analysis of Water and Wastes (EPA600/4-79-020).

8.6. **Calibration of field equipment:** N/A

8.7. **Field Measurements (pH, Temperature, Conductivity, etc.):** N/A

8.8. **Field Equipment Decontamination:** The sampler uses a precleaned or new jar each time a sample is taken. New equipment will be used each time a sample is collected where possible. Other equipment will be washed thoroughly, rinsed and then rinsed again with DI water after each sample. Disposable equipment will be discarded properly.

8.9. **Sampling Equipment used:** The sampling equipment needed can vary depending on the physical state of the waste and the analysis being performed. Any waste samples in the form of a liquid shall be collected with a drum thief. Any solid waste samples shall be collected with a trowel. All samples are placed in a precleaned glass jars with Teflon lined lids. Volumes sizes will vary.

8.10. **Sampling Equipment Decontamination:** New sampling equipment is used for each sample taken.

8.11. **Descriptions of any variances of standard sampling procedures or protocols:** Resampling will take place if sample jars become broken during transport.

9. **Sampling documentation method used (Field notebook, Pre-printed form, field electronic device such as Marlin, lap-top, palm pilot, etc.):** The sampler uses a label and a Chain of Custody.

10. **Chain of Custody procedures (Use of Sample Seals, Cooler Seals, forms used, how to fill out forms):** The chain of custody is filled out by the sampler once the sampling has been completed.
Attachment I-5

Closure Cost Estimate Calculation
CLOSURE COST ESTIMATE

1.0  RCRA STORAGE TANKS
2.0  BIF RULE REGULATED BOILERS
3.0  INFLATION ADJUSTED COST ESTIMATE
1.0 RCRA STORAGE TANKS

The next three pages of this attachment show the closure cost estimate for the three RCRA storage tanks located at the Haverhill, Ohio facility. The closure cost estimate was developed in 2012, based on recent tank cleaning events at the plant. The numbers presented here are not inflation adjusted values carried over from the previous RCRA permit.
ESTIMATED CLOSURE COST
FOR TANK 2003-F

- Removal of Maximum Waste Inventory
  1 Laborer $54/hr. x 40 hrs. = 2,160

- Disconnecting Piping
  2 Pipe fitters $54/hr. x 10 hrs. = 1,080

- Decontamination of Piping (Steam Purge)
  2 Laborers $54/hr. x 24 hrs. = 2,592

- Decontamination/Clean Tank
  2 Laborers $54/hr. x 10 hrs. = 1,080

- Clean and Seal Secondary Containment
  2 Laborers $54/hr. x 10 hrs. = 1,080

- Sampling and Analysis
  1 laborer $54/hr. x 8 hrs. = 432
  Analysis $500/sample x 4 = 2,000

- Light Hydrocarbon Waste & Residual Disposal
  199,000 gallons LHC Oil @$0.611/gallon (transportation included) = 121,589
  1,000 gallons LHC Sludge @$0.611/gallon (transportation included) = 611
  1,000 gallons Wash & Rinse Water @$0.611/gallon (transportation included) = 611
  Disposal of Contaminated Clothing and Debris = 1,000

- Project Foreman
  1 Foreman $56/hr. x 64 hrs. = 7,168

- Certification by Professional Engineer
  = 7,500

Subtotal $148,903

Contingency (10%) 14,890

TOTAL $163,793
ESTIMATED CLOSURE COST
FOR TANK 2104-F

- Removal of Maximum Waste Inventory (HHC Liquid)
  1 Laborer $54/hr. x 40 hrs. = 2,160

- Removal of Maximum Waste Inventory (HHC Residual Sludge)
  3 Laborer $54/hr. x 40 hrs. = 6,480
  Equipment Rental = 75,000

- Piping & Pump Connection/Disconnection for Circulation of Solvent in Circulation and Tank Lines for Decontamination
  3 Pipe fitters $54/hr. x 40 hrs. = 6,480

- Decontamination/Cleaning of Tank and Piping
  Pipe Cleaning (Circulation of Solvent through Recirculation Line, Steam & Flush)
  2 Laborer $54/hr. x 40 hrs. = 4,320
  Solvent 5,000 gallons@0.70/gallon = 7,000
  Cleaning of Internal Tank Surfaces (Scarification)
  5 Laborer $54/hr. x 80 hrs. = 21,600
  Clean and Seal Secondary Containment
  2 Laborers $54/hr. x 10 hrs. = 1,080

- Additional Decontamination of Piping and Equipment
  3 Laborers $54/hr. x 60 hrs. = 6,480

- Sampling and Analysis
  1 laborer $54/hr. x 8 hrs. = 432
  Analysis $500/sample x 4 = 2,000

- Disposal of Waste Materials (transportation included in values)
  Heavy Hydrocarbon Waste (185,500 gallon @ 0.591/gallon) = 109,631
  Heavy Hydrocarbon Waste Residual Sludge (14,500 gallon @ 0.591/gallon) = 8,570
  Cleaning Agent Disposal (5,000 gallon @ 0.591/gallon) = 2,955
  Contaminated Wash Water Disposal (5,000 gallon @ 0.591/gallon) = 2,955
  Contaminated Materials & Protective Clothing Disposal = 1,000

- Project Foreman
  1 Foreman $56/hr. x 220 hrs. = 12,320

- Certification by Professional Engineer
  = 7,500

Subtotal $277,963

Contingency (10%) = 27,796

TOTAL $305,758
ESTIMATED CLOSURE COST
FOR TANK 2105-F

- Removal of Maximum Waste Inventory (HHC Liquid)
  1 Laborer $54/hr. x 40 hrs. = 2,160

- Removal of Maximum Waste Inventory (HHC Residual Sludge)
  3 Laborer $54/hr. x 40 hrs. = 6,480
  Equipment Rental = 75,000

- Piping & Pump Connection/Disconnection for Circulation of Solvent in Circulation and Tank Lines for Decontamination
  3 Pipe fitters $54/hr. x 40 hrs. = 6,480

- Decontamination/Cleaning of Tank and Piping
  Pipe Cleaning (Circulation of Solvent through Recirculation Line, Steam & Flush)
  2 Laborer $54/hr. x 40 hrs. = 4,320
  Solvent 5,000 gallons @ 0.70/gallon = 7,000

  Cleaning of Internal Tank Surfaces (Scarification)
  5 Laborer $54/hr. x 80 hrs. = 21,600

  Clean and Seal Secondary Containment
  2 Laborers $54/hr. x 10 hrs. = 1,080

- Additional Decontamination of Piping and Equipment
  3 Laborers $54/hr. x 60 hrs. = 6,480

- Sampling and Analysis
  1 laborer $54/hr. x 8 hrs. = 432
  Analysis $500/sample x 4 = 2,000

- Disposal of Waste Materials (transportation included in values)
  Heavy Hydrocarbon Waste (232,000 gallon @ 0.591/gallon) = 137,112
  Heavy Hydrocarbon Waste Residual Sludge (18,000 gallon @ 0.591/gallon) = 10,638
  Cleaning Agent Disposal (5,000 gallon @ 0.591/gallon) = 2,955
  Contaminated Wash Water Disposal (5,000 gallon @ 0.591/gallon) = 2,955
  Contaminated Materials & Protective Clothing Disposal = 1,000

- Project Foreman
  1 Foreman $56/hr. x 220 hrs. = 12,320

- Certification by Professional Engineer
  = 7,500

Subtotal $307,512

Contingency (10%) 30,751

TOTAL $338,263
2.0 BIF RULE REGULATED BOILERS

The next page of this attachment shows the closure cost estimate for the two RCRA boilers located at the Haverhill, Ohio facility. The closure cost estimate was developed in 2012, based on recent boiler closure events at the plant. The numbers presented here are not inflation adjusted values carried over from the previous RCRA permit.
## BOILER CLOSURE COST ESTIMATE

(2012 DOLLARS)

<table>
<thead>
<tr>
<th>Description</th>
<th>Boiler 2001-UC</th>
<th>Boiler 2001-UE</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Disconnecting Pipe/Blinding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Pipefitters @ $54.00/hour × 16 hours</td>
<td>= $2,624</td>
<td>= $2,624</td>
</tr>
<tr>
<td>1 Foreman @ $56.00/hour × 16 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Boiler Decontamination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Laborers @ $54.00/hour × 48 hours</td>
<td>= $10,372</td>
<td>= $10,372</td>
</tr>
<tr>
<td>1 Foreman @ $56.00/hour × 48 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Pressure Cleaning @ $2,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Refractory Removal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Laborers @ $54.00/hour × 48 hours</td>
<td>= $10,464</td>
<td>0</td>
</tr>
<tr>
<td>1 Foreman @ $56.00/hour × 48 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Sampling and Analysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Geologist @ $175.00/hour × 16 hours</td>
<td>= $6,200</td>
<td>= $6,200</td>
</tr>
<tr>
<td>4 Rinsate Samples @ $800.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Treatment of Wastewater and Rinsate</td>
<td>$25,000</td>
<td>$12,500</td>
</tr>
<tr>
<td>20,000 Gallons @ $1.25/gallon (E Boiler 10,000 Gallons)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Certification by Professional Engineer</td>
<td>$7,500</td>
<td>$7,500</td>
</tr>
<tr>
<td>* Disposal of Refractory and Contaminated Clothing</td>
<td>$7,000</td>
<td>$1,000</td>
</tr>
<tr>
<td>Subtotal</td>
<td>$69,160</td>
<td>$40,196</td>
</tr>
<tr>
<td>Contingency (15%)</td>
<td>$10,374</td>
<td>$6,029</td>
</tr>
<tr>
<td>Boiler TOTAL</td>
<td>$79,534</td>
<td>$46,225</td>
</tr>
<tr>
<td>OVERALL TOTAL</td>
<td></td>
<td>$125,759</td>
</tr>
</tbody>
</table>
3.0 INFLATION ADJUSTED COST ESTIMATE

The following table shows the total closure cost estimate for the plant in 2012 dollars. Immediately following the 2012 total cost estimate are spaces that will be completed in future annual updates, using US Government factors to provide an inflation-adjusted total cost estimate for the plant, for the remaining years of the permit, after 2012.
## INFLATION ADJUSTED TOTAL CLOSURE COST ESTIMATE
(Cost Estimate Updated Annually between 2013 and 2021)

<table>
<thead>
<tr>
<th>Year</th>
<th>Inflation Adjustment Factor</th>
<th>Unit</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>1.00 Base Year of Estimate</td>
<td>2003-F</td>
<td>$163,793</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2104-F</td>
<td>$305,758</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2105-F</td>
<td>$338,263</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2001-UC</td>
<td>$79,534</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2001-UE</td>
<td>$46,225</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>$933,574</td>
</tr>
<tr>
<td>2013</td>
<td>1.017(^1)</td>
<td></td>
<td>$949,445</td>
</tr>
<tr>
<td>2014</td>
<td>1.014(^2)</td>
<td></td>
<td>$962,737</td>
</tr>
<tr>
<td>2015</td>
<td>1.014(^3)</td>
<td></td>
<td>$976,215</td>
</tr>
<tr>
<td>2016</td>
<td>1.010(^4)</td>
<td></td>
<td>$985,977</td>
</tr>
<tr>
<td>2017</td>
<td>1.013(^5)</td>
<td></td>
<td>$998,795</td>
</tr>
<tr>
<td>2018</td>
<td>1.018(^6)</td>
<td></td>
<td>$1,016,773</td>
</tr>
<tr>
<td>2019</td>
<td>Later</td>
<td></td>
<td>Later</td>
</tr>
<tr>
<td>2020</td>
<td>Later</td>
<td></td>
<td>Later</td>
</tr>
<tr>
<td>2021</td>
<td>Later</td>
<td></td>
<td>Later</td>
</tr>
</tbody>
</table>

\(^1\) The 2013 inflation factor was obtained from the Ohio EPA web-site [http://cpa.ohio.gov/dmwm/Home/HazFinanceAssurance.aspx](http://cpa.ohio.gov/dmwm/Home/HazFinanceAssurance.aspx). The value for 2013 is 1.7%.

\(^2\) The 2014 inflation factor was obtained from the Ohio EPA web-site [http://epa.ohio.gov/dmwm/Home/HazFinanceAssurance.aspx](http://epa.ohio.gov/dmwm/Home/HazFinanceAssurance.aspx). The value for 2014 is 1.4%.

\(^3\) The 2015 inflation factor was obtained from the Ohio EPA web-site [http://epa.ohio.gov/dmwm/Home/HazFinanceAssurance.aspx](http://epa.ohio.gov/dmwm/Home/HazFinanceAssurance.aspx). The value for 2015 is 1.4%.

\(^4\) The 2016 inflation factor was obtained from the Ohio EPA web-site [http://epa.ohio.gov/derr/hazwaste/financial_assurance.aspx](http://epa.ohio.gov/derr/hazwaste/financial_assurance.aspx). The value for 2016 is 1.00%

\(^5\) The 2017 inflation factor was obtained from the Ohio EPA web-site [http://epa.ohio.gov/derr/hazwaste/financial_assurance.aspx](http://epa.ohio.gov/derr/hazwaste/financial_assurance.aspx). The value for 2017 is 1.3%

\(^6\) The 2018 inflation factor was obtained from the Ohio EPA web-site [http://cpa.ohio.gov/derr/hazwaste/financial_assurance.aspx](http://cpa.ohio.gov/derr/hazwaste/financial_assurance.aspx). The value for 2018 is 1.8%.
Please Note: Pages of this application which contain financial assurance mechanism details specific to policy or account numbers have been removed from this web-available version of the document.

To review redacted copies of these removed pages, please contact DMWM's record management staff at 614-644-2621.

Thank you.
Attachment I-5

Closure Cost Estimate Calculation
<table>
<thead>
<tr>
<th>REPORT</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent Auditors' Report</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FINANCIAL STATEMENTS</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance Sheet as of December 31, 2017</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Statement of Income for the year ended December 31, 2017</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Statement of Changes in Member's Equity for the year ended December 31, 2017</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Statement of Cash Flows for the year ended December 31, 2017</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Notes to Financial Statements</td>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>
INDEPENDENT AUDITORS’ REPORT

To the Member
ALTIVIA Petrochemicals, LLC
Houston, Texas

We have audited the accompanying financial statements of ALTIVIA Petrochemicals, LLC (a Delaware limited liability company) (the “Company”), which comprise the balance sheet as of December 31, 2017, and the related statements of income, changes in member’s equity, and cash flows for the year then ended, and the related notes to the financial statements.

Management’s Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors’ Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors’ judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.
Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of ALTIVIA Petrochemicals, LLC as of December 31, 2017, and the results of its operations and its cash flows for the year then ended, in accordance with accounting principles generally accepted in the United States of America.

Houston, Texas
March 27, 2018
ALTIVIA Petrochemicals, LLC
Balance Sheet

December 31, 2017

<table>
<thead>
<tr>
<th>Assets</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current assets</strong></td>
<td></td>
</tr>
<tr>
<td>Accounts receivable trade</td>
<td>$22,787,497</td>
</tr>
<tr>
<td>Due from affiliate</td>
<td>86,280</td>
</tr>
<tr>
<td>Other receivables</td>
<td>433,281</td>
</tr>
<tr>
<td>Inventory</td>
<td>34,952,663</td>
</tr>
<tr>
<td>Prepaid expenses and other</td>
<td>1,887,074</td>
</tr>
<tr>
<td>Prepaid inventory</td>
<td>2,349,133</td>
</tr>
<tr>
<td><strong>Total current assets</strong></td>
<td>62,495,928</td>
</tr>
<tr>
<td><strong>Property and machinery</strong></td>
<td></td>
</tr>
<tr>
<td>Land</td>
<td>163,720</td>
</tr>
<tr>
<td>Machinery</td>
<td>2,250,000</td>
</tr>
<tr>
<td>Equipment</td>
<td>426,537</td>
</tr>
<tr>
<td>Vehicles</td>
<td>86,486</td>
</tr>
<tr>
<td><strong>Total property and machinery</strong></td>
<td>2,926,743</td>
</tr>
<tr>
<td>Less: accumulated depreciation</td>
<td>(377,121)</td>
</tr>
<tr>
<td><strong>Property and machinery, net</strong></td>
<td>2,549,622</td>
</tr>
<tr>
<td><strong>Other assets</strong></td>
<td></td>
</tr>
<tr>
<td>Security deposits</td>
<td>530,000</td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td>$65,575,550</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Liabilities and member’s equity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current liabilities</strong></td>
<td></td>
</tr>
<tr>
<td>Accounts payable trade</td>
<td>7,595,725</td>
</tr>
<tr>
<td>Due to affiliate</td>
<td>2,017,619</td>
</tr>
<tr>
<td>Accrued liabilities</td>
<td>2,653,207</td>
</tr>
<tr>
<td>Line of credit</td>
<td>22,081,452</td>
</tr>
<tr>
<td>Note payable - member</td>
<td>6,702,763</td>
</tr>
<tr>
<td><strong>Total current liabilities</strong></td>
<td>41,050,766</td>
</tr>
<tr>
<td><strong>Commitments and contingencies</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Member’s equity</strong></td>
<td>24,524,784</td>
</tr>
<tr>
<td><strong>Total liabilities and member’s equity</strong></td>
<td>$65,575,550</td>
</tr>
</tbody>
</table>

The accompanying notes are an integral part of these financial statements.
## ALTIVIA Petrochemicals, LLC  
### Statement of Income  

For the year ended December 31, 2017

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales, net</td>
<td>$ 246,811,985</td>
</tr>
<tr>
<td>Cost of sales</td>
<td>215,876,164</td>
</tr>
<tr>
<td><strong>Gross profit</strong></td>
<td>30,935,821</td>
</tr>
<tr>
<td><strong>Operating and general and administrative expenses</strong></td>
<td></td>
</tr>
<tr>
<td>Management fees</td>
<td>6,000,000</td>
</tr>
<tr>
<td>License and fees</td>
<td>545,882</td>
</tr>
<tr>
<td>Non-order movement</td>
<td>211,761</td>
</tr>
<tr>
<td>Depreciation</td>
<td>197,121</td>
</tr>
<tr>
<td>Professional fees</td>
<td>416,812</td>
</tr>
<tr>
<td>Travel</td>
<td>168,557</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>105,274</td>
</tr>
<tr>
<td>Supplies</td>
<td>91,558</td>
</tr>
<tr>
<td>Outside lab services</td>
<td>64,402</td>
</tr>
<tr>
<td>Contract labor</td>
<td>38,823</td>
</tr>
<tr>
<td>Rent</td>
<td>30,000</td>
</tr>
<tr>
<td>Dues and subscriptions</td>
<td>27,572</td>
</tr>
<tr>
<td>Vehicles</td>
<td>24,188</td>
</tr>
<tr>
<td>Safety training</td>
<td>17,274</td>
</tr>
<tr>
<td>Repairs and maintenance</td>
<td>15,096</td>
</tr>
<tr>
<td>Trash hauling and waste</td>
<td>14,000</td>
</tr>
<tr>
<td>Marketing</td>
<td>7,538</td>
</tr>
<tr>
<td>Employee expense</td>
<td>5,507</td>
</tr>
<tr>
<td><strong>Total operating and general and administrative expenses</strong></td>
<td>7,981,365</td>
</tr>
<tr>
<td><strong>Operating income</strong></td>
<td>22,954,456</td>
</tr>
<tr>
<td><strong>Other income (expense)</strong></td>
<td></td>
</tr>
<tr>
<td>Other income</td>
<td>95,598</td>
</tr>
<tr>
<td>Interest expense</td>
<td>(1,156,490)</td>
</tr>
<tr>
<td><strong>Income before state income tax expense</strong></td>
<td>21,893,564</td>
</tr>
<tr>
<td><strong>State income tax expense</strong></td>
<td>80,543</td>
</tr>
<tr>
<td><strong>Net income</strong></td>
<td>$ 21,812,921</td>
</tr>
</tbody>
</table>

*The accompanying notes are an integral part of these financial statements.*
ALTIVIA Petrochemicals, LLC  
Statement of Changes in Member’s Equity  

For the year ended December 31, 2017

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance, beginning of year</td>
<td>$14,711,863</td>
</tr>
<tr>
<td>Net income</td>
<td>$21,812,921</td>
</tr>
<tr>
<td>Distributions</td>
<td>$(12,000,000)</td>
</tr>
<tr>
<td>Balance, end of year</td>
<td>$24,524,784</td>
</tr>
</tbody>
</table>

The accompanying notes are an integral part of these financial statements.
ALTIVIA Petrochemicals, LLC
Statement of Cash Flows

For the year ended December 31, 2017

<table>
<thead>
<tr>
<th>Operating activities</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net income</td>
<td>$21,812,921</td>
</tr>
<tr>
<td>Adjustments to reconcile net income to net cash used in operating activities</td>
<td></td>
</tr>
<tr>
<td>Depreciation</td>
<td>197,121</td>
</tr>
<tr>
<td>Interest expense added to note payable - member</td>
<td>565,694</td>
</tr>
<tr>
<td>Change in operating assets and liabilities</td>
<td></td>
</tr>
<tr>
<td>Accounts receivable trade</td>
<td>(3,767,426)</td>
</tr>
<tr>
<td>Other receivables</td>
<td>377,553</td>
</tr>
<tr>
<td>Inventory</td>
<td>(27,214,137)</td>
</tr>
<tr>
<td>Prepaid expenses</td>
<td>(696,826)</td>
</tr>
<tr>
<td>Prepaid inventory</td>
<td>(192,495)</td>
</tr>
<tr>
<td>Security deposits</td>
<td>441,728</td>
</tr>
<tr>
<td>Accounts payable trade</td>
<td>4,882,183</td>
</tr>
<tr>
<td>Due to an affiliate</td>
<td>1,405,486</td>
</tr>
<tr>
<td>Accrued liabilities</td>
<td>1,058,818</td>
</tr>
<tr>
<td>Net cash used in operating activities</td>
<td>(1,129,380)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Investing activities</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase of property and machinery</td>
<td>(488,023)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Financing activities</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net borrowings on line of credit</td>
<td>10,081,452</td>
</tr>
<tr>
<td>Borrowings on note payable - member</td>
<td>7,300,000</td>
</tr>
<tr>
<td>Repayments on note payable - member</td>
<td>(4,000,000)</td>
</tr>
<tr>
<td>Distribution to member</td>
<td>(12,000,000)</td>
</tr>
<tr>
<td>Net cash provided by financing activities</td>
<td>1,381,452</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Net change in cash and cash equivalents</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(235,951)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cash and cash equivalents, beginning of year</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>235,951</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cash and cash equivalents, end of year</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$</td>
</tr>
</tbody>
</table>

The accompanying notes are an integral part of these financial statements.
NOTE 1: ORGANIZATION AND NATURE OF OPERATIONS

Organization

ALTIVIA Petrochemicals, LLC (the "Company") is a Delaware limited liability company formed in September 2015. The Company purchased the assets of Haverhill Chemicals, LLC out of bankruptcy during November 2015. Management of the Company includes individuals who are experienced within the industrial chemical manufacture and distribution of chemicals industry. The Company is headquartered in Houston, Texas and is engaged in manufacturing and marketing Phenol, Acetone and Alpha-Methyl Styrene (AMS) to industrial customers throughout the United States and Canada. The Company’s manufacturing plant is located in Haverhill, Ohio where products are shipped to customers via barge, railcars and trucks.

NOTE 2: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Cash and Cash Equivalents

Cash and cash equivalents include cash in banks and all highly liquid investments with initial maturities of three months or less at the time of purchase. The Company’s cash management system provides for the daily replenishment of their bank account for check clearing requirements. Consequently, outstanding checks totaling $801,391 at December 31, 2017 have been included in accounts payable on the accompanying balance sheet.

Accounts Receivable Trade

Accounts receivable trade represents amounts owed to the Company which are expected to be collected within the next twelve months. Management evaluates receivables on an ongoing basis by analyzing customer relationships, previous payment histories and current economic conditions. An allowance for doubtful accounts is established for each account whose collection is uncertain. Amounts are written off against the allowance after all collection efforts have failed. At December 31, 2017, management considered all accounts receivable to be collectible and thus, no allowance for doubtful accounts was considered necessary.

Other Receivables

At December 31, 2017, other receivables include $433,281 related to a grant received from JobsOhio ("grantor"). The grantor is a private non-profit corporation designed to drive job creation and new capital investment in Ohio. The Company receives financial assistance (up to a maximum of $800,000) from the grantor for certain reimbursable costs as defined in the grant agreement. These reimbursable costs include cost incurred for fixed asset and infrastructure. The grant expires on December 31, 2020. The Company has recognized $769,872 in grant reimbursements for costs incurred during the year ended December 31, 2017. These reimbursements are netted against costs included within cost of sales on the accompanying statement of income.
NOTE 2: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

Inventory

Inventory, consists of both raw materials and finished goods and is stated at the lower of cost or net realizable value. Cost is determined using the weighted average method.

Prepaid Inventory

Prepaid inventory consists of deposits made with the Company’s major vendor to purchase inventory that will be delivered in a future period.

Property and Machinery

Property and machinery are stated at cost. The Company provides for depreciation of property and machinery over the estimated useful lives of the respective assets using the straight-line method (15 years for machinery, 7 to 10 years for equipment and 5 years for vehicles). Expenditures for additions, major renewals and betterments are capitalized, and expenditures for maintenance and repairs are charged against income as incurred. When property and machinery are retired or otherwise disposed of, the related cost and accumulated depreciation are removed from the accounts, and any resulting gain or loss is reflected in income. Depreciation expense for the year ended December 31, 2017 totaled $197,121.

Security Deposits

Security deposits represent amounts with certain vendors in connection with services to provide the Company with utilities. Further, the Company was required to place deposits with certain freight carriers for access transportation services to customers.

Impairment of Long-Lived Assets

Long-lived assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. When required, impairment losses on assets to be held and used or disposed of other than by sale are recognized based on the fair value of the asset. Management believes there is no impairment at December 31, 2017.

Income Taxes

The member of the Company elected to be taxed under the provisions of Subchapter S under the Internal Revenue Code (IRC). Under IRC provisions, net income or losses are reportable for federal income tax purposes by the member on his personal return. Accordingly, no federal income taxes are included in the accompanying financial statements.

The Company is subject to certain state income taxes for the year ended December 31, 2017. Accordingly, a provision has been included in the accompanying financial statements.
NOTE 2: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

Income Taxes (Continued)

The Company applies a more-likely-than-not recognition threshold for all tax uncertainties. Accordingly, only those tax benefits that have a greater than fifty percent likelihood of being sustained upon examination by the taxing authorities are recognized. As applied to the Company, any tax uncertainties would principally relate to state income taxes, or uncertainties in its U.S. Federal income tax return that is used to determine state income tax liability. The Company’s management has reviewed the Company’s tax positions and determined there were no significant outstanding or retroactive tax positions with less than a 50% likelihood of being sustained upon examination by the taxing authorities.

Based on its evaluation, the Company has concluded that there are no significant uncertain tax positions requiring recognition in its financial statements. The Company’s evaluation was performed for the initial tax period ended December 31, 2015 and the year ended December 31, 2017 for U.S. Federal and applicable states, the tax periods which principally remains subject to examination by major tax jurisdictions as of December 31, 2017.

Revenue Recognition

Revenues are recognized when persuasive evidence of an arrangement exists, products are shipped and title is transferred, the sales price is fixed or determinable and collectability is reasonably assured.

Shipping and Handling Expenses

Shipping and handling charges related to sales transactions are recorded as sales revenue when billed to customers. All costs incurred by the Company to both receive product and ship product to customers are classified as cost of sales.

Use of Estimates

The preparation of the financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amount of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the period. Actual results could differ from those estimates. Management believes these estimates and assumptions provide a reasonable basis for the fair presentation of the financial statements.
NOTE 2: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

Fair Value Considerations

The Company may use fair value to measure financial and certain non-financial assets and liabilities. Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. The fair value hierarchy established and prioritized fair value measurements into three levels based on the nature of the inputs. The hierarchy gives the highest priority to inputs based on market data from independent sources (observable inputs – Level 1) and the lowest priority to a reporting entity's internal assumptions based upon the best information available when external market data is limited or unavailable (unobservable inputs – Level 3).

The fair value option allows entities to choose, at specified election dates, to measure eligible financial assets and financial liabilities at fair value that are not otherwise required to be measured at fair value. If an entity elects the fair value option for an eligible item, changes in that item's fair value in subsequent reporting periods must be recognized in current earnings. As allowed by the standard, the Company did not elect the fair value option for the measurement of any eligible assets or liabilities.

The Company's financial instruments (receivables, payables and debt) are carried in the accompanying balance sheet at amounts which reasonably approximate fair value because of their short term nature.

Subsequent Events

The Company has evaluated subsequent events through the date the financial statements were available for issuance on March 27, 2018. No matters were identified affecting the financial statements or related disclosures that have not already been disclosed elsewhere in the financial statements.

NOTE 3: COMPANY AGREEMENT

Some of the significant terms of the Company agreement are summarized:

Management

The Member, except as otherwise provided in the Company Agreement, shall have full authority to manage the business and affairs of the Company.

Liability of Member

The Company shall, to the fullest extent permitted by the Delaware Limited Liability Company Act, indemnify and hold harmless the Member from and against any and all claims and demands whatsoever arising out of his action or inaction by or on behalf of the Company while a member, including, without limitation, his action or inaction while a member in serving as an officer or manager, or in a similar capacity, of the Company or any of its affiliates.
NOTE 3: COMPANY AGREEMENT (Continued)

Term

The Company's existence will expire on December 31, 2099, unless earlier as provided in the Company Agreement.

NOTE 4: INVENTORY

Inventory consists principally of the following:

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw materials</td>
<td>$17,225,575</td>
</tr>
<tr>
<td>Finished goods</td>
<td>$17,727,088</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$34,952,663</strong></td>
</tr>
</tbody>
</table>

NOTE 5: LINE OF CREDIT

At December 31, 2017, the Company has a $30,000,000 revolving line of credit with a bank expiring in October 2018. Borrowings are subject to a borrowing base of both accounts receivable and inventory. Interest accrues at LIBOR plus 2.5% (4.19% at December 31, 2017) and is payable monthly. Advances are collateralized by accounts receivable and inventory. At December 31, 2017, $22,081,452 was outstanding on this line of credit. The Company is also subject to certain covenants including a minimum tangible net worth and fixed charge coverage ratio. The Company was in compliance with all financial covenants as of December 31, 2017.

The note payable - member discussed in Note 6 below is subordinated to the line of credit.

In February 2018, the line of credit agreement was amended to increase borrowings to $50,000,000 and extend the maturity to February 2020.

NOTE 6: NOTE PAYABLE - MEMBER

In 2016, the Company entered into a promissory note agreement with the Member providing for borrowings of $12,750,000. Borrowings accrue interest at 8% and are payable monthly. Accrued interest and principal are due upon maturity in December 2018. At December 31, 2017, the outstanding balance on this debt totaled $6,702,763.

Interest expense on this debt totaled $565,694 for the year ended December 31, 2017, and has been rolled into the principal balance of the note.
NOTE 7: RELATED PARTY TRANSACTIONS

The Company pays a management fee to ALTIVIA Investment, LLC (“Investments”) an affiliate related through common ownership, for management and administrative support services. Management fees for the year ended December 31, 2017 totaled $6,000,000. At December 31, 2017, the Company owed Investments $2,017,619.

During 2017, the Company sold certain land to Haden Road Corporation, an affiliate related through common ownership, for $86,280. This amount is included in due from affiliate on the accompanying balance sheet and was received in 2018.

NOTE 8: EMPLOYEE BENEFIT PLAN

The Company has a 401(k) retirement plan that covers substantially all employees who have completed six months of service. The Company provides a safe harbor matching contribution of 100% of an employee’s salary deferrals up to 3% of compensation plus 50% of the employee’s salary deferrals up to the next 3% employee’s compensation. Contributions (net of forfeitures from terminated employees who were not fully vested) totaled $306,560.

NOTE 9: OPERATING LEASES

The Company leases machinery and equipment under operating leases expiring at various times through March 2021. Rent expense under these leases totaled $585,658 for the year ended December 31, 2017. The Company also leases railcars under operating leases expiring at various times through March 2023. Rent expense for railcars totaled $1,456,959 for the year ended December 31, 2017. Future minimum lease payments under the railcar and certain equipment operating leases are as follows:

<table>
<thead>
<tr>
<th>Year ending December 31,</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>$1,725,374</td>
</tr>
<tr>
<td>2019</td>
<td>1,758,534</td>
</tr>
<tr>
<td>2019</td>
<td>1,723,988</td>
</tr>
<tr>
<td>2020</td>
<td>980,987</td>
</tr>
<tr>
<td>2021</td>
<td>649,800</td>
</tr>
<tr>
<td>Thereafter</td>
<td>579,900</td>
</tr>
<tr>
<td>Total minimum lease payments</td>
<td>$7,418,583</td>
</tr>
</tbody>
</table>
Attachment I-6

Financial Assurance Liability
HAZARDOUS WASTE FACILITY CERTIFICATE OF LIABILITY INSURANCE

1. AIG Specialty Insurance Company, the "Insurer", hereby certifies that it has issued liability insurance covering bodily injury and property damage to ALTIVIA Petrochemicals, LLC, the "Insured", of 1019 Haverhill - Ohio Furnace Road, Haverhill, OH 45636 in connection with the Insured’s obligation to demonstrate financial responsibility under Rules 3745-55-47 or 3745-66-47 of the Administrative Code. The coverage applies at EPA ID Number: OHD005 108 477, Facility Name: ALTIVIA Petrochemicals, LLC, Facility Address: 1019 Haverhill - Ohio Furnace Road, Haverhill, OH 45636 for "sudden and nonsudden accidental occurrences".

The limits of liability are $4,000,000 "each occurrence" and $8,000,000 "annual aggregate" limits of the Insurer’s liability, exclusive of legal defense costs. The coverage is provided under an issued on March 10, 2016. The effective date of said policy is March 10, 2016.

2. The Insurer further certifies the following with respect to the insurance described in Paragraph 1:

(a) Bankruptcy or insolvency of the Insured shall not relieve the Insurer of its obligations under the policy.

(b) The Insurer is liable for the payment of amounts within any deductible applicable to the policy, with a right of reimbursement by the Insured for any such payment made by the Insurer. This provision does not apply with respect to that amount of any deductible for which coverage is demonstrated as specified in Paragraph (F) of Rule 3745-55-47 of the Administrative Code or Paragraph (F) of Rule 3745-66-47 of the Administrative Code.

(c) Whenever requested by the director of the Ohio Environmental Protection Agency, the Insurer agrees to furnish to the director a signed duplicate original of the policy and all endorsements.

(d) Cancellation of the insurance, whether by the Insurer, the Insured, a parent corporation providing insurance coverage for its subsidiary, or by a firm having an insurable interest in and obtaining liability insurance on behalf of the owner or operator of the hazardous waste management facility, will be effective only upon written notice and only after the expiration of 60 days after a copy of such written notice is received by the director of the Ohio Environmental Protection Agency in which the facility is located.

(e) Any other termination of the insurance will be effective only upon written notice and only after the expiration of thirty (30) days after a copy of such written notice is received by the director of the Ohio Environmental Protection Agency in which the facility is located.

I hereby certify that the wording of this instrument is identical to the wording specified in Paragraph (J) of Rule 3745-55-51 of the Administrative Code as such regulation was constituted on the date first above written, and that the Insurer is licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines Insurer, in one or more States.
ENDORSEMENT NO. 14

This endorsement, effective 12:01 AM, March 10, 2016

Forms a part of Policy No: EG

Issued to: ALTIVIA PETROCHEMICALS, LLC

By: AIG SPECIALTY INSURANCE COMPANY

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

FINANCIAL RESPONSIBILITY ENDORSEMENT

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY AND POLLUTION LEGAL LIABILITY COVERAGE FORM

It is hereby agreed that solely for the insured property(s) identified in Paragraph 13. of this endorsement and solely provided that the claim is one for which the insured is required to demonstrate financial responsibility pursuant to OHIO ADMINISTRATIVE CODE, the Policy is amended as follows:

1. ITEM 3. of the Declarations, LIMITS OF INSURANCE: EACH LOSS LIMIT (COVERAGE D - POLLUTION LEGAL LIABILITY) is deleted in its entirety and replaced with the following: $4,000,000

2. ITEM 3. of the Declarations, LIMITS OF INSURANCE, is amended by the addition of the following:

   COVERAGE D - POLLUTION LEGAL LIABILITY AGGREGATE LIMIT: $8,000,000

3. SECTION I - COVERAGE, COVERAGE D - POLLUTION LEGAL LIABILITY, 1. Insuring Agreements, COVERAGE D-1 a. THIRD PARTY CLAIMS FOR ON-SITE BODILY INJURY OR PROPERTY DAMAGE and COVERAGE D-1 b. THIRD PARTY CLAIMS FOR OFF-SITE BODILY INJURY, PROPERTY DAMAGE AND CLEAN-UP COSTS are amended by the addition of the following at the end of each Coverage:

   Coverage pursuant to this paragraph is effective solely provided that the claim is one for which the insured is required to demonstrate financial responsibility pursuant to OHIO ADMINISTRATIVE CODE 3745-55-47 and 3745-65-47.

4. SECTION I - COVERAGE, COVERAGE D - POLLUTION LEGAL LIABILITY, paragraph 1. Insuring Agreements, DEFENSE APPLICABLE TO COVERAGE D is deleted in its entirety and replaced with the following:

   We will have the right and the duty to defend, including but not limited to, the right to appoint counsel, any claim covered under Coverage D-1 a. and D-1 b. Our duty to defend or continue defending any such claim, and to pay any loss, shall cease once the applicable limit of liability as amended by this endorsement has been exhausted. Defense costs, charges and expenses are included within the Deductible amount shown in Item 4 of the Declarations.

   The Company shall have the right to determine if and for what amount any claim covered pursuant to this Endorsement shall be settled, within the limits of coverage as set forth in SECTION III - LIMITS OF INSURANCE AND DEDUCTIBLE as amended by this Endorsement, without the consent of the insured.
ENDORSEMENT NO. 14 (Continued)

5. SECTION I - COVERAGES, COVERAGE D - POLLUTION LEGAL LIABILITY, Item 2. Exclusions - Applicable to Coverage D is amended by the addition of the following:

Due to any liability for which the insured is not required by OAC 3745-55-47 and OAC 3745-66-47 to demonstrate financial responsibility.

6. SECTION III - LIMITS OF INSURANCE AND DEDUCTIBLE, Paragraph 10. a. is deleted in its entirety and replaced with the following:

a. Under Coverage D, to all loss arising out of a pollution condition or the same related or continuous pollution conditions. However, if the insured is unable or unwilling to pay any or all the amount of the Deductible, we shall pay such amounts, and such amounts shall be included within loss and erode EACH LOSS LIMIT (COVERAGE D - POLLUTION LEGAL LIABILITY) and the COVERAGE D - POLLUTION LEGAL LIABILITY AGGREGATE LIMIT set forth in Item 3. of the Declarations, as amended by this Endorsement. The insured shall promptly reimburse us for advancing any part of the loss or defense costs falling within the Deductible.

7. SECTION III - LIMITS OF INSURANCE AND DEDUCTIBLE, is amended by the addition of the following:

In addition to the applicable limit of liability under Coverage D-1 a. or D-1 b., we shall pay on behalf of the insured costs, charges and expenses incurred in the defense, investigation or adjustment of claims covered under Coverage D-1 a. or D-1 b. Our total liability for such costs, charges and expenses associated with all loss(es) shall not exceed twenty-five percent (25%) of the COVERAGE D - POLLUTION LEGAL LIABILITY AGGREGATE LIMIT set forth in Item 3. of the Declarations, as amended by this Endorsement.

8. SECTION III - LIMITS OF INSURANCE AND DEDUCTIBLE, Paragraph 2, Subparagraph d. is deleted in its entirety.

9. SECTION III - LIMITS OF INSURANCE AND DEDUCTIBLE, Paragraph 8. is deleted in its entirety and replaced with the following, respectively,

8. The COVERAGE D POLLUTION LEGAL LIABILITY AGGREGATE LIMIT is the most we will pay for the sum of all loss under Coverages D-1 a. and D-1 b. pursuant to this Endorsement.

Subject to the COVERAGE D - POLLUTION LEGAL LIABILITY AGGREGATE LIMIT, the EACH LOSS LIMIT (COVERAGE D - POLLUTION LEGAL LIABILITY) is the most we will pay under Coverages D-1 a. and D-1 b. in excess of the Deductible amount stated in Item 4 of the Declarations, for all loss because of bodily injury, property damage or clean-up costs arising out of the same, related, or continuous pollution conditions.

10. SECTION IV - CONDITIONS, Paragraph 9. Cancellation is deleted in its entirety and replaced with the following:

9. Cancellation

This Endorsement may be cancelled by the insured by surrender thereof to us or any of our authorized agents or by mailing to us written notice stating when thereafter (not less than 60 days after notice of cancellation is received by the OHIO ENVIRONMENTAL PROTECTION AGENCY, as evidenced by the return receipt of a registered or certified mail receipt, the cancellation shall be effective. This Endorsement may be cancelled by us by mailing to the insured at the address shown in the Policy, written notice stating when thereafter (not less than 60 days after notice of cancellation is received by the OHIO ENVIRONMENTAL PROTECTION AGENCY as evidenced by the return receipt of a registered or certified mail receipt), such cancellation shall be effective. Proof of mailing of such notice shall be sufficient proof of notice.
ENDORSEMENT NO. 14 (Continued)

The time of surrender or the effective date and hour of cancellation stated in the notice shall become the end of the policy period. Delivery of such written notice either by the insured or by us shall be equivalent to mailing. If the insured cancels, earned premium shall be computed in accordance with the customary short rate table and procedure. If we cancel, earned premium shall be computed pro-rata. Premium adjustment may be either at the time cancellation is effected or as soon as practicable after cancellation becomes effective, but payment or tender of unearned premium is not a condition of cancellation.

11. SECTION IV - CONDITIONS is amended by the addition of the following paragraph:

Reimbursement - All terms, conditions, and limitations in the Policy to which this Endorsement is attached shall remain in full force and effect as binding between us and insured. The insured agrees to reimburse us for any payment made by us on account of any breach of the terms of this Policy, or for any payment that we would not have been obligated to make under the provisions of the Policy except for the agreements contained in this endorsement.

12. SECTION VI - DEFINITIONS. Paragraph 23., Loss, Applicable to Coverage D-1, subparagraph (b) is deleted in its entirety.

13. Scheduled insured property(s):

1019 HAVERHILL OHIO FURNACE ROAD, HAVERHILL, OH 45636

All other terms, conditions and exclusions shall remain the same.

AUTHORIZED REPRESENTATIVE
or countersignature (in states where applicable)

103354 (10/09)
CI4369 PAGE 3 OF 3
CERTIFICATE OF LIABILITY INSURANCE

PRODUCER
USI Southwest - RMD
P.O. Box 218060
Houston TX 77218

INSURED
Altivia Petrochemicals, LLC
1100 Louisiana Street, Suite 3160
Houston TX 77002

CERTIFICATE NUMBER: 579242496

COVERAGES

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DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES

General Liability coverage is on an Occurrence Basis and Pollution Legal Liability is on a Claims Made Basis. Certificate holder is included as additional insured on a primary noncontributory basis on the General Liability and Auto Liability policies when required by written contract. Blanket Waiver of Subrogation in General Liability and Auto Liability when required by written contract. Excess Liability is follow form over General Liability/Pollution Legal Liability and Automobile Liability.

General Liability/Pollution Legal Liability Policy includes Transportation Pollution Liability. See Attached...

CERTIFICATE HOLDER
For Information Purposes Only
1019 Haverhill Ohio Furnace Rd
Haverhill OH 45636

CANCELLATION
SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE
**ADDITIONAL REMARKS SCHEDULE**

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**ADDITIONAL REMARKS**

This additional remarks form is a schedule to ACORD form.

**FORM NUMBER:** 25  **FORM TITLE:** CERTIFICATE OF LIABILITY INSURANCE

Hired Car Physical Damage
Other Than Collision Ded: $1,000
Collision Ded: $1,000

Subject to policy terms, conditions and exclusions.
The General Liability policy includes [endorsements (10/09)] for location: 1019 Haverhill - Ohio Furnace Rd, Haverhill, OH 45636. This endorsements provides Coverage D-Pollution Legal Liability limits of $4,000,000 each occurrence and Coverage D-Pollution Legal Liability limits of $8,000,000 annual aggregate.
Please Note: Pages of this document which contain sensitive information such as personal information, home addresses and phone numbers, and policy or account numbers have been removed from this web-available version of the document.

To review redacted copies of these removed pages, please contact DMWM's record management staff at 614-644-2621.

Thank you.
SECTION J

SOLID WASTE MANAGEMENT UNITS
# SECTION J. SOLID WASTE MANAGEMENT UNITS

## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>SECTION J. SOLID WASTE MANAGEMENT UNITS</td>
<td>J-1</td>
</tr>
<tr>
<td>J-1 INTRODUCTION</td>
<td>J-1</td>
</tr>
<tr>
<td>J-2 SWMU DESCRIPTIONS</td>
<td>J-2</td>
</tr>
<tr>
<td>J-2a Group 1 - Wastewater, Land Treatment Areas, Lagoons and Ponds</td>
<td>J-2</td>
</tr>
<tr>
<td>SWMU #9 - Alcohol Holding Basin</td>
<td>J-2</td>
</tr>
<tr>
<td>SWMU #12 - Alcohol Pond</td>
<td>J-3</td>
</tr>
<tr>
<td>SWMU #13 - West Lagoon</td>
<td>J-3</td>
</tr>
<tr>
<td>SWMU #30 - 100/800 Sump Drying Area</td>
<td>J-3</td>
</tr>
<tr>
<td>SWMU #32 and #33 - Sludge Lagoons/Aeration Lagoon</td>
<td>J-4</td>
</tr>
<tr>
<td>SWMU #34 - Polystyrene Lagoons</td>
<td>J-4</td>
</tr>
<tr>
<td>SWMU #35 - Reactor Blowdown Area</td>
<td>J-4</td>
</tr>
<tr>
<td>SWMU #55 - Land Treatment Area</td>
<td>J-5</td>
</tr>
<tr>
<td>SWMU #100 - Land Application/Biosolids and Sediment Settling Pond Area</td>
<td>J-5</td>
</tr>
<tr>
<td>J-2b Group 2 - Basins, Pits, Sewers, Sumps and Tanks</td>
<td>J-6</td>
</tr>
<tr>
<td>SWMU #11 - Alcohol Sludge Pit</td>
<td>J-6</td>
</tr>
<tr>
<td>SWMU #24 - Sludge Pit</td>
<td>J-6</td>
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<td>SWMU #38 - 2422-A, 2423-A, 2424-A Holding Basins</td>
<td>J-6</td>
</tr>
<tr>
<td>SWMU #54 - 2429-A Clarifier Blowdown Pits</td>
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<td>SWMU #59 - TK-902 Sump</td>
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<td>SWMU #61 - TK-903/904 Sump</td>
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<td>SWMU #69 - Process and Stormwater Sewers</td>
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</tr>
<tr>
<td>SWMU #84 - Fire Burning Pit</td>
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<td>SWMU #98 - Septic Tank Oil Trap</td>
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<td>SWMU #99 - Cobalt Catalyst Tank</td>
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<td>SWMU #103 - D-143 Biowaste Oil Collection Tank</td>
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<td>SWMU #115 - 2102 FA Tank</td>
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<td>J-2c Group 3 - Solid Waste Handling, Loading and Storage Areas</td>
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<tr>
<td>SWMU #15 - Alcohol RR Loading Area</td>
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<td>SWMU #66 - BD-908 Drum Storage Area</td>
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<td>SWMU #86 - Surplus Equipment/Scrap Dump Area</td>
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<td>SWMU #87 - Coal Yard/Ash Storage Area</td>
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<td>SWMU #97 - BD-17 Waste/Surplus Drum Storage Area</td>
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</table>
J-2d  Group 4 - RCRA Closure Areas ................................................................. J-12
      SWMU #51 - Underground Injection Wells 1 and 2 .................................... J-12
      SWMU #56 - Northwest Lagoon ................................................................. J-13
      SWMU #57 - Boilers .................................................................................... J-13
      SWMU #62 - East Pond ................................................................................ J-13
      SWMU #63 - West Pond .............................................................................. J-14

J-2e  Group 5 - Consent Agreement and Final Order Areas (CAFO) ............... J-14
      SWMU #53 - Phenol RR Loading Area ......................................................... J-14
      SWMU #67 - Wastewater Ditches and Settling Ponds .............................. J-15
      SWMU #68 - Emergency Dike Fields ........................................................ J-15
SECTION J. SOLID WASTE MANAGEMENT UNITS

LIST OF EXHIBITS

Exhibit J-1  Solid Waste Management Unit Summaries
Exhibit J-2  Solid Waste Management Unit Period of Operation
SECTION J. SOLID WASTE MANAGEMENT UNITS

LIST OF ATTACHMENTS

Attachment J-1  Solid Waste Management Unit Locations
SECTION J. SOLID WASTE MANAGEMENT UNITS

J-1 INTRODUCTION

This section addresses applicable information on the plant's solid waste management units (SWMUs) at the plant. The description of the units in this section includes:

- Description of the Unit
- Wastes Managed
- Constituents of Concern
- Operating Status
- Description of Releases

The information provided in this section was obtained from the following sources:

- RCRA Facility Assessment (RFA) for the site performed by U.S. EPA-Region V in 1987.
- RFI Report, April 1996.
- RFI Data Summary Validation Report and Risk Calculation Report, August 2006.

The RFI for the site was accomplished by using Aristech's knowledge of the plant's manufacturing and waste disposal practices as well as written historical records, the RFA, visual site inspections (VSIs), previous site investigations, aerial photographs, and interviews with knowledgeable plant personnel to identify potential sources of contamination requiring additional investigation.

The RFI began with the preparation of the Assessment of Current Conditions document (1993) for the plant. The ACC provided existing information on a total of 115 SWMUs at the plant: 69 SWMUs identified by the U.S. EPA during the RFA/VSI (and updated in the ACC) and 46 additional SWMUs identified by Aristech during review of historical records.
Based on the information provided in the RFI Work Plan (1995) and in the documents referenced above, 39 of the 115 identified SWMUs required additional investigation/discussion in the RFI. Exhibit J-1 identifies and briefly describes these 39 SWMUs, which were organized into the following five groups:

- **Group 1**: Wastewater/Land Treatment Areas, Lagoons and Ponds
- **Group 2**: Basins, Pits, Sewers, Sumps and Tanks
- **Group 3**: Solid Waste Handling, Loading and Storage Areas
- **Group 4**: RCRA Closure Areas
- **Group 5**: Consent Agreement and Final Order (CAFO) areas.

Exhibit J-2 presents the 115 identified SWMUS.

Groups 1, 2, and 3 list the SWMUs identified as requiring further investigation during the RFI. Group 4 lists the SWMUs identified by the U.S. EPA as requiring further discussion in the RFI report. Group 5 indicates CAFO areas that are incorporated into the RFI per an agreement between Aristech and U.S. EPA. The RFI Report (April 1996) and subsequent documents contain the results of all sampling and analysis activities conducted to date, under the Correction Action Program.

Attachment J-1 presents a site map showing the location of all SWMUs. Note that the former PWWTS area and the process piping adjacent to the former BPA lagoons are also identified as SWMU’s (No. 38 and No. 69 respectively). A clean closure approval was received for PWWTS on September 29, 2000. The soils associated with SWMU No. 38 were sampled and analyzed as part of the RFI work at the plant. Details of this soils sampling were addressed in the RFI workplan addendum submitted in June 2001. A clean closure approval was received for the BPA lagoons on April 8, 2002. A clean closure approval was received for Utility boilers 2001-UA and 2001-UB on June 12, 2012.

**J-2 SWMU DESCRIPTIONS**

**J-2a Group 1 - Wastewater, Land Treatment Areas, Lagoons and Ponds**

**SWMU #9 - Alcohol Holding Basin**

This unit consists of an unlined, excavated, earthen surface impoundment roughly rectangular in
approximately 1,000,000 gallons. Non-contact cooling water and stormwater runoff feed this unit. This unit fed the Equalization Basin (SWMU #6) and the D-147 Mix Tank (SWMU #2).

In 1992, overflow from this unit into the Final Settler (SWMU #7) caused the NPDES limits for phenolics to be exceeded a single time. Chemicals/compounds of concern include phenol and cobalt.

**SWMU #12 - Alcohol Pond**

This unit was an irregularly shaped, unlined earthen pond. The dimensions were 500 by 170 feet at its widest point, and two to three feet deep. Waste bio-sludge was pumped from the Alcohol Waste Treatment Unit to this unit by a pipeline for disposal.

No releases from this unit have been documented. Chemicals/compounds potentially present at this unit include: alcohol wastewater, sludge from the alcohol waste treatment unit, cobalt and chromium.

**SWMU #13 - West Lagoon**

This unit was an unlined, earthen surface impoundment. The unit was about 200 feet by 180 feet and three to four feet deep. Sludge from the Alcohol Waste Treatment Unit and organic sludge from the intermediate process tanks in the Alcohol Unit were deposited in this impoundment. Sludge was transported to this unit by a 10-ton dump truck. The unit was closed and capped in 1980.

No releases from this unit have been documented. Chemicals/compounds potentially present at this unit include: sludge from the alcohol waste treatment unit, cobalt and chromium.

**SWMU #30 - 100/800 Sump Drying Area**

This unit was an area located south of the Polystyrene Plant and east of Solar Avenue. When the Polystyrene Plant ceased operation, the solids in the two sumps (SWMUs #28 and #29) were removed and spread onto a plastic sheet in this area for dewatering before being disposed off-site.

No releases from this unit have been documented. Chemical/compounds of concern include: solids from the 100 and 800 sumps (SWMUs #28 and #29).
SWMU #32 and #33 - Sludge Lagoons/Aeration Lagoon

Unit #32 consisted of two excavated earthen impoundments (lagoons) that were constructed with a six-inch liner of clay and bentonite. In 1972, the use of one of the lagoons was discontinued, and it was closed in 1976. The remaining lagoon was lined with concrete, but it was later removed in 1994 and backfilled with clean soil to grade. Each lagoon was approximately 134 feet by 35 feet by nine feet deep and had a capacity of approximately 317,000 gallons. This unit was used to remove solids from wastewater by sedimentation, from the Polystyrene Plant.

Unit #33 was an excavated, earthen impoundment (lagoon) that was constructed with a six-inch liner of clay and bentonite. The lagoon was lined with a Hypalon liner membrane in 1976. This lagoon provided retention time and oxygen for biological treatment. The unit had two surface aerators. The dimensions of the lagoon are 115 feet by 75 feet by nine feet deep. The capacity of the lagoon is approximately 581,000 gallons.

SWMU #34 - Polystyrene Lagoons

These four lagoons were unlined, earthen impoundments contained by earthen dikes. The dimensions of each lagoon were 200 feet by 200 feet and three feet deep. These lagoons handled the sludges that were periodically removed from the two sludge lagoons (SWMU #32), and aeration lagoon (SWMU #33). From 1971 until 1976 the sludge was piped to these lagoons. In 1976, the rotary vacuum filter (SWMU #16) was installed and sludge storage was no longer necessary.

No releases from this unit have been documented. Chemicals/contents potentially present at this unit include polystyrene wastewater components.

SWMU #35 - Reactor Blowdown Area

This unit was an unlined, earth and gravel area which was surrounded by a concrete curb. The dimensions for the area were 246 feet long by 28 feet wide. Approximately three to six times per year a batch of polymer at the Polystyrene Plant showed bad suspension characteristics and had to be dumped.

This unit was the area where it was placed. Liquid styrene was skimmed off and drummed for off-site landfill disposal. Wastewater from this area drained to the 100 Sump (SWMU #29) by a trench. Solids that remained and became hardened were also disposed at an off-site landfill.
No releases from this unit have been documented. Chemicals/compounds potentially present at this unit include: “bad” polymer from the Polystyrene Plant containing polystyrene, styrene monomer, calcium chloride, tricalcium phosphate, and polybutadiene rubber.

**SWMU #55 - Land Treatment Area**

This unit is an unlined area with a total size of two acres. The current active area is approximately one-half acre in size. Sludge from the 2429-A Clarifier Blowdown Pits (SWMU #54) is placed in this area an average of twice per year. The sludge in this unit supports plant life.

No releases from this unit have been documented. Chemicals/compounds of concern include Ohio River silts with flocculating chemicals added. Sludge analysis indicated the presence of arsenic, barium and lead at low concentrations.

**SWMU #100 - Land Application/Biosolids and Sediment Settling Pond Area**

This unit consists of two separate areas identified as biosolids and settling pond sediment areas. The biosolids area was located east of the settling pond and has dimensions of approximately 150 feet by 200 feet. The settling pond sediment area was located north of the settling pond and has dimensions of approximately 300 feet by 300 feet. Once the solids were dry, they were disposed off-site. The biosolids area (east area) was used in the early 1980s and the settling pond sediment (north area) was used in 1982, 1989 and 1991.

No releases were recorded by the plant; however, “operational” releases may have occurred. Chemicals/compounds of concern include: biosolids containing trace amounts of sodium sulfate, cobalt, oils (alcohol, aldehyde, olefin, paraffins) silt and fly ash.

**SWMU #114 - BPA Maintenance and Central Stores**

This unit consists of a gravel lot in the BPA area. The lot was used to store lubrication oil drums and bags of off-specification BPA but is currently used to store other material such as replacement reactor parts, new piping, etc.

Waste is no longer stored in the area. Reportedly, drums were observed to overflow while stored in the area. Chemicals/compounds of concern include: lubrication oil drums and off-specification BPA.
J-2b  Group 2 - Basins, Pits, Sewers, Sumps and Tanks

SWMU #11 - Alcohol Sludge Pit
This unit was an unlined, earthen surface impoundment that was about 75 feet by 75 feet (at surface grade) and 12 feet deep. The volume of the unit was approximately 2500 cubic yards. Liquids from the pit were drained back to the Alcohol Waste Treatment Unit by a pipe. The pipe was plugged in 1983. After 1983, a pump was used to transfer the liquids back to the treatment unit. The original purpose of this pit was to store sludge from the river water clarifiers which started operation in 1961 and continued until 1968 when sludge was sent to SWMU #54. From 1962 until 1983, the pit was also used for waste sludges from G-116 Clarifier (SWMU #8), API Separator skim oil in the Alcohol Waste Treatment Unit (SWMU #3), excess waste activated sludge from the Final Settler (SWMU #7), and sludge from the cooling tower CT-101.

This unit was clean closed in 1991 and backfilled to grade. Section 4.0 of the Assessment of Current Conditions document submitted to the U.S. EPA in April 1993 details the closure activities.

No releases from this unit have been documented. Chemicals/compounds potentially present at this unit include: alcohol wastewater, skim oil sludge and various other sludges.

SWMU #24 - Sludge Pit
This unit is a reinforced concrete pit measuring approximately 12 feet by 12 feet with a depth of about eight feet. The function of the pit was to pump waste materials, high in solids ("bottoms") to the Sludge Lagoon (SWMU #32), or the F-806 Rotary Vacuum Filter (SWMU #16) via the T-819 Surge Tank (SWMU #26), or back to the pit.

No releases from this unit have been documented. Chemicals/compounds of concern include: bottoms from the W-809 solids (SWMU #27) and W-810 final clarifier (SWMU #22).

SWMU #38 - 2422-A, 2423-A, 2424-A Holding Basins
These three open top basins are constructed of steel reinforced concrete and are located above ground. Each basin is 75 feet square and eight feet high. The walls and base of each basin are 12 inches thick. The two internal walls between these basins contain one foot keyways. The capacity of each basin was approximately 500,000 gallons. Wastewater was discharged via swing suction pipe and was directed to the API separator (SWMU #39). In 1988, the basins were
cleaned and Tanks 2426-F, 2427-F, and 228-F were installed inside the basins. The basins are presently being used for secondary containment for these tanks.

On 9 September 1986, excessive rainfall and winds caused approximately ten gallons of wastewater to overflow from 2422-A and 2423-A into the containment area. Chemicals/compounds of concern include: combined process wastewater from the phenol, aniline and BPA process area and from the quality control laboratory.

**SWMU #54 - 2429-A Clarifier Blowdown Pits**

The pits consist of two cells formed by earthen dikes. The cells are unlined but have concrete end walls. The total pit area is 140 feet by 40 feet and 6.5 feet deep. Each cell can hold 500 tons (or ~1,350 cubic yards) of sludge. The pits had been periodically drained and the sludge removed and disposed off-site at the landfill. This practice continued until 1980. In 1980, land treatment (SWMU #55) of the sludge started on-site. The current operating procedure allows the full cell to stand several months to maximize drying of the sludge. This generates a semi-solid to solid material that is hauled to the land treatment (SWMU #55) area where it is dumped and then spread by bulldozer.

No releases from this unit have been documented. Chemicals/compounds of concern include: Ohio River silts with flocculating chemicals added. Sludge analysis typical of pit contents between 1970 and 1976 indicated the presence of oil, phenol, cumene, acetophenone, DMBA, AMS and the presence of low concentrations of arsenic, barium and lead.

**SWMU #59 - TK-902 Sump**

This unit is constructed of steel reinforced concrete, and lined with four inches of acid brick. Exposed concrete was sprayed with Ceilcote 6650 on a Type H glass cloth. The in-ground unit is ten feet by ten feet and is seven feet deep. The sump has a capacity of 5,000 gallons. The waste liquids were originally pumped to the BPA East Pond (SWMU #62). In the first part of 1981 the flow was changed to the West Pond (SWMU #63). Since the closure of the BPA lagoons, the waste stream goes through BPA waste treatment then to bio-waste treatment. There have been several releases from this unit as discussed below.

**12 August 1985** - Approximately 200 gallons of liquid overflowed from the unit to the soil. The released liquid had a pH of 0.5, and contained 0.33% phenol.
4 November 1985 - Approximately 200 gallons of liquid overflowed from the unit to the soil. The released liquid had a pH of 1.9, and contained 0.21% phenol and 0.1% HCL.

20 October 1986 - Approximately 20 gallons of liquid were released from the unit to the soil due to a surge. The released liquid contained 26.8% HCl and 3.8% phenol.

Chemicals/compounds of concern include: wastewater containing phenol, HCl, BPA and calcium chloride.

SWMU #61 - TK-903/904 Sump
This unit is constructed of steel reinforced concrete which was sprayed with Ceilcote 6650 on a Type H glass cloth. The in-ground unit is 12 feet by 12 feet and is about four feet deep. The sump has a capacity of 4,000 gallons. The waste liquids were originally pumped to the BPA East Pond (SWMU #62). In the first part of 1981, the flow was changed to the West Pond (SWMU #63). The sump was drained and inspected on August 16, 1985. Subsequent to the inspection, the sump was lined with acid bricks and the concrete recoated with Ceilcote 6550. Currently, WWastewater from this sump bypasses the BPA Wastewater Treatment System and is WAS pumped directly to the Phenol Wastewater Treatment System. Since the closure of the phenol wastewater treatment system, the waste stream goes to bio-waste treatment. No releases from this unit have been documented. Chemical/compounds of concern include: bisphenol A (BPA), and wastewater containing phenol and BPA.

SWMU #69 - Process and Stormwater Sewers
These units consist of two separate systems of underground piping of various types and sizes. One system handles storm runoff, and the other system handles process wastewaters. The pipes usually discharged to the Alcohol Waste Treatment Unit or the Phenol Waste Treatment System. The BPA Waste Treatment System piping was originally underground; it was abandoned and relocated above-ground, and the Polystyrene Waste Treatment System is inactive.

No infiltration or inflow studies have been performed on the two sewer systems. Chemicals/compounds of concern include: stormwater runoff and process wastewaters ancillary to the Alcohol Waste Treatment Unit, Phenol Waste Treatment System, BPA Waste Treatment System and the inactive Polystyrene Waste Treatment System.
**SWMU #84 - Fire Burning Pit**

This unit consisted of a constructed metal pan measuring eight feet wide by ten feet long by one foot high. The unit was located just inside Gate #8 on the west side of D Street. The pan was in operation from 1974 until the present time. Typically, a layer of oil was placed on top of water, ignited, and extinguished by plant personnel. The oil in the pan was process waste oil, spent olefins, heptane, octane, and alcohol heavy ends.

No releases from this unit have been documented. Chemicals/compounds of concern include: process waste oil, spent olefins, heptane, octane, and alcohol heavy ends.

**SWMU #98 - Septic Tank Oil Trap**

This unit is a septic tank oil trap located in the Alcohol Tank dike field. Material collected in the dike field flowed into the trap and the water was sent to the Bio-waste Treatment System. At the present time, the Alcohol Tanks have been emptied.

Reportedly, visible contamination was noted on accumulated precipitation within the dike field by plant personnel. Chemicals/compounds of concern include: floating oil and small quantities of process material.

**SWMU #99 - Cobalt Catalyst Tank**

This unit consists of a steel underground tank. The tank has a diameter of four feet and is 16 feet in length. The tank received bottoms from D-128. The tank was emptied and high pressure water cleaned in March 1989. At this time, the unit is not operational.

Reportedly, visible contamination was observed in soils around this tank. Chemicals/compounds of concern include: high cobalt wastewater, cobalt tally oil phase and bottoms from D-128 with an EPTox chromium value of 33 mg/kg.

**SWMU #103 - D-143 Biowaste Oil Collection Tank**

This unit consists of an above-ground horizontal, cylindrical, steel tank. The tank capacity is approximately 500 gallons. The tank was used to collect oil skimmed off the storm cell and process cell. Skim oil in the tank went to D-125 (SWMU #101).

Visible contamination was noted in the past. Chemicals/compounds of concern include: alcohols, aldehydes, olefins and paraffins.
**SWMU #115 - 2102 FA Tank**

This is a steel tank with a one-million gallon capacity (40 feet high, 32.5 feet radius) all of which is above-ground. The tank is surrounded by asphalt-covered earthen dikes.

In April 1991, it was determined that a leak had developed in the tank. Engineering calculations indicated that the leak was limited to 32 gallons. From sampling, the affected area was determined to be approximately 2,500 square feet. The tank was repaired immediately, but remediation was postponed for 16 months, so that the soils could be remediated when service of the tank was not needed. Chemicals/compounds of concern include phenol.

**J-2c Group 3 - Solid Waste Handling, Loading and Storage Areas**

**SWMU #15 - Alcohol RR Loading Area**

This unit consists of two parallel ballasted railroad tracks constructed on an earthen foundation, and a loading/unloading rack. The rack consists of an elevated structural steel platform. The platform is 195 feet long.

Chemicals/compounds of concern include: products (i.e., iso-decyl alcohol, iso-octyl alcohol, iso-nonyl alcohol) and feedstocks (i.e., cumene, phenol). Pre-excavation results from soil samples obtained between 13-15 May 1985 indicated cumene levels between 21 and 4,658 mg/kg. Post-excavation results obtained 10 February 1987 indicated cumene levels at less than 0.1 mg/kg.

**SWMU #65 - BPA RR Loading Area**

This unit consists of a ballasted spur railroad track, constructed on an earthen foundation, under the BPA loading shed. A concrete pad and dust collector were added in 1986.

This unit has had periodic minor spills. Chemicals/compounds of concern include spilled BPA solids.

**SWMU #66 - BD-908 Drum Storage Area**

This unit was open on three sides, and located on the south side of building BD-908. Currently, the unit is enclosed and covered by a reinforced concrete platform of BD-908’s second floor. The floor of the unit is constructed of reinforced concrete which is coated. There is secondary containment constructed of coated concrete around the interior perimeter of the building. The
dimensions of the building are approximately 40 feet by 70 feet.

No releases from this unit have been documented. Chemicals/compounds of concern include: various drummed waste materials contaminated with commercial chemical products such as phenol (U188), alpha-methyl styrene (D001), cumene (U055), non-hazardous BPA unit spent filter cartridges, and slag from the boilers (SWMU #57) which contains D007 characteristics and retains the K022 code.

**SWMU #86 - Surplus Equipment/Scrap Dump Area**
This unit stored surplus equipment and scrap. The surplus equipment and scrap were placed on railroad ties. The unit was located just outside Gate #8. Some of the equipment and scrap consisted of old exchanges and pumps from the alcohol unit.

No releases from this unit have been documented. Chemicals/compounds of concern include: cooling water, alcohol, aldehyde, olefin, paraffins, and cobalt.

**SWMU #87 - Coal Yard/Ash Storage Area**
This unit consisted of an area approximately 225 feet by 175 feet and was used to store coal and ash. No releases from this unit have been documented. Chemicals/compounds of concern include: ash with low pH, and heavy metals.

**SWMU #88 - Waste Drum Storage**
This unit consisted of three separate areas which were used to store drums of spent catalyst and oil. The drums were stored on slag/gravel above dirt located near the northwest corner of the General Plant Storage Yard and near the northwest and southwest corner of Utilities Maintenance Storage Yard.

No releases from this unit have been documented. Chemicals/compounds of concern include: spent catalyst consisting of cobalt and chromium, and process oils consisting of alcohols, aldehydes, olefins and paraffins.

**SWMU #93 - Ash Silo/Ash Loading Area**
The ash silo is approximately 10 feet by 20 feet and located 15 feet above the ash truck loading area. The ash silo received ash from the coal boilers. Water was added to the ash, and the wet ash was loaded into trucks below the silo. The loading area was part concrete and part soil. The trucks removed the ash to an off-site landfill five days a week. During the weekends, the trucks
were unloaded in the Ash Storage Area (SWMU #87) for weekday removal.

No releases from this unit have been documented. Chemicals/compounds of concern include: ash from the coal boilers with a low pH, heavy metals, and stormwater runoff.

**SWMU #97 - BD-17 Waste/Surplus Drum Storage Area**
This unit consists of an area inside and two areas outside of Building BD-17. The building has a concrete floor and the outside areas are covered with gravel. Both raw materials and waste containers were periodically stored in these areas.

Reportedly, outside drums containing oil overflowed into gravel during storm events. Chemicals/compounds of interest for the outside and inside areas are:

**Outside Area**
Spent catalyst (cobalt and chromium), spent saddles, packing from MEA (monoethanolamine) Tower.

**Inside Area**
Catalyst (copper, nickel, iron, chromium, cobalt solids), filtered decyl alcohol bottoms, methanol, lubrication oil, electrical oil (Exxon Univolt 60), n-heptane, miscellaneous maintenance material and potassium permanganate.

**J-2d Group 4 - RCRA Closure Areas**

**SWMU #51 - Underground Injection Wells 1 and 2**
Injection Well #1 was completed 24 July 1968 with a total drilled depth of 5,617 feet below grade. The injection well was completed in the Mount Simon sandstone formation. Injection Well #2 was completed 31 August 1978 with a directionally total drilled depth of 6,024 feet below grade. The wellheads are on concrete pads inside buildings. Both wells have been RCRA closed.

No releases from this unit have been documented. Chemicals/compounds of concern include: combined treated, process wastewater from the Phenol Waste Treatment Unit.
**SWMU #56 - Northwest Lagoon**

This unit is an unlined, earthen impoundment that was 200 feet by 200 feet and three feet deep. The unit was closed under RCRA Interim Status regulations and a Post-Closure Care Permit Application was submitted to the U.S. EPA.

No releases from this unit have been documented. Chemicals/compounds of concern include: sludges from the 2433-A Filter Cake Pit (SWMU #52), Phenol Waste Treatment Holding Basing (SWMU #38), bisphenol A (BPA) lagoon sludge and phenol-contaminated environmental media such as soil and gravel.

**SWMU #57 - Boilers**

These boilers are co-fired natural gas and oil fired positive draft boiler systems. Each boiler is rated for 150,000 lbs/hr of 450 psig steam. Boilers 2001-UA& UB are Riley type and were permitted to burn light and heavy hydrocarbon waste fuel and were RCRA-closed in 2012. Boiler 2001-UC is a Riley type and is still permitted to burn light and heavy hydrocarbons. Boiler 2001-UE is Babcock and Wilcox type and is permitted to burn only light hydrocarbon waste fuel. All four boilers provide steam for plant operations and are located on a bermed concrete pad with a drain.

No releases from this unit have been documented. Chemicals/compounds of concern include: fuel oil or natural gas with mixed heavy hydrocarbon waste fuel consisting of phenol heavy ends.

**SWMU #62 - East Pond**

This pond is an incised basin measuring 145 feet by 55 feet and is eight feet deep. This unit is separated from the West Pond (SWMU #63) by an earthen dike with a crest width of six feet. Side slopes are at a ratio of two horizontal units to one vertical unit (2H:1V). The West Pond (SWMU #63) began pumping to this unit during the first part of 1981. Originally, the TK-904 and TK-902 Sumps (SWMUs #61 and #59, respectively) flowed directly to this unit. Sodium hydroxide was added to this unit for neutralization purposes. This was followed by the addition of sodium carbonate to precipitate calcium. The treated water was then filtered by the F-2101 Guard Filter (SWMU #64) prior to pumping to the Phenol Waste Treatment Unit. The impoundment was taken out of service prior to 8 November 1988. Aristech submitted a revised RCRA Interim Status Closure Plan for SWMU #62 and SWMU #63 (West Pond) in August 1995. The plan addresses the closure of the impoundments and underlying soils to the waste.
A release in 1982 resulted from a torn liner. Remediation/partial closure of the pond (and SWMU #63 West Pond) was performed, consisting of removal and proper disposal of accumulated sludges and the High Density Polyethylene (HDPE) liner, treatment of the liquid contents of the ponds at the Phenol Wastewater Treatment System and sampling and testing of the subsoil.

**SWMU #63 - West Pond**

This pond is an incised basin measuring 145 feet by 55 feet and is eight feet deep. This unit is separated from the East Pond (SWMU #62) by an earthen dike with a crest width of six feet. Side slopes are at a ratio of two horizontal units to one vertical unit (2H:1V). This pond was lined with a compacted bentonite liner and a 100-mil HDPE liner. This pond originally received wastewater from the HCl Recovery Unit. Then it received BPA Plant wastewater from the TK-904 and TK-902 Sumps (SWMUs #61 and #59, respectively) in addition to the HCl Recovery Unit wastewater. This wastewater was then pumped to the East Pond (SWMU #62). The impoundment was taken out of service prior to 8 November 1988. Aristech submitted a revised RCRA Interim Status Closure Plan for SWMUs #62 (East Pond) and #63 (West Pond) in August 1995. The plan addresses the closure of the impoundments and underlying soils to the water table within the impoundment’s unit boundaries. The west pond has been RCRA closed.

A release in 1982 resulted from a torn liner. Remediation/partial closure of the pond (and SWMU #62 East Pond) was performed, consisting of removal and proper disposal of accumulated sludges and the HDPE liner, treatment of the liquid contents of the ponds at the Phenol Wastewater Treatment System and sampling and testing of the subsoil.

**J-2e  Group 5 - Consent Agreement and Final Order Areas (CAFO)**

**SWMU #53 - Phenol RR Loading Area**

Historically, this unit consisted of two parallel ballasted railroad tracks constructed on an earthen foundation, and concrete drip pans at each loading position adjacent to the loading rack. Subsequently, the unit was excavated to approximately 18 feet below ground surface (bgs) to remove any soil contamination, then backfilled with clean soil to grade. The area was then covered by concrete to provide secondary containment for loading operations. Drainage piping connects the area to the Oily Waste Sump (SWMU #37) at the Phenol Waste Treatment Unit. SWMU #53 was originally part of a CAFO by U.S. EPA Region V Enforcement Branch. It was subsequently included in the RFI Program per an agreement (August 1994) between Aristech and
U.S. EPA Region V.

Five releases have been recorded by the plant. On 30 March 1981, 15 gallons of alpha-methyl styrene were released. On 10 October 1984, 12,000 pounds of phenol were released. On 25 March 1986, 3,000 gallons of acetone were released. On 18 June 2006, 3,900 gallons of phenol were released. On 10 October 2006, 1,300 gallons of acetone were released. Chemicals/compounds of concern include: alpha-methyl styrene, phenol and acetone.

SWMU #67 - Wastewater Ditches and Settling Ponds

The plant contains numerous in-plant unlined stormwater ditches in various sections of the plant. The Main Ditch was excavated from the native soils in the area. The two settling ponds are excavated, unlined earthen impoundments. A portion of this SWMU, known as the “Third Street Ditch,” was originally part of a CAFO identified by U.S. EPA Region V Enforcement Branch. It was subsequently (August 1994) included in the RFI Program per an agreement between Arisotech and U.S. EPA Region V. In the Spring of 1981, the settling pond leaked to Gervais Run.

Chemicals/compounds of concern include: stormwater runoff from the entire plant, cooling tower and boiler blowdowns, effluent from the sanitary wastewater plant, Alcohol Waste Treatment Unit, and Polystyrene Waste Treatment Unit (when it was operational) and potentially BPA Waste Treatment Unit effluent.

On 25 January 1985, the BPA Plant had a number of lines freeze due to prolonged sub-zero weather. Several lines froze, broke, and spilled into Ditch #2 (part of SWMU #67) which runs adjacent to 3rd Street. An estimated 175,000 gallons of process water spilled.

SWMU #68 - Emergency Dike Fields

These dike fields are constructed of native soils surrounded by earthen dikes that are covered with a light layer of asphalt-like material. Each dike field has a capacity of 880,000 gallons.

On 25 January 1985, the BPA Plant had a number of lines freeze due to prolonged sub-zero weather. Several lines froze, broke, and spilled into Ditch #2 (part of SWMU #67) which runs adjacent to 3rd Street. To avoid an overflow to the site’s main outfall ditch (part of SWMU #67; NPDES Outfall #OIF0000901), the spilled material (low pH water) was pumped into the adjacent dike field surrounding Tank D-134, and later to the dike field of D-113. An estimated 175,000 gallons of process water spilled.
EXHIBIT J-1

SOLID WASTE MANAGEMENT UNIT SUMMARIES
## Exhibit J-1: SWMU Description

<table>
<thead>
<tr>
<th>SWMU ID</th>
<th>Description of SWMU</th>
</tr>
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<tbody>
<tr>
<td><strong>Group 1 – Wastewater/Land Treatment Areas, Lagoons and Ponds</strong></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Alcohol Holding Basin</td>
</tr>
<tr>
<td>12</td>
<td>Alcohol Pond</td>
</tr>
<tr>
<td>13</td>
<td>West Lagoon</td>
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<tr>
<td>30</td>
<td>100/800 Sumps Drying Area</td>
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<td>32</td>
<td>Sludge Lagoon</td>
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<td>Polystyrene Lagoons</td>
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<tr>
<td>35</td>
<td>Reactor Blowdown Area</td>
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<td>55</td>
<td>Land Treatment Area</td>
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<td>Land Application/Biosolids &amp; Sediment Settling Pond Area</td>
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<td>114</td>
<td>BPA Maintenance and Central Stores</td>
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<td><strong>Group 2 – Basins, Pits, Sewers, Sumps and Tanks</strong></td>
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<td>Alcohol Sludge Pit</td>
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<td>Sludge Pit</td>
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<td>2422-A, 2423-A, 2424-A Holding Basins</td>
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<td>2429-A Clarifier Blowdown Pits</td>
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<td>TK-902 Sump</td>
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<td>TK-903/904 Sump</td>
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<td>69</td>
<td>Process Stormwater Sewers</td>
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<td>84</td>
<td>Fire Burning Pit</td>
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<td>Septic Tank Oil Traps</td>
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<td>Cobalt Catalyst Tank</td>
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<td>D-143 Bio-Waste Oil Collection Tank</td>
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<td>115</td>
<td>2102-FA Tank</td>
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<td><strong>Group 3 – Solid Waste Handling, Loading and Storage Areas</strong></td>
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<td>Alcohol RR Loading Area</td>
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<td>BPA RR Loading Area</td>
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<td>66</td>
<td>BD-908 Drum Storage Area</td>
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<td>86</td>
<td>Surplus Equipment/Scrap Dump Area</td>
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<td>87</td>
<td>Coal Yard/Ash Storage Area</td>
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<td>88</td>
<td>Waste Drum Storage</td>
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<td>93</td>
<td>Ash Silo/Ash Loading Area</td>
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<td>97</td>
<td>BD-17 Waste/Scrap Drum Storage Area</td>
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<td><strong>Group 4 – RCRA Closure Areas</strong></td>
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<tr>
<td>51</td>
<td>Underground Injection Wells 1 &amp; 2 – RCRA CLOSED</td>
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<td>56</td>
<td>Northwest Lagoon – RCRA CLOSED</td>
</tr>
<tr>
<td>57</td>
<td>Boilers</td>
</tr>
<tr>
<td>62</td>
<td>East Pond – RCRA CLOSED</td>
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<td>West Pond – RCRA CLOSED</td>
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<td><strong>Group 5 – CAFO Areas</strong></td>
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<td>67</td>
<td>Wastewater Ditches &amp; Settling Ponds</td>
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<td>Emergency Dikefields</td>
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EXHIBIT J-2

SOLID WASTE MANAGEMENT UNIT PERIOD OF OPERATION
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<tr>
<th>SWMU ID</th>
<th>Description of SWMU</th>
<th>Period of Operation</th>
<th>Type of Unit</th>
<th>Comments</th>
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<td>1</td>
<td>Influent Surge Basin</td>
<td>1962 - Present</td>
<td>NPDES</td>
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<td>2</td>
<td>D-147 Mix Tank</td>
<td>1977 - 1992</td>
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<td>3</td>
<td>API Separator</td>
<td>1962 - Present</td>
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<td>Oil Recovery Cell</td>
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<td>Aeration Basin</td>
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<td>7</td>
<td>Final Settler</td>
<td>1982 - Present</td>
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<td>G-116 Clarifier</td>
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<td>Ash Settling Pit</td>
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<td>5/71 - 12/81</td>
<td>Non-Regulated</td>
<td>Non-Operational</td>
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<tr>
<td>23</td>
<td>T-817 Anion/Cation Backwash Tank</td>
<td>5/71 - 12/81</td>
<td>Non-Regulated</td>
<td>Non-Operational</td>
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<tr>
<td>24</td>
<td>Sludge Pit</td>
<td>5/71 - 12/81</td>
<td>Non-Regulated</td>
<td>Non-Operational</td>
</tr>
<tr>
<td>25</td>
<td>T-818 Backwash Sump</td>
<td>5/71 - 12/81</td>
<td>Non-Regulated</td>
<td>Non-Operational</td>
</tr>
<tr>
<td>26</td>
<td>T-819 Surge Tank</td>
<td>5/71 - 12/81</td>
<td>Non-Regulated</td>
<td>Non-Operational</td>
</tr>
<tr>
<td>27</td>
<td>W-809 Solids Contact Clarifier</td>
<td>5/71 - 12/81</td>
<td>Non-Regulated</td>
<td>Non-Operational</td>
</tr>
<tr>
<td>28</td>
<td>800 Sump</td>
<td>5/71 - 12/81</td>
<td>Non-Regulated</td>
<td>Non-Operational</td>
</tr>
<tr>
<td>29</td>
<td>100 Sump</td>
<td>1973 - 12/81</td>
<td>Non-Regulated</td>
<td>Non-Operational</td>
</tr>
<tr>
<td>30</td>
<td>100 and 800 Sumps Drying Area</td>
<td>12/81 - 1982</td>
<td>Non-Regulated</td>
<td>No Longer in Existence</td>
</tr>
<tr>
<td>31</td>
<td>Waste Effluent Sump</td>
<td>5/71 - 12/81</td>
<td>Non-Regulated</td>
<td>Non-Operational</td>
</tr>
<tr>
<td>32</td>
<td>Sludge Lagoons</td>
<td>5/71 - 12/81</td>
<td>Non-Regulated</td>
<td>Non-Operational</td>
</tr>
<tr>
<td>33</td>
<td>Aeration Lagoon</td>
<td>5/71 - 12/81</td>
<td>Non-Regulated</td>
<td>Non-Operational</td>
</tr>
<tr>
<td>SWMUID</td>
<td>Description of SWMU</td>
<td>Period of Operation</td>
<td>Type of Unit</td>
<td>Comments</td>
</tr>
<tr>
<td>--------</td>
<td>---------------------</td>
<td>---------------------</td>
<td>--------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>34</td>
<td>Polystyrene Lagoons</td>
<td>1971 to 12/81</td>
<td>Non-Regulated</td>
<td>Closed</td>
</tr>
<tr>
<td>35</td>
<td>Polystyrene Unit: Reactor Blowdown Area</td>
<td>6/71 to 12/81</td>
<td>Non-Regulated</td>
<td>Non-Operational</td>
</tr>
<tr>
<td>36</td>
<td>Polystyrene Unit: Reactor Sample Drum Storage Area</td>
<td>1971 to 1980</td>
<td>Non-Regulated</td>
<td>No Longer in Existence</td>
</tr>
<tr>
<td>37</td>
<td>2421-A Wastewater Sump</td>
<td>8/69 to Present</td>
<td>RCRA</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>2422-A, 2423-A Holding Basins</td>
<td>8/69 to 1988</td>
<td>RCRA</td>
<td>Currently Secondary Containment for RCRA Regulated Units</td>
</tr>
<tr>
<td>39</td>
<td>2424-A Holding Basin</td>
<td>7/79 to 1988</td>
<td>RCRA</td>
<td>Currently Secondary Containment for RCRA Regulated Units</td>
</tr>
<tr>
<td>40</td>
<td>2426-A API Separator</td>
<td>8/69 to 1988</td>
<td>RCRA</td>
<td>Currently Secondary Containment for RCRA Regulated Units</td>
</tr>
<tr>
<td>41</td>
<td>2428-A Skimmed Oil Sump</td>
<td>8/69 to 1988</td>
<td>RCRA</td>
<td>Currently Secondary Containment for RCRA Regulated Units</td>
</tr>
<tr>
<td>42</td>
<td>2421-F Decanter Tank</td>
<td>8/69 to Present</td>
<td>RCRA</td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>2427-A Wastewater Sump</td>
<td>1958 to 1988</td>
<td>RCRA</td>
<td>Currently Secondary Containment for RCRA Regulated Units</td>
</tr>
<tr>
<td>44</td>
<td>2421-FA Oil Storage Tank</td>
<td>7/79 to Present</td>
<td>RCRA</td>
<td>Less Than 90 Days of Storage</td>
</tr>
<tr>
<td>45</td>
<td>2423-F, 2424-F Surge Tanks</td>
<td>7/79 to Present</td>
<td>RCRA</td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>2421-UA/UB Anthracite Filters</td>
<td>8/69 to Present</td>
<td>RCRA</td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>2421-UC/UD Anthracite Filters</td>
<td>7/79 to Present</td>
<td>RCRA</td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>Spent Anthracite Box</td>
<td>12/84 to 1988</td>
<td>Less Than 90 Days of Storage</td>
<td>No Longer in Existence</td>
</tr>
<tr>
<td>49</td>
<td>2422-F Holding Tank</td>
<td>8/69 to 1988</td>
<td>RCRA</td>
<td>Closed</td>
</tr>
<tr>
<td>50</td>
<td>2422-UUA Guard Filters</td>
<td>8/69 to Present</td>
<td>RCRA</td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>2422-UB Guard Filters</td>
<td>7/79 to Present</td>
<td>RCRA</td>
<td></td>
</tr>
<tr>
<td>52</td>
<td>D-133 Storage Tank</td>
<td>1967 to 9/90</td>
<td>NPDES</td>
<td>Non-Operational</td>
</tr>
<tr>
<td>53</td>
<td>D-134 Storage Tank</td>
<td>1967 to 9/90</td>
<td>NPDES</td>
<td>Non-Operational</td>
</tr>
<tr>
<td>54</td>
<td>Aniline Unit: A-90 Oily Water Sump</td>
<td>3/82 to Present</td>
<td>RCRA</td>
<td>Less Than 90 Days of Storage</td>
</tr>
<tr>
<td>55</td>
<td>Injection Well #1</td>
<td>1966 to 1966</td>
<td>UIC</td>
<td>Closed</td>
</tr>
<tr>
<td>56</td>
<td>Injection Well #2</td>
<td>1977 to 1976</td>
<td>UIC</td>
<td>Closed</td>
</tr>
<tr>
<td>57</td>
<td>2433-A Filter Cake Pit (Enzinger Pit)</td>
<td>5/77 to Present</td>
<td>RCRA</td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>Phenol Railroad Loading Area</td>
<td>8/69 to Present</td>
<td>RCRA</td>
<td>Permitted by OEPa</td>
</tr>
<tr>
<td>59</td>
<td>2429-A Clarifier Blowdown Pits</td>
<td>5/68 to Present</td>
<td>RCRA</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>Land Treatment Area</td>
<td>12/81 to Present</td>
<td>RCRA</td>
<td>Closed</td>
</tr>
<tr>
<td>61</td>
<td>Northwest Lagoon</td>
<td>1970 to 1984</td>
<td>RCRA</td>
<td></td>
</tr>
<tr>
<td>62</td>
<td>2001-UA/UB/UC/UD/UE Boilers</td>
<td>1969 to Present</td>
<td>RCRA</td>
<td>Present OEPA Air and RCRA</td>
</tr>
<tr>
<td>63</td>
<td>2104-F Storage Tank</td>
<td>1959 to Present</td>
<td>RCRA</td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>2105-F Storage Tank</td>
<td>1988 to Present</td>
<td>RCRA</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>TK-802 Sump</td>
<td>7/78 to Present</td>
<td>RCRA</td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>TK-803 Sump</td>
<td>7/78 to Present</td>
<td>RCRA</td>
<td>Same as SWMUI 61</td>
</tr>
<tr>
<td>67</td>
<td>TK-903/904 Sump</td>
<td>7/78 to Present</td>
<td>RCRA</td>
<td></td>
</tr>
<tr>
<td>SWMUID</td>
<td>Description of SWMU</td>
<td>Period of Operation</td>
<td>Type of Unit</td>
<td>Comments</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------------------------------</td>
<td>--------------------</td>
<td>---------------</td>
<td>----------</td>
</tr>
<tr>
<td>62</td>
<td>East Pond</td>
<td>7/78 - 1988</td>
<td>RCRA</td>
<td>Non-Operational</td>
</tr>
<tr>
<td>63</td>
<td>West Pond</td>
<td>7/78 - 1988</td>
<td>RCRA</td>
<td>Non-Operational</td>
</tr>
<tr>
<td>64</td>
<td>F-2101 Guard Filter</td>
<td>9/78 - 1988</td>
<td>Formerly RCRA</td>
<td>Removed</td>
</tr>
<tr>
<td>65</td>
<td>BPA Railroad Loading Area</td>
<td>9/78 - Present</td>
<td>Non-Regulated</td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>BD-908 Drum Storage Area</td>
<td>8/70 - Present</td>
<td>Less Than 90 Days of Storage</td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>Wastewater Ditches</td>
<td>1961 - Present</td>
<td>NPDES</td>
<td></td>
</tr>
<tr>
<td>68</td>
<td>* Settling Ponds</td>
<td>12/78 - Present</td>
<td>NPDES</td>
<td></td>
</tr>
<tr>
<td>69</td>
<td>Emergency Wastewater Storage Dikefields (D-113 &amp; D134)</td>
<td>1/25/65 - 4/25/65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>Storm and Process Sewers</td>
<td>1951 - Present</td>
<td>Non-Regulated</td>
<td></td>
</tr>
<tr>
<td>71</td>
<td>F-94</td>
<td>1982 - Present</td>
<td>Less Than 90 Days of Storage</td>
<td></td>
</tr>
<tr>
<td>72</td>
<td>D-115/D-116A Tanks</td>
<td>1990 - Present</td>
<td>Non-Regulated</td>
<td></td>
</tr>
<tr>
<td>74</td>
<td>TK-2122</td>
<td>1985 - Present</td>
<td>NPDES</td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>T-809</td>
<td>1971 - 1981</td>
<td>Non-Regulated</td>
<td>Non-Operational</td>
</tr>
<tr>
<td>76</td>
<td>2427-A Neutralization Tank</td>
<td>1968 - Present</td>
<td>RCRA</td>
<td></td>
</tr>
<tr>
<td>77</td>
<td>2426-F/2427-F/2426-F Holding Tanks</td>
<td>1988 - Present</td>
<td>RCRA</td>
<td></td>
</tr>
<tr>
<td>78</td>
<td>2424 UA-UH Bag Filters</td>
<td>1978 - Present</td>
<td>RCRA</td>
<td></td>
</tr>
<tr>
<td>79</td>
<td>Static Mixers #1 and #2</td>
<td>1988 - 1990</td>
<td>Non-Regulated</td>
<td>No Longer in Existence</td>
</tr>
<tr>
<td>80</td>
<td>TK-2101</td>
<td>1977 - 1991</td>
<td>Non-Regulated</td>
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</tr>
<tr>
<td>81</td>
<td>TK-2101-R</td>
<td>1991 - Present</td>
<td>Non-Regulated</td>
<td></td>
</tr>
<tr>
<td>82</td>
<td>TK-2123 Clarifier</td>
<td>1988 - Present</td>
<td>Non-Regulated</td>
<td></td>
</tr>
<tr>
<td>83</td>
<td>TK-2108 Clarifier Effluent Tank</td>
<td>1988 - Present</td>
<td>Non-Regulated</td>
<td></td>
</tr>
<tr>
<td>84</td>
<td>F-2102 Filter Press</td>
<td>1988 - Present</td>
<td>Non-Regulated</td>
<td></td>
</tr>
<tr>
<td>85</td>
<td>TK-2124 Surge Tank</td>
<td>1988 - Present</td>
<td>Non-Regulated</td>
<td></td>
</tr>
<tr>
<td>86</td>
<td>Fire Burning Pit</td>
<td>1962 - 1970</td>
<td></td>
<td>No Longer in Existence</td>
</tr>
<tr>
<td>87</td>
<td>Trash Area on North D Street</td>
<td>1962 - 1970</td>
<td></td>
<td>No Longer in Existence</td>
</tr>
<tr>
<td>88</td>
<td>Surplus Equipment/Scrap Dump</td>
<td>1970 - 1960's</td>
<td></td>
<td>No Longer in Existence</td>
</tr>
<tr>
<td>89</td>
<td>Coal Yard/Ash Storage</td>
<td>1962 - 1992</td>
<td></td>
<td>Non-Operational</td>
</tr>
<tr>
<td>90</td>
<td>Waste Drum Storage</td>
<td>1978 - 1982</td>
<td></td>
<td>No Longer in Existence</td>
</tr>
<tr>
<td>92</td>
<td>D-129 Heavy End Fuel Oil Tank</td>
<td>1982 - 1981</td>
<td></td>
<td>Non-Operational</td>
</tr>
<tr>
<td>94</td>
<td>Sludge Feed Tank</td>
<td>1981 - 1992</td>
<td></td>
<td>Non-Operational</td>
</tr>
<tr>
<td>SWMU ID</td>
<td>Description of SWMU</td>
<td>Period of Operation</td>
<td>Type of Unit</td>
<td>Comments</td>
</tr>
<tr>
<td>---------</td>
<td>-------------------------------------------</td>
<td>---------------------</td>
<td>--------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>93</td>
<td>Ash Silo/Ash Loading Area</td>
<td>1982-1992</td>
<td>Non-Operational</td>
<td></td>
</tr>
<tr>
<td>95</td>
<td>Oil Separator Sump</td>
<td>7-1984</td>
<td>Non-Operational</td>
<td></td>
</tr>
<tr>
<td>96</td>
<td>D-121/D-122 Spent Olefin Tanks</td>
<td>1982-1982</td>
<td>Non-Operational</td>
<td></td>
</tr>
<tr>
<td>97</td>
<td>BD-17 Waste/Surplus Drum Storage</td>
<td>1970-1980's</td>
<td>Non-Operational</td>
<td></td>
</tr>
<tr>
<td>98</td>
<td>Septic Tank Oil Trap</td>
<td>1982-Present</td>
<td>Non-Regulated</td>
<td></td>
</tr>
<tr>
<td>99</td>
<td>Cobalt Catalyst Tank</td>
<td>1970-1982</td>
<td>Non-Operational</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>Land Application/Biosolids and Settling Pond Sediment</td>
<td>1980's-1991</td>
<td>Non-Operational</td>
<td></td>
</tr>
<tr>
<td>101</td>
<td>D-125 Bio Oil Storage Tank</td>
<td>1982-Present</td>
<td>NPDES</td>
<td></td>
</tr>
<tr>
<td>102</td>
<td>D-157 Bio Sludge Settling Tank</td>
<td>1985-Present</td>
<td>NPDES</td>
<td></td>
</tr>
<tr>
<td>103</td>
<td>D-143 Bio Waste Oil Collection Tank</td>
<td>1982-Present</td>
<td>Non-Regulated</td>
<td></td>
</tr>
<tr>
<td>104</td>
<td>D-802 Organics Waste Tank</td>
<td>1977-Present</td>
<td>Non-Regulated</td>
<td></td>
</tr>
<tr>
<td>106</td>
<td>D-714 Tar Pit</td>
<td>1977-Present</td>
<td>Non-Regulated</td>
<td></td>
</tr>
<tr>
<td>107</td>
<td>401-F Phenol I Wastewater Collection Vessel</td>
<td>1969-Present</td>
<td></td>
<td></td>
</tr>
<tr>
<td>108</td>
<td>T-702 Phenolic Wastewater Tank</td>
<td>1988-1991</td>
<td></td>
<td>Currently in fire water service</td>
</tr>
<tr>
<td>109</td>
<td>A-92 Wastewater Sump</td>
<td>1982-Present</td>
<td>Non-Regulated</td>
<td></td>
</tr>
<tr>
<td>110</td>
<td>2439-F Stormwater Tank</td>
<td>10/92-3/93</td>
<td>Non-Regulated</td>
<td>Currently a stormwater tank</td>
</tr>
<tr>
<td>111</td>
<td>Poly-100 Warehouse</td>
<td>1980-Present</td>
<td>Less Than 90 Days of Storage</td>
<td></td>
</tr>
<tr>
<td>112</td>
<td>2003-F Light Hydrocarbon Tank</td>
<td>1999-Present</td>
<td>RCRA</td>
<td></td>
</tr>
<tr>
<td>113</td>
<td>2402-L Coalescer</td>
<td>1989-Present</td>
<td>RCRA</td>
<td></td>
</tr>
<tr>
<td>114</td>
<td>BPA Maintenance/Central Stores</td>
<td>1978-1988</td>
<td>Non-Operational</td>
<td></td>
</tr>
<tr>
<td>115</td>
<td>Tank 2102-FA Leak</td>
<td>4/91-1992</td>
<td>Remediation Complete</td>
<td></td>
</tr>
</tbody>
</table>
Attachment J-1

Solid Waste Management Unit Locations
SECTION K
OTHER FEDERAL LAWS
SECTION K
OTHER FEDERAL LAWS

TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Act</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>WILD AND SCENIC RIVERS ACT</td>
<td>K-1</td>
</tr>
<tr>
<td>THE NATIONAL HISTORIC PRESERVATION ACT</td>
<td>K-1</td>
</tr>
<tr>
<td>THE FISH WILDLIFE COORDINATION ACT</td>
<td>K-1</td>
</tr>
<tr>
<td>THE COASTAL ZONE MANAGEMENT ACT</td>
<td>K-1</td>
</tr>
<tr>
<td>ENDANGERED SPECIES ACT</td>
<td>K-1</td>
</tr>
</tbody>
</table>
SECTION K

OTHER FEDERAL LAWS

LIST OF ATTACHMENT

Attachment K-1 Ohio Department of Natural Resources
SECTION K

OTHER FEDERAL LAWS

In accordance with 40 CFR 270.3, the following laws have been reviewed for applicability with respect to the hazardous waste management activities at the Haverhill Plant.

WILD AND SCENIC RIVERS ACT: Section 1501.16 (Wild and Scenic Rivers - Under DNR)

There are no wild or scenic rivers within one mile of the plant. This information was verified by the Ohio Department of Natural Resources - Division of Natural Areas and Preserves (Attachment K-1).

THE NATIONAL HISTORIC PRESERVATION ACT

The Haverhill Plant is not listed on the National Register of Historic Places.

THE FISH WILDLIFE COORDINATION ACT

There are no waters of any stream or other body of water that will be proposed or authorized to be impounded, diverted, controlled, or modified at this plant.

THE COASTAL ZONE MANAGEMENT ACT

The Haverhill Plant is not located within a designated coastal zone.

ENDANGERED SPECIES ACT: Chapters 1518 and 1531, OAC (Wildlife and Endangered Species)

There are no endangered species within one-quarter mile of the plant. This information was verified by the Ohio Department of Natural Resources - Division of Natural Areas and Preserves (Attachment K-1).
ATTACHMENT K-1

OHIO DEPARTMENT OF NATURAL RESOURCES
October 3, 1997

Colleen A. Kitch
Environmental Quality Mgmt., Inc.
1310 Kemper Meadow Drive
Cincinnati, OH 45240

Dear Ms. Kitch:

I have reviewed our Natural Heritage maps and files for the Aristech Chemical project area, including a one mile radius, on the Greenup Quad in Scioto County, Ohio. (Please note that we do not have information for the Kentucky portion of your project site.) The numbers on the accompanying list correspond to the areas marked in red on the accompanying map. A dot represents an exact location, a triangle a general location within a square mile. Exactness is determined by the accuracy and detail of information provided by the surveyor. Common name, scientific name and status are given for each species. There are no existing or proposed state nature preserves or scenic rivers at the project site.

Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Please note that although we inventory all types of plant communities, we only maintain records on the highest quality areas. Also, we do not have data for all Ohio wetlands. For additional information on wetlands and National Wetlands Inventory maps, please contact Jim Given in the Division of Real Estate and Land Management at 614-265-6770.

Please contact me at 614-265-6818 if I can be of further assistance.

Sincerely,

Debbie Woschke
Debbie Woschke, Ecological Analyst
Division of Natural Areas & Preserves
OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF NATURAL AREAS AND PRESERVES

October 3, 1997

Aristech Chemical, Scioto County, Ohio

GREENUP QUAD

1. *Bignonia capreolata* - Cross-vine, potentially threatened

2. *Bignonia capreolata* - Cross-vine, potentially threatened

3. Beech-Sugar Maple Forest Plant Community

4. Floating-Leaved Marsh Plant Community
   Mixed Emergent Marsh Plant Community
   *Gratiola viscidula* - Short's Hedge-hyssop, potentially threatened

5. *Gratiola viscidula* - Short’s Hedge-hyssop, potentially threatened

6. *Gratiola viscidula* - Short's Hedge-hyssop, potentially threatened

7. *Bignonia capreolata* - Cross-vine, potentially threatened

8. *Ranunculus pusillus* - Low Spearwort, endangered
   *Gratiola viscidula* - Short’s Hedge-hyssop, potentially threatened

9. *Viola lanceolata* - Lance-leaved Violet, potentially threatened

10. Mixed Emergent Marsh Plant Community
    Submerged Marsh Plant Community
    *Hottonia inflata* - Featherfoil, endangered
    *Gratiola viscidula* - Short’s Hedge-hyssop, potentially threatened
    *Potamogeton pulcher* - Spotted Pondweed, threatened
    *Ranunculus pusillus* - Low Spearwort, endangered
October 2, 1997

Ms. Patricia Jones  
Division of Natural Areas and Preserves  
Ohio Department of Natural Resources  
1889 Fountain Square Court, F-1  
Columbus, OH 43224

RE: Ohio Natural Heritage Data Services

Dear Ms. Patricia Jones,

As per our conversation on October 2, 1997 regarding the Ohio Natural Heritage Data Services, I would like to request data pertaining to the following:

- the Wild and Scenic Rivers Act (Section 1501.16), and
- the Endangered Species Act (Chapters 1518 and 1531 OAC Wildlife and Endangered Species.)

I am in the process of renewing a RCRA Part B Permit Application for Aristech Chemical Corporation. I need to find out if there are any wild and scenic rivers, and/or endangered species within a one mile radius of the facility. Please provide a cost estimate for this work. I have included the necessary application and map for the request.

This information is being obtained to use as an attachment to be included in the application. I would then like to request written permission to use this information as such. I understand that in order to include this in the facility’s application I will acknowledge the Division of Natural Areas and Preserves as the source of the material.

If there are any questions pertaining to this please contact me at (513) 825-7500.

Sincerely,

ENVIRONMENTAL QUALITY MANAGEMENT, INC.

Colleen A. Kitch  
Geologist

enc.
DATA REQUEST

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF NATURAL AREAS AND PRESERVES
HERITAGE DATA SERVICES
1889 FOUNTAIN SQUARE COURT, BUILDING F-1
COLUMBUS, OHIO 43224
PHONE: 614-265-6453; FAX: 614-267-3096

INSTRUCTIONS:
Please fill out both sides of this data request form, sign it and return it to the address or fax number listed above along with: (1) a letter formally requesting data and describing your project, and (2) a map detailing the boundaries of your study area. A photocopy from the pertinent portion of a USGS 7.5 minute topographic map is preferred but other maps are acceptable. Our turnaround time is two weeks, although we can often respond more quickly.

FEES:
Manual Search: Base fee = $20.00 per request plus $25.00 per hour when data is provided.
Computer Search: Base fee = $40.00 per search plus $.50 per page for printouts exceeding ten pages

The Heritage Data Services staff will determine the most cost-efficient method of supplying the data. A cost estimate can be provided upon request. Unless otherwise specified, an invoice will accompany the data services response.

This request is being submitted by: □ fax □ mail □ both
Date: October 2nd 1997

Your Agency/Organization: Environmental Quality Management, Inc.
Your Name/Title: Colleen A. Kitch, Geologist
Address: 1310 Kemper Meadow Dr. Ste 100
City/State/Zip: Cincinnati OH 45240
Phone/Fax: (513) 925-7500 FAX (513) 825-7995

Project Name/Number: Aristech Chemical

Project is located on the following USGS 7.5 minute topographic map(s):

Green up Quad. (Scioto & Green up Counties) 00430

If there is a program or contracting agency requiring this information, please give the name and phone number of a contact person:

Vicky German, Ohio EPA (614) 385-8501
The Natural Heritage Data Base contains records for the categories of species and features listed below. Check the appropriate boxes to indicate your selection.

PLANTS:  □ Federal Status Only  □ Federal Status Only
         □ State Legal Status Only  □ State Legal Status Only
         □ Rare (non-legal status)  □ Rare (non-legal status)
         ☑ All of the above  ☑ All of the above

PLANT COMMUNITIES:  ☑ All
         □ Wetlands Only
         □ Other

OTHER FEATURES:  □ Geologic Features
         □ Breeding/Non-breeding Animal Concentrations
         □ Champion Trees
         □ State Nature Preserves and Natural Areas
         □ State Wild, Scenic and Recreational Rivers
         □ State Parks, Forests, Wildlife Areas
         □ All of the above.
         □ Other Items listed in Endangered Species Act Chapters 1513 and 1531.04C,
          and Wild and Scenic Rivers Act Section 1501.14.

Besides name, location and status, specify any additional information you need:

________________________________________________________________________

The area you want searched:  □ study area as outlined on the map
         □ study area plus ½ mile radius
         □ study area plus 1 mile radius
         ☑ Other: 1 mile radius of plant.

How will the information be used:

To list and attach in a RCRA Part B Permit Application renewal for

Aristech Chemical Corporation.

The information supplied above is complete and accurate. Any material supplied by the Natural Heritage Data Base will not be published without prior written permission and without crediting the Division of Natural Areas and Preserves as the source of the material.

Your Signature  10/2/17

Ohio EPA DMWM - DEC 16 2011  OCT 29 2001
To: M.S. Patricia Jones

Company: Division of Natural Areas and Preserves

Fax No: (513) 267-3090

From: Colleen A. Kitch

Message: DATA REQUEST FOR HERITAGE DATA SERVICES.
Division of Natural Areas and Preserves
Ohio Department of Natural Resources
1889 Fountain Square Court, F-1
Columbus, Ohio 43224

FACSIMILE TRANSMISSION

Please deliver the following fax message to:

Name: Colleen Kitch, Environmental Quality Management
From: Patricia Jones

Total number of pages including this cover sheet: 5
If you do not receive all the pages, please call:
Office Number: 614/265-6456 Fax Number: 614/267-3096

Comments:

Date: October 2, 1997
The inventory has compiled information from a wide range of sources, including museum and herbarium collection records, publications and experts throughout the state. Guided by this information, the inventory conducts considerable field research every year to build the database and keep it current.

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Accurate, Up-To-Date, Centralized, Accessible, Comprehensive.

The quantity and quality of data collected by the Heritage Program depend on the research and observations of many individuals and organizations. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in Ohio have never been thoroughly surveyed, and new species of plants and animals are still being discovered. For these reasons, the Heritage Program cannot provide a definitive statement on the presence, absence or condition of biological elements in any part of Ohio. Heritage reports summarize the existing information regarding the biological elements or locations in question known to ONHP at the time of the request. They should never be regarded as final statements on the elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments.
Prospective data users should obtain data request forms from:
Heritage Data Services
ODNR Division of Natural Areas & Preserves
Fountain Square, Building F-1
Columbus, OH 43224

These forms request detailed information about the planned use of the data and require the data user to agree to certain restrictions. These restrictions include the need to acquire written permission to publish information provided by the Heritage Program and a requirement that the division be given credit as the information source.

The Heritage staff will review the data request form and will contact the prospective data user to answer any questions. A decision will be made about the level of detail necessary to fulfill the data user's needs. A cost estimate for the data search can be given at this time if requested. Fees for services rendered help recover actual costs for the Division of Natural Areas and Preserves. A fee schedule is provided with each form.

The requested information will be retrieved from the Heritage data systems using the most cost-efficient methods, and will be provided to the user with specified restrictions. If the application for access to data is denied, a written explanation will be provided.

Information will not be provided by telephone or to drop-in visitors. Normally, users will receive the requested data within two weeks of ONHP's receipt of the data request form.

Written agreements can be negotiated to offset fees for services. Data users providing useful information to the Heritage Program can obtain reduced or deferred fees. Contact the Heritage Data Manager for details.
SECTION L

CERTIFICATION
SECTION L. CERTIFICATION

TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>CERTIFICATION</td>
<td>L-1</td>
</tr>
</tbody>
</table>
CERTIFICATION

This Permit Application is signed below in accordance with the requirements of OAC Rule 3745-50-42:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

[Signature]

Stephen C. Isaacs, Jr., Site Manager

7/17/2013

Date