WESTON
MANAGERS DESIGNERS/CONSULTANTS

PFE

# Site Inspection Report

## Robert Wooler Company Site
## Dresher, Montgomery County, PA

**CERCLIS No. PAD987279387**

**Dump Site No. PA2700**

27 October 1997

**Prepared for**

**U. S. Environmental Protection Agency Region III**
**CEPP and Site Assessment Section**
**Philadelphia, PA**

**SATA**
**Site Assessment Technical Assistance**

TDD No. 9701-151
Contract No. 68-S5-3002

TDD#: 9701-151
CONTRACT No. 68-S5-3002

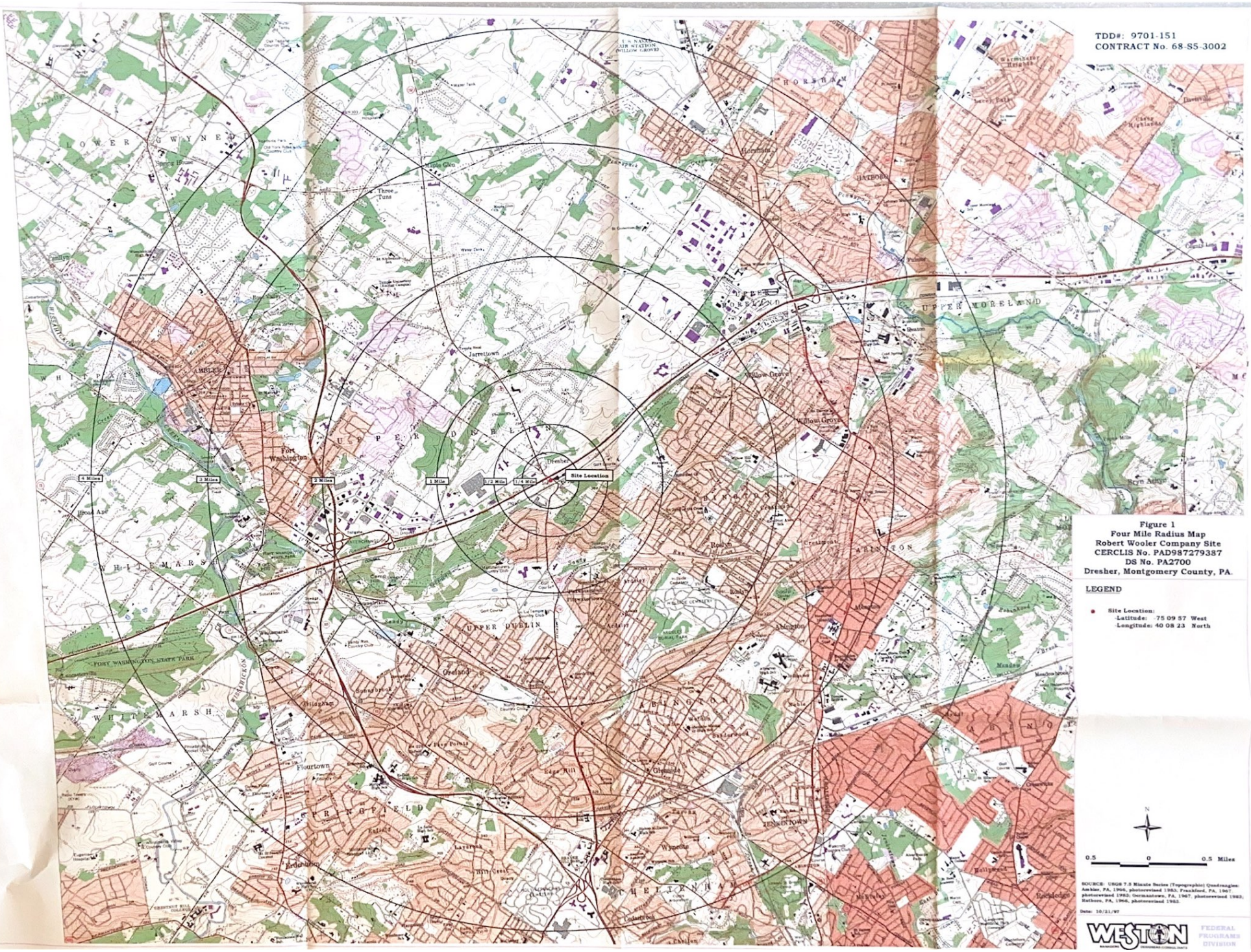



Figure 1
Four Mile Radius Map
Robert Wooler Company Site
CERCLIS No. PAD987279387
DS No. PA2700
Dresher, Montgomery County, PA.

**LEGEND**

- Site Location:
  - Latitude: 75 09 57 West
  - Longitude: 40 08 23 North

N

0.5 0 0.5 Miles

SOURCE: USGS 7.5 Minute Series (Topographic) Quadrangles: Ambler, PA, 1966, photorevised 1983; Frankford, PA, 1967, photorevised 1983; Germantown, PA, 1967, photorevised 1983; Hatboro, PA, 1966, photorevised 1983.

Date: 10/21/97

WESTON

FEDERAL PROGRAMS DIVISION

FILE ORIGINAL (Red)

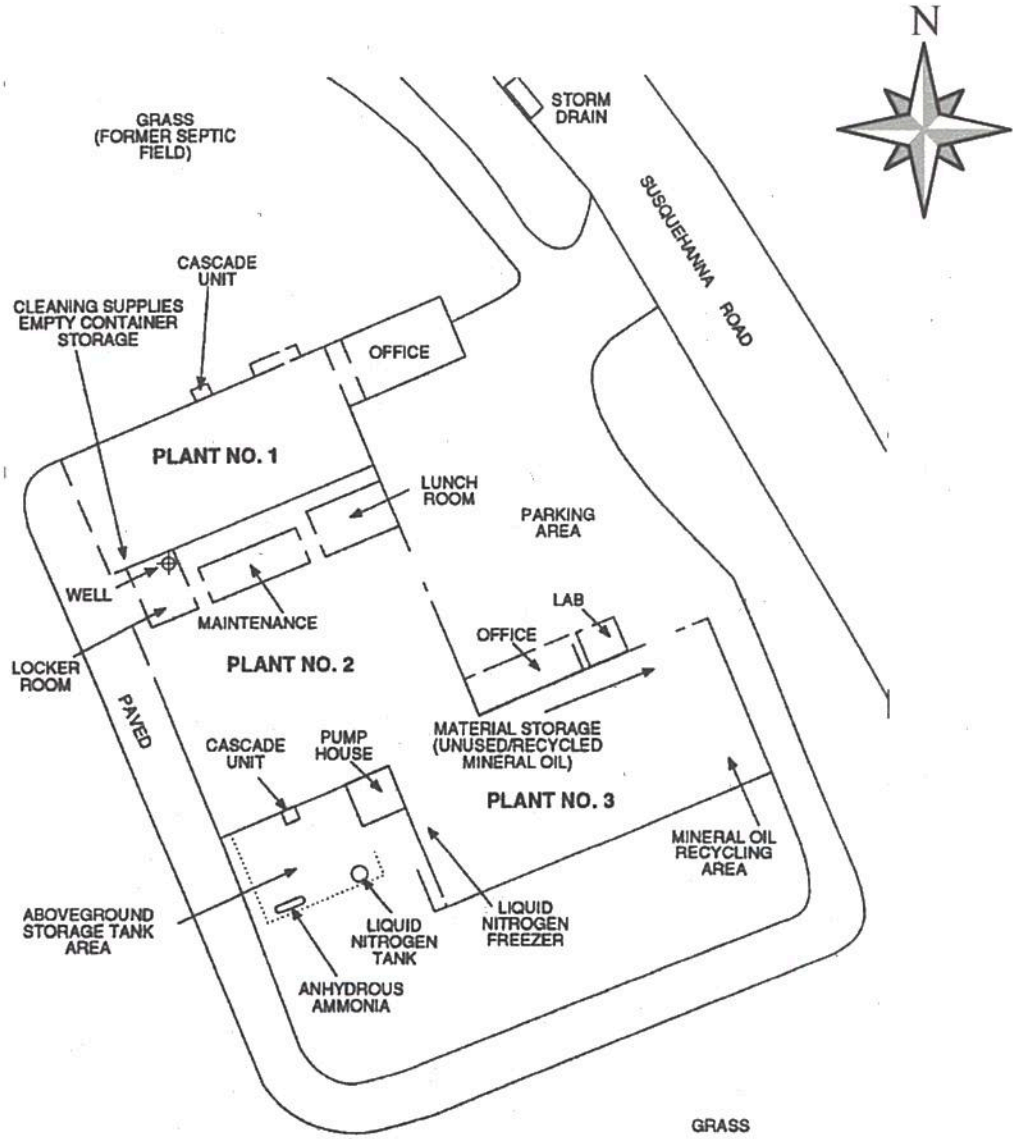
# FIGURE 2

## Site Layout Map

WESTON FEDERAL PROGRAMS DIVISION
MANAGERS DESIGNERS/CONSULTANTS

Figure 2
Robert Wooler Company Site
**Dresher, Montgomery County, PA**

**TDD#: 9701-151**
**PCS#: 3152**




Source: Ecology and Environment, 1993

NOT TO SCALE

(b) (9)

ORIGINAL
(Red)

# FIGURE 4

## Two Mile Radius Map

Figure 4
Two Mile Radius Map
Robert Wooler Company Site
CERCLIS No. PAD987279387
DS No. PA2700
Dresher, Montgomery County, PA.

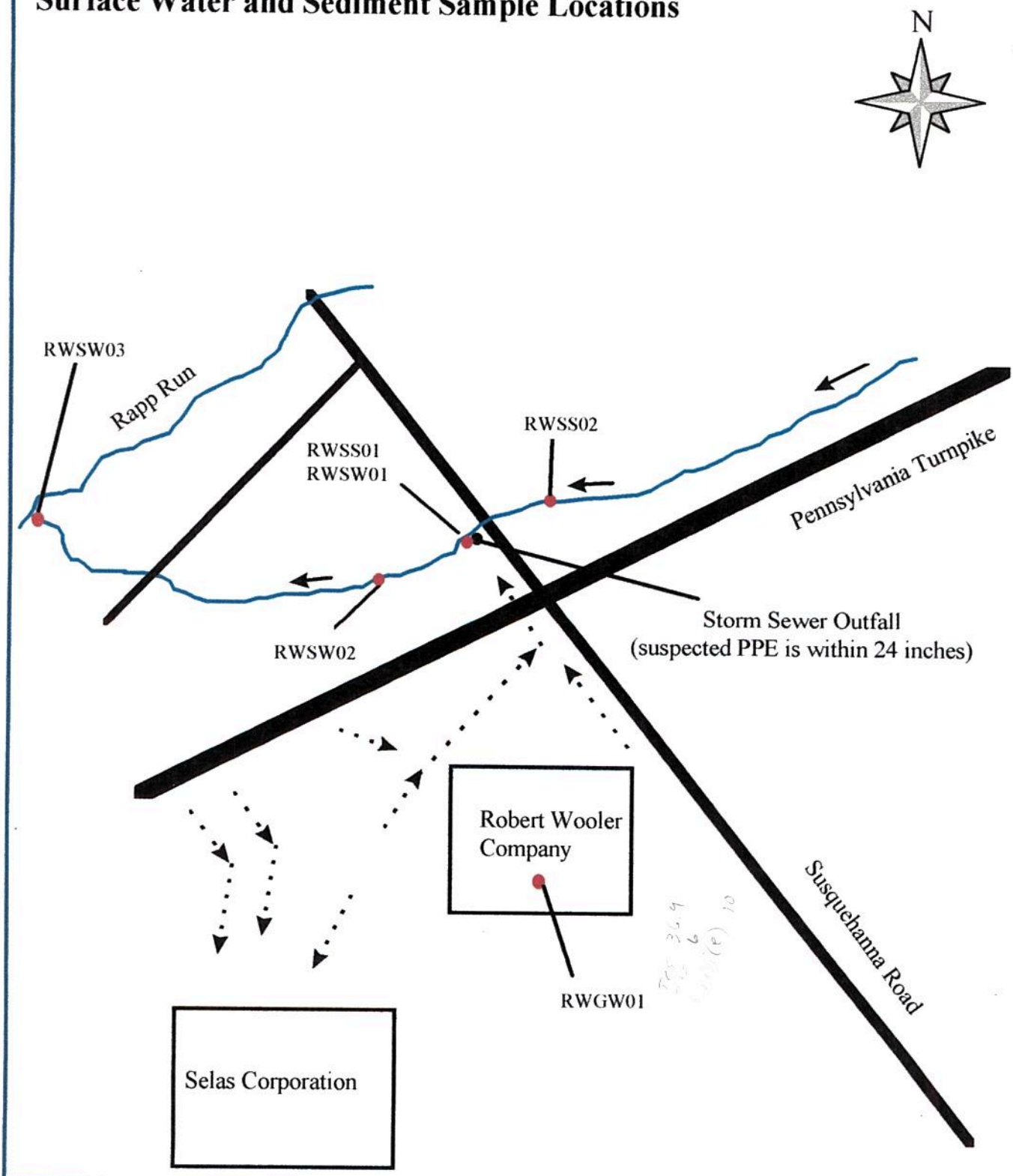
ORIGINAL (Red)

# FIGURE 5

## Surface Water/Sediment Sample Location Map

| WESTON FEDERAL PROGRAMS DIVISION | Robert Wooler Company Site<br>Dresher, Montgomery County, PA | TDD#: 9701-151<br>PCS#: 3152 |
|---|---|---|

# Surface Water and Sediment Sample Locations




· · · ➤ Direction of Surface Topography

NOT TO SCALE

ORIGINAL
(Red)

# FIGURE 6

## Fifteen Mile Downstream Map

TDD#: 9701-151
CONTRACT No. 68-S5-3002

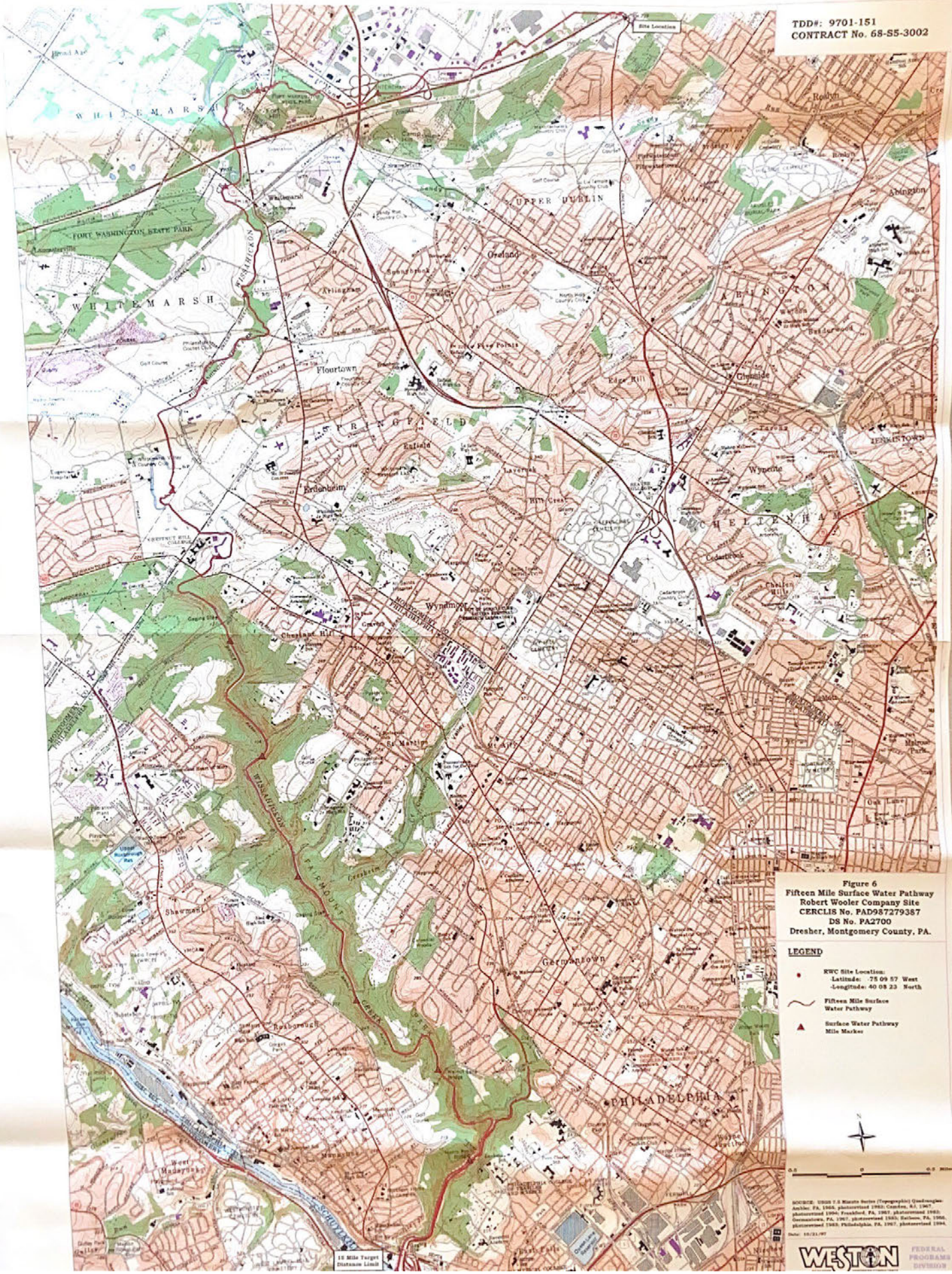



**Figure 6**
**Fifteen Mile Surface Water Pathway**
**Robert Wooler Company Site**
**CERCLIS No. PAD987279387**
**DS No. PA2700**
**Dresher, Montgomery County, PA.**

**LEGEND**

- RWC Site Location:
  - Latitude: 75 09 57 West
  - Longitude: 40 08 23 North
- Fifteen Mile Surface Water Pathway
- Surface Water Pathway Mile Marker

SOURCE: USGS 7.5 Minute Series (Topographic) Quadrangles: Ambler, PA, 1966, photorevised 1983; Camden, NJ, 1967, photorevised 1984; Frankford, PA, 1967, photorevised 1983; Germantown, PA, 1967, photorevised 1983; Hatboro, PA, 1966, photorevised 1983; Philadelphia, PA, 1967, photorevised 1984.

Date: 10/21/97

WESTON FEDERAL PROGRAMS DIVISION

PFE ORIGINAL (Red)

# FIGURE 7

## Wetlands Location Map

# NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

WILMINGTON NW
WILMINGTON

PHILADELPHIA, PA-N.J.

Other information concerning the wetland resources depicted on this document may be available. For information, contact:

Regional Director (ARDE) Region V
U.S. Fish and Wildlife Service
1 Gateway Center Suite 700
Newton Corner, Massachusetts 01258

SPECIAL NOTE

This document was prepared primarily by stereoscopic analysis of high altitude aerial photographs. Wetlands were identified on the photographs based on vegetation, visible hydrology and geography in accordance with **Classification of Wetlands and Deep Water Habitats of the United States** (An Operational Draft), Cowardin, et al, 1977. The aerial photographs typically reflect conditions during the specific year and season when they were taken. In addition, there is a margin of error inherent in the use of the aerial photography. Thus, a detailed on the ground or historical analysis of a single site may reveal it is inaccurate. Wetlands boundaries depicted on this map are approximate. Geographical boundaries, some small wetlands and those obscured by dense forest cover may not be included on this document.

Federal, State and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or production of this inventory, to define the limits of proprietary jurisdiction of any Federal, State or local government or to establish the geographic scope of the regulatory programme of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, State or local agencies concerning specified agency regulatory programs and programs considerations that may affect such activities.

SYNONOMY EXAMPLE

NOTES TO THE USER

- Wetlands which have been less maintained are indicated on the map by an asterisk (*).
- Commercial type tame vegetation or sedentary animal can be added to the map as the intended use.
- Additions or corrections to the wetlands information displayed on this map are solicited. Please forward such information to the address indicated.
- Some areas designated R4SB, R4SBH, or R4SBJ (intermittent streams) may not meet the definition of wetlands.

AERIAL PHOTOGRAPHY

| | |
|---|---|
| DATE | 3-6-77 |
| SCALE | 1:80,000 |
| TYPE | B-W |
| DATE | |
| SCALE | |
| TYPE | |
| DATE | |
| SCALE | |
| TYPE | |

U.S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

Prepared by Office of Biological Services
for the National Wetlands Inventory

Figure 7
Robert Wooler Company SI Report
October 1997

## WETLAND LEGEND

B - Principally representing **upland** areas, but may include palustrine wetlands such as man-modified areas, non photo-identifiable areas and/or anthropogenic complexes.

ECOLOGICAL SYSTEM

E - ESTUARINE

M - MARINE

ECOLOGICAL SYSTEM

ECOLOGICAL SYSTEM

P - PALUSTRINE

L - LACUSTRINE

ECOLOGICAL SYSTEM

ECOLOGICAL SYSTEM

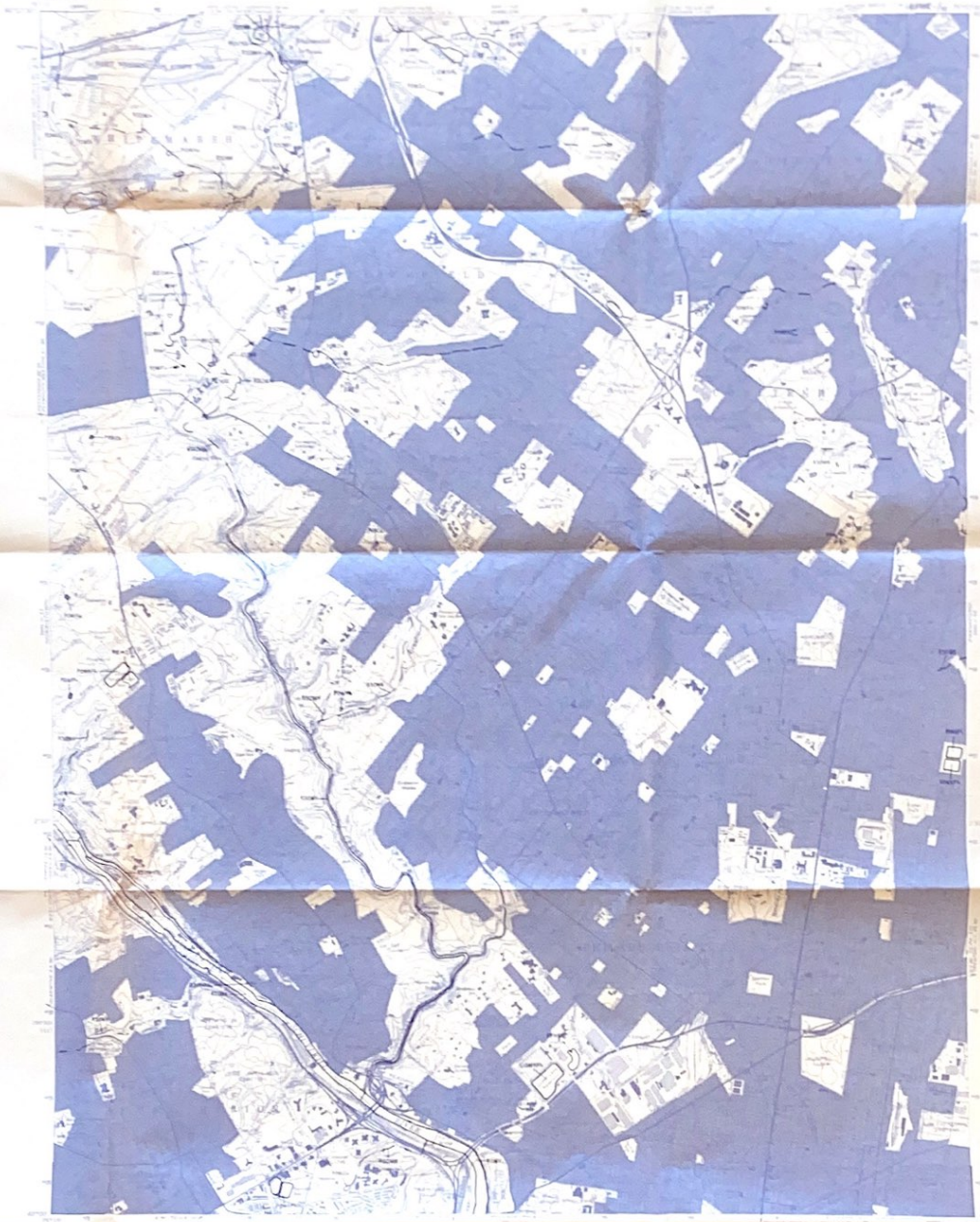
R - RIVERINE

MODIFYING TERMS

| WATER REGIME | | | SPECIAL CHARACTER | | | SPECIAL MODIFIERS | | |
|---|---|---|---|---|---|---|---|---|
| Non-Tidal | | | Cultural Subsets | Special Subsets | Modifiers for all Coast Zones | | | |

# NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



Other information concerning the wetland resources depicted on this document may be available. For information, contact:

Regional Director (ARDE) Region V
U.S. Fish and Wildlife Service
1 Gateway Center, Suite 700
Newton Corner, Massachusetts 02158

**SPECIAL NOTE**

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Federal, State and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, State or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving alteration or construction in wetland areas should seek the advice of appropriate Federal, State or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

**SYMBOLOGY EXAMPLE**

**NOTES TO THE USER**

- Wetlands which have been field examined are indicated on the map by an asterisk (*).
- Dominance type (either vegetative or sedentary animal) can be added to the map by the interested user.
- Additions or corrections to the wetlands information displayed on this map are solicited. Please forward such information to the address indicated.

**AERIAL PHOTOGRAPHY**

| | |
|---|---|
| DATE | 9 / 81 |
| SCALE | 1 : 8 000 |
| TYPE | CIR |
| DATE | / / |
| SCALE | |
| TYPE | |
| DATE | / / |
| SCALE | |
| TYPE | |

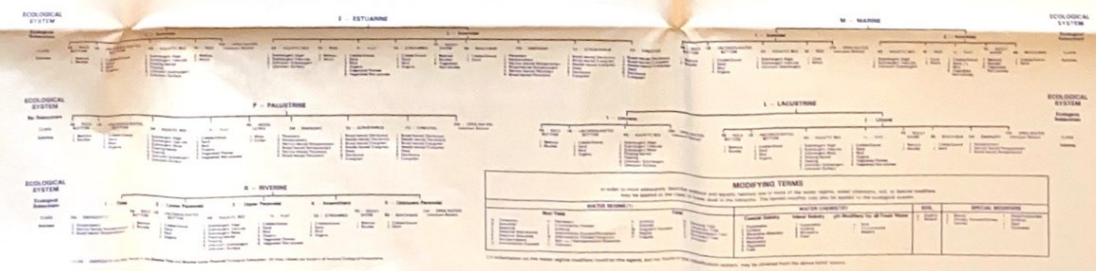
**U.S. DEPARTMENT OF THE INTERIOR**
**FISH AND WILDLIFE SERVICE**

Prepared by Office of Biological Services for the National Wetlands Inventory

Figure 7
Robert Wooster Companies SI Report
October 1997

## WETLAND LEGEND

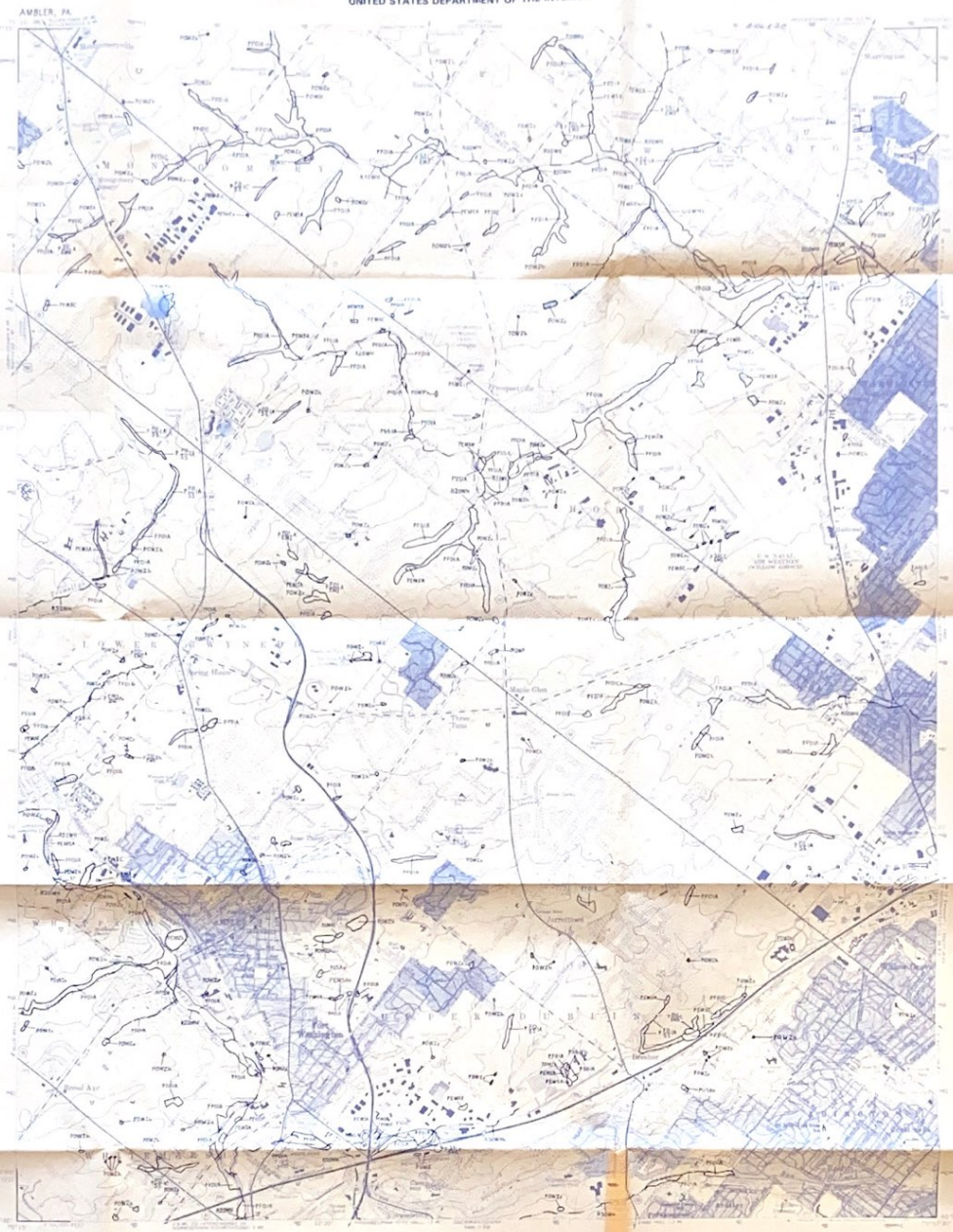
B – Primarily represents **upland** areas, but may include unclassified wetlands such as man-modified areas, non photo-identifiable areas and/or unintentional omissions.



# NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

AMBLER, PA.



NEWARK 5 W

READING

SCALE 1:24 000

Other information concerning the wetland resources depicted on this document may be available. For information, contact:

Regional Director (ARDE) Region V
U.S. Fish and Wildlife Service
1 Gateway Center, Suite 700
Newton Corner, Massachusetts 02158

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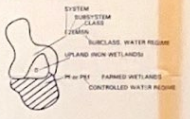
**SYMBOLOGY EXAMPLE**




**NOTES TO THE USER**

- Wetlands which have been field examined are indicated on the map by an asterisk (*).
- Depressional type (either vegetative or bedforms) animals can be drilled on the map by the interested user.
- Comments or questions relative to the wetlands information displayed on this map are solicited. Please forward such information to the address indicated.

**AERIAL PHOTOGRAPHY**

DATE 4 / 5 / 51
SCALE 1:58 000
TYPE CIR
DATE / /
SCALE
TYPE
DATE / /
SCALE
TYPE

AMBLER, PA.

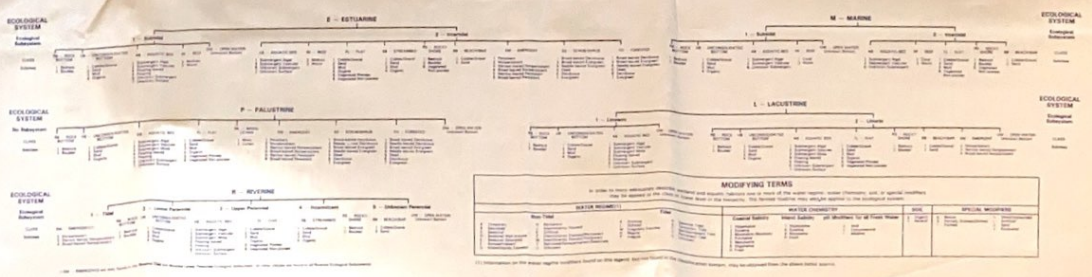
U.S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

Prepared by Office of Biological Services
for the National Wetlands Inventory

Figure 7
Robert Wooler Company SI Report
October 1997

## WETLAND LEGEND

D — Primarily represents upland areas, but may include unclassified wetlands such as man-modified areas, non-photo-identifiable areas and/or unmanageable areas.




**MODIFYING TERMS**

In order to more adequately describe wetland and aquatic habitats and to meet of the water regime, water chemistry, soil, or special modifiers may be applied to the class or lower level in the hierarchy. The former routine may apply to the ecological system.

| WATER REGIMES | WATER CHEMISTRY | SOIL | SPECIAL MODIFIERS |
|---|---|---|---|
| Non-Tidal<br>Tidal<br>Lower Perennial<br>Upper Perennial<br>Intermittent<br>Unknown Perennial | General Subclass<br>Inland Subclass (or Modifiers for all Fresh Water) | | |

ORIGINAL (Red)

# APPENDIX 1

## 1997 SI Analytical Summary

# Appendix 1
## Analytical Data Summary
## 1997 SI Sampling Results
## Robert Wooler Company

| Hazardous Substance | RWSS02 SED | | RWSS01 SED | | RWSW02 AQ | | RWSW03 AQ | | RWGW01 AQ | | RWGW04 AQ | | RWGW03 AQ | | RWGW06 AQ | | RWGW05 AQ | | RWGW02 AQ | | RWBL01 AQ TRIPBLANK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (ug/g) | | (ug/g) | | (ug/L) | | (ug/L) | | (ug/L) | | (ug/L) | | (ug/L) | | (ug/L) | | (ug/L) | | (ug/L) | | (ug/L) | |
| **Organics** | | | | | | | | | | | | | | | | | | | | | | |
| Acetone | 5 | J | ND | | ND | | ND | | ND | | ND | | ND | | 5.9 | | ND | | ND | | ND | |
| Chloroform | ND | | ND | | ND | | ND | | 0.4 | J | 2.7 | | ND | | ND | | 2.4 | | ND | | ND | |
| 1,1-Dichloroethane | ND | | ND | | ND | | ND | | 0.4 | J | ND | | ND | | ND | | ND | | ND | | ND | |
| 1,1-Dichloroethene | ND | | ND | | 0.4 | J | ND | | 10.8 | | ND | | ND | | ND | | ND | | ND | | ND | |
| cis 1,2-Dichloroethene | 0.6 | J | ND | J | 0.2 | J | ND | | 0.9 | J | 0.2 | J | ND | | ND | | ND | | ND | | ND | |
| Methylene Chloride | 2 | B | 2 | B | 0.5 | B | 0.2 | B | 0.5 | B | 0.4 | B | 0.6 | B | 0.5 | B | 0.5 | B | 0.6 | B | 0.5 | B |
| Tetrachloroethane | ND | | ND | | 0.2 | J | ND | | 6 | | 0.3 | J | ND | | ND | | ND | | ND | | ND | |
| 1,1,1-Trichloroethane | ND | | ND | | 0.3 | J | ND | | 7.4 | | ND | | ND | | ND | | ND | | ND | | ND | |
| Trichloroethene | ND | | 1 | J | 1.2 | | ND | | 36.9 | | 0.3 | | ND | | 0.7 | J | ND | | ND | | ND | |
| | (ug/g) | | (ug/g) | | | | | | | | | | | | | | | | | | | |
| **Inorganics** | | | | | | | | | | | | | | | | | | | | | | |
| Aluminum | 9900.0 | | 11600.0 | | | | | | | | | | | | | | | | | | | |
| Antimony | <0.5 | | <0.5 | | | | | | | | | | | | | | | | | | | |
| Arsenic | 3.0 | | 3.9 | | | | | | | | | | | | | | | | | | | |
| Barium | 227.0 | | 213.0 | | | | | | | | | | | | | | | | | | | |
| Beryllium | 1.1 | | 1.1 | | | | | | | | | | | | | | | | | | | |
| Cadmium | <= 0.5 | | 0.8 | | | | | | | | | | | | | | | | | | | |
| Calcium | 22500.0 | | 18700.0 | | | | | | | | | | | | | | | | | | | |
| Chromium | 25.4 | | 25.0 | | | | | | | | | | | | | | | | | | | |
| Cobalt | 10.6 | | 10.6 | | | | | | | | | | | | | | | | | | | |
| Copper | 36.7 | | 38.1 | | | | | | | | | | | | | | | | | | | |
| Iron | 17800.0 | | 18100.0 | | | | | | | | | | | | | | | | | | | |
| Lead | 162.0 | | 147.0 | | | | | | | | | | | | | | | | | | | |
| Magnesium | 8390.0 | | 8220.0 | | | | | | | | | | | | | | | | | | | |
| Manganese | 501.0 | | 493.0 | | | | | | | | | | | | | | | | | | | |
| Mercury | <0.1 | | <0.1 | | | | | | | | | | | | | | | | | | | |
| Nickel | 18.7 | | 19.4 | | | | | | | | | | | | | | | | | | | |
| Potassium | 1660.0 | | 1910.0 | | | | | | | | | | | | | | | | | | | |
| Selenium | <0.5 | | <0.5 | | | | | | | | | | | | | | | | | | | |
| Sodium | 512.0 | | 539.0 | | | | | | | | | | | | | | | | | | | |
| Vanadium | 30.6 | | 33.4 | | | | | | | | | | | | | | | | | | | |
| Zinc | 226.0 | | 225.0 | | | | | | | | | | | | | | | | | | | |
| Cyanide | <1.0 | | <1.0 | | | | | | | | | | | | | | | | | | | |

NOT ANALYZED FOR INORGANICS

*Notes:*

B - Not detected substantially above the level reported in laboratory or field blanks.

J - Analyte present. Reported value is estimated; concentration is outside the range for accurate quantitation.

ND - Not detected

< - Less than minimum quantitation limit

<= Less than or equal to minimum quantitation limit

ORIGINAL (Red)

ORIGINAL (Red)

# U.S. EPA Region III
## Office of Analytical Services and Quality Assurance
## Annapolis, Maryland

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# ANALYTICAL REPORT

**ROBERT WOOLER**
**SUPERFUND REMOVAL/REMEDIAL**

**Account #: 97 T 03N FAX A343SI00**
**Lab Request # REQ97099**

**May 8, 1997**

ORIGINAL (Red)

**U.S. EPA Region III**
**Office of Analytical Services**
**and Quality Assurance**
**Annapolis, Maryland**

May 8, 1997

ANALYTICAL RESULTS: ROBERT WOOLER [REQ97099]

Dear Margaret Jennis (3HW33),

Enclosed is our analytical report for the above case. It is organized into several sections: Analytical Request and Sample Descriptions, Organic, Inorganic, and Microbiological Results. All data were peer reviewed.

Analytical Request and Sample Descriptions: (General)

Each laboratory assigned number, station, description, matrix, sample date and locational data is reported. A table summarizes the tests assigned to each sample. A glossary and qualifier code definition is provided.

Inorganic Results:

For requests assigned inorganic tests, results are grouped by service group, e.g., Metals. Sample results are reported; non-detects are provided with the actual quantitation limit. Method description and quality control protocols are described in analyst narratives.

Organic Results:

For requests assigned organic tests, results are grouped by service group, e.g., Volatile Organic Compounds. Only detected analytes are reported. Nominal Quantitation Limit (NQL) tables are provided for each service group. Specific information for the calculation of Actual Quantitation Limits (AQL) achieved for a given sample is included. Quality control values are provided in summary tables with acceptance criteria. Method description and quality control protocols are described in analyst narratives.

Microbiological Results:

For requests assigned microbiological tests, sample results and quality control values are incorporated into a single table. Method description and quality control protocols are described in analyst narratives.

If you have any questions we may be reached at (b) (6) [redacted]

Approval for Release:
Not Responsive Based on Revised Scope
[redacted]

Site contact: Not Responsive Based on Revised Scope [redacted] (WESTON)
Margaret Jennis (3HW33)

U.S. EPA Region III
Office of Analytical Services
and Quality Assurance
Annapolis, Maryland

Section: GENERAL
Page: B1

Facility: ROBERT WOOLER
Program: SUPERFUND REMOVAL/REMEDIAL

Account #: 97 T 03N FAX A343SI00
Lab Request #: REQ97099

## SAMPLE DESCRIPTIONS

| Sample # | Station, Description | Matrix | Type | End Collection Date | End Collection Time | Latitude | Longitude |
|---|---|---|---|---|---|---|---|
| 97040101 | STA RWGW01, Wooler Well | Water - Type Unspecified | GRAB | 03/31/97 | 09:18 | | |
| 97040102 | STA RWGW04, [redacted] | Water - Type Unspecified | GRAB | 03/31/97 | 10:15 | | |
| 97040103 | STA RWGW02, (b) (6) [redacted] | Water - Type Unspecified | GRAB | 03/31/97 | 10:40 | | |
| 97040104 | STA RWSS02, Sediment Upstream | Soil | GRAB | 03/31/97 | 11:05 | | |
| 97040105 | STA RWSS01, Sediment Outfall | Soil | GRAB | 03/31/97 | 11:05 | | |
| 97040106 | STA RWSW01, Surface Water Outfall | Water - Type Unspecified | GRAB | 03/31/97 | 11:10 | | |
| 97040107 | STA RWGW05, (b) (6) [redacted] | Water - Type Unspecified | GRAB | 03/31/97 | 11:45 | | |
| 97040108 | STA RWSW03, Mouth of Tributary | Water - Type Unspecified | GRAB | 03/31/97 | 12:20 | | |
| 97040109 | STA RWSW02, 200 ft. Downstream | Water - Type Unspecified | GRAB | 03/31/97 | 12:45 | | |
| 97040110 | STA RWGW03, (b) (6) [redacted] | Water - Type Unspecified | GRAB | 03/31/97 | 13:15 | | |
| 97040111 | STA RWGW06, [redacted] | Water - Type Unspecified | GRAB | 03/31/97 | 14:00 | | |
| 97040112 | STA RWBL01, Trip Blank | Aqueous Matrix - Type Unspecified | GRAB | 03/31/97 | 08:00 | | |

PFE
ORIGINAL (Red)

U.S. EPA Region III
Office of Analytical Services
and Quality Assurance
Annapolis, Maryland

Section: GENERAL
Page: C1

Facility: ROBERT WOOLER
Program: SUPERFUND REMOVAL/REMEDIAL

Account #: 97 T 03N FAX A343SI00
Lab Request #: REQ97099

## TESTS REQUESTED

| Inorganic Test Assigned | Sample No. 970401- | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | | | |
| Metals Analysis | | | | X | X | | | | | | | | | | |
| Percent Dry Weight | | | | X | X | | | | | | | | | | |
| Total Cyanide | | | | X | X | | | | | | | | | | |

| Organic Test Assigned | Sample No. 970401- | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | | | |
| Volatile Organics by Purge and Trap GC/MS | X | X | X | X | X | X | X | X | X | X | X | X | | | |

(X = test was requested)

ORIGINAL (Red)

## QUALIFIER CODE AND GLOSSARY DEFINITIONS

**Qualifier Codes:**

| | | |
|---|---|---|
| < | = | Sample value is below the quantitation limit. Quantitation limit reported. |
| </= | = | Reported value is estimated. Sample was analyzed in duplicate, one value is equal to or above the quantitation limit and one below. Average of quantitation limit and detected value reported. |
| > | = | Sample value is above the quantitation range. |
| A | = | Quality control value is outside acceptance limits. |
| B | = | Not detected substantially above (10 times) the level reported in the laboratory or field blanks (includes field, trip, rinsate, and equipment blanks). |
| C | = | See report narrative for analyst's observations concerning this result. |
| D | = | Sample and duplicate values are below the quantitation limit. Quantitation limit reported. |
| E | = | Value exceeds a theoretically equivalent or greater value (e.g. dissolved > total, orthophosphate > total phosphorus). However, the difference is within the expected precision of the analytical techniques and is not statistically significant. |
| I | = | An interference exists which masks true response. See report narrative for explanation. |
| J | = | Analyte present. Reported value is estimated; concentration is outside the range for accurate quantitation. |
| K | = | Analyte present. Reported value may be biased high. Actual value is expected to be lower. |
| L | = | Analyte present. Reported value may be biased low. Actual value is expected to be higher. |
| N | = | Presumptive evidence indicates the presence of the compound. Special methods and/or method modifications may be needed to confirm its presence or absence in future sampling efforts. |
| NA | = | Analysis was not requested. |
| Q | = | No analytical results. See report for explanation. |
| R | = | Unreliable results. Analyte may or may not be present in the sample. Supporting data is necessary to confirm results. |
| T | = | Tentatively Identified Compound. Identified as a result of a library search using the EPA/NIH Mass Spectral Library. Authentic standards were not available to properly identify and quantitate the compound The reported concentration is an estimate. |
| TD | = | Spike recovery too dilute for accurate quantitation. |
| UJ | = | Not detected. Quantitation limit is estimated. |
| UL | = | Not detected. Quantitation limit is probably higher. |

**Glossary:**

| | | |
|---|---|---|
| ( ) | = | Numbers in parentheses are analytical spike recoveries (e.g. post-digestion spikes). |
| [ ] | = | Numbers in brackets are matrix spike recoveries (e.g. pre-digestion spikes). |
| MS/MSD | = | Matrix spike/matrix spike duplicate; a known increment of target analyte made to a sample before preparation or analyses. |
| MSA | = | Method of Standard Additions |
| RPD | = | Relative Percent Difference; the results for duplicate analyses are presented as the mean and the relative percent difference. |

$$RPD = \frac{|Replicate1 - Replicate2|}{(Replicate1 + Replicate2)/2} \times 100$$



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# INORGANIC ANALYTICAL REPORT

## ROBERT WOOLER

## SUPERFUND REMOVAL/REMEDIAL

**Account #: 97 T 03N FAX A343SI00**

**Lab Request # REQ97099**

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U.S. EPA Region III
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Section: INORGANIC
Page: A1

Facility: ROBERT WOOLER
Program: SUPERFUND REMOVAL/REMEDIAL

Account #: 97 T 03N FAX A343SI00
Lab Request #: REQ97099

# INORGANIC ANALYTICAL SAMPLE RESULTS

| Sample Number: | 97040104 | | | 97040105 | | |
|---|---|---|---|---|---|---|
| ANALYTES | SAMPLE | | | SAMPLE | | |
| **Metals Analysis** | Units: ug/g | % Rec | RPD | ug/g | % Rec | RPD |
| Aluminum | 9960 | | 6 | 11600 | (108) | |
| Antimony | <0.5 | (97) | D | <0.5 | (97) | |
| Arsenic | 3.0 | (86) | 35 | 3.9 | (MSA) | |
| Barium | 227 | | 4 | 213 | [85] | |
| Beryllium | 1.1 | | 6 | 1.1 | [99] | |
| Cadmium | <=0.5 | | | 0.8 | [81] | |
| Calcium | 22500 | | 2 | 18700 | (107) | |
| Chromium | 25.4 | | 2 | 25.0 | [90] | |
| Cobalt | 10.6 | | 3 | 10.6 | [88] | |
| Copper | 36.7 | | 2 | 38.1 | [82] | |
| Iron | 17800 | | 5 | 18100 | (102) | |
| Lead | 162 | | 5 | 147 | [106] | |
| Magnesium | 8390 | | 6 | 8220 | (96) | |
| Manganese | 501 | | 0 | 493 | (105) | |
| Mercury | <0.1 | [101] | D | <0.1 | | |
| Nickel | 18.7 | | 3 | 19.4 | [89] | |
| Potassium | 1660 | | 7 | 1910 | [81] | |
| Selenium | <0.5 | (MSA) | D | <0.5 | (MSA) | |
| Silver | <1.0 | | D | <1.0 | [110] | |
| Sodium | 512 | | 4 | 539 | [94] | |
| Thallium | <0.5 | (99) | D | <0.5 | [95] | |
| Vanadium | 30.6 | | 6 | 33.4 | (93) | |
| Zinc | 226 | | 4 | 225 | (108) | |
| **Percent Dry Weight** | Units: % | % Rec | RPD | % | % Rec | RPD |
| Percent Dry Weight (105C) | 71.2 | | 1 | 72.4 | | |
| Percent Dry Weight (60C) | 70.0 | | 2 | 70.4 | | |

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U.S. EPA Region III
Office of Analytical Services
and Quality Assurance
Annapolis, Maryland

Section: INORGANIC
Page: A2

Facility: ROBERT WOOLER
Program: SUPERFUND REMOVAL/REMEDIAL

Account #: 97 T 03N FAX A343SI00
Lab Request #: REQ97099

# INORGANIC ANALYTICAL SAMPLE RESULTS

| Sample Number: | 97040104 | | | 97040105 | | |
|---|---|---|---|---|---|---|
| ANALYTES (continued) | SAMPLE | | | SAMPLE | | |
| **Total Cyanide** | Units: **mg/Kg** | **% Rec** | **RPD** | **mg/Kg** | **% Rec** | **RPD** |
| Cyanide | < 1.0 | (120) | | < 1.0 | [101] | D |

ORIGINAL (Red)

U.S. EPA Region III
Office of Analytical Services
and Quality Assurance
Annapolis, Maryland

Section: INORGANIC
Page: B1

Facility: ROBERT WOOLER
Program: SUPERFUND REMOVAL/REMEDIAL

Account #: 97 T 03N FAX A343SI00
Lab Request #: REQ97099

## INORGANIC WET/DRY CONVERSION

| Sample Number: | 97040104 | | 97040105 | |
|---|---|---|---|---|
| ANALYTES | WET SAMPLE | DRY SAMPLE | WET SAMPLE | DRY SAMPLE |
| **Percent Dry Weight** | Units: % | | % | |
| Percent Dry Weight (105C) | 71.2 | | 72.4 | |
| Percent Dry Weight (60C) | 70.0 | | 70.4 | |
| **Metals Analysis** | Units: | | | |
| Aluminum | 6970 | 9960 | 8170 | 11600 |
| Antimony | < 0.4 | < 0.5 | < 0.4 | < 0.5 |
| Arsenic | 2.1 | 3.0 | 2.7 | 3.9 |
| Barium | 159 | 227 | 150 | 213 |
| Beryllium | 0.8 | 1.1 | 0.8 | 1.1 |
| Cadmium | <=0.35 | < =0.5 | 0.6 | 0.8 |
| Calcium | 15800 | 22500 | 13200 | 18700 |
| Chromium | 17.8 | 25.4 | 17.6 | 25.0 |
| Cobalt | 7.4 | 10.6 | 7.5 | 10.6 |
| Copper | 25.7 | 36.7 | 26.8 | 38.1 |
| Iron | 12500 | 17800 | 12700 | 18100 |
| Lead | 113 | 162 | 103 | 147 |
| Magnesium | 5870 | 8390 | 5790 | 8220 |
| Manganese | 351 | 501 | 347 | 493 |
| Mercury | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Nickel | 13.1 | 18.7 | 13.7 | 19.4 |
| Potassium | 1160 | 1660 | 1340 | 1910 |
| Selenium | < 0.4 | < 0.5 | < 0.4 | < 0.5 |
| Silver | < 0.7 | < 1.0 | < 0.7 | < 1.0 |
| Sodium | 358 | 512 | 379 | 539 |
| Thallium | < 0.4 | < 0.5 | < 0.4 | < 0.5 |
| Vanadium | 21.4 | 30.6 | 23.5 | 33.4 |
| Zinc | 158 | 226 | 158 | 225 |

ORIGINAL (Red)

U.S. EPA Region III
Office of Analytical Services
and Quality Assurance
Annapolis, Maryland

Section: INORGANIC
Page: B2

Facility: ROBERT WOOLER
Program: SUPERFUND REMOVAL/REMEDIAL

Account #: 97 T 03N FAX A343SI00
Lab Request #: REQ97099

## INORGANIC WET/DRY CONVERSION

| Sample Number: | | 97040104 | | 97040105 | |
|---|---|---|---|---|---|
| | | WET SAMPLE | DRY SAMPLE | WET SAMPLE | DRY SAMPLE |
| ANALYTES (continued) | | | | | |
| **Total Cyanide** | **Units:** | | | | |
| Cyanide | | < 1.0 | < 1.4 | < 1.0 | < 1.4 |

The wet/dry weight conversion table is presented for the convenience of the data user. The attached analyst narratives state whether a test was determined on a wet or dry weight basis. Any difference in significant figures between the two columns is an artifact of the reporting function and does not imply that the calculated value has greater precision than the measured value.

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# PERCENT DRY WEIGHT DETERMINATIONS

**Analyst:**

Not Responsive Based on Revised Scope
[redacted]

LMES Chemist

**WAD:** 0397101

**TDF:** 0409

**Method:**

The soil samples from Robert Wooler (Batch ID # REQ97099) were analyzed for Percent Dry Weight as required by EPA analytical methods. The samples were dried at 105°C following the procedure outlined in EPA Region III Central Regional Laboratory's SOP #R3QA056.0.

**These results are to be used to convert analyte concentrations to a dry weight basis for organic and non-metal analyses. Normally, analytical values are reported on a wet weight basis for organic and non-metals. All metals reported use a 60°C drying temperature for the percent dry weight determinations, as required by the methodology. The 60°C percent dry weight values are reported with the metals results, if applicable.**

Weighing dishes used for these samples were sequentially numbered, oven-dried overnight at 105°C, and then cooled in a desiccator before the empty dish weight was recorded. Five to ten grams of each sample was then placed on an empty dish and the total weight recorded. The samples were then placed in an oven and oven-dried overnight at 105°C. When the samples were removed from the oven they were cooled in a desiccator before their weight was recorded for the determination of percent dry weight. All weights were recorded after all appropriate calibration checks were completed on the balance using Class S weights.

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## METALS DETERMINATIONS

**Analysts:**

Not Responsive Based on Revised Scope [redacted]
LMES Chemist

Not Responsive Based on Revised Scope [redacted]
LMES Chemist

**Methods:**

Samples 970401-04 and 970401-05 from Robert Wooler were prepared for analysis by acid digestion and analyzed by furnace atomic absorption spectroscopy and inductively coupled plasma optical emission spectrometry. The following are the digestion and analytical techniques and methods employed:

Digestion Methods

Method 3050, excluding HCl for furnace AAS (excluding antimony) (solid samples) (1)
Method 3050, for ICP-AES, Flame AAS, and antimony by Furnace AAS (solid samples) (1)

Analytical Methods

EPA Method 204.2 and Internal SOP R3-QA132, antimony by Furnace AAS (2)
EPA Method 206.2 and Internal SOP R3-QA132, arsenic by Furnace AAS (2)
EPA Method 270.2 and Internal SOP R3-QA132, selenium by Furnace AAS (2)
EPA Method 279.2 and Internal SOP R3-QA132, thallium by Furnace AAS (2)
EPA Method 200.7 and Internal SOP R3-QA132, remaining elements by ICP-AES (2)

(1) SW-846, 2nd Edition, Test Methods for Evaluating Solid Waste Physical /Chemical Methods
(2) 1979/83 EPA Manual of Methods for Chemical Analysis of Water and Wastes

Results for solid samples are reported in ug/g (ppm) **DRY** weight at 60 degrees centigrade. This Percent Dry Weight test pertains only to metals results. The drying temperature of 60 degrees centigrade is selected to retain volatile elements. The Percent Dry Weight (60°C) is reported to allow for conversion to wet weight.

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**Quality Control:**

Samples analyzed in duplicate (method duplicates) are reported as the Mean and the Relative Percent Difference (RPD) of the two analytical values. Routine Quality Control (QC) performed includes preparation and analysis of audit materials; check standards; interference check samples (ICS--for ICP-AES only); method blanks; method spikes; analytical spikes; method duplicates; and analytical duplicates. Calibration standards for ICP-AES are prepared from NIST stock solutions. Calibration standards for Furnace AAS are prepared from Baker stock solutions. Method blanks are prepared with each analytical set and are acceptable if they are found to be below the quantification level for the sample set. Audit materials are analyzed at the beginning of each run to document proper instrument calibration. For ICP-AES the acceptable range is 90-110% recovery; for other techniques it is the 95% confidence interval generated using the True Values and algorithms from NERL-Cincinnati. Check standards are analyzed periodically (generally a 1/10 frequency) throughout the run to document instrumental stability, and are acceptable at 90-110%. The ICS is obtained from NERL-Las Vegas and is analyzed at the beginning of each ICP-AES run to document proper selection of analytical lines, background correction factors, and interelement correction factors; it is acceptable at 80-120% recovery. The remaining QC items are sample specific and are performed at a frequency of 1/10 samples for sample sets $\geq$ 10 and 1 per sample set for sample sets <10, except for analytical spikes for Furnace AAS which requires a passing analytical spike or successful Method of Standard Additions for each sample. Acceptance limits for Precision (method and instrumental duplicates) are generated for each element/matrix/analytical procedure using a Shewhart Chart and the most recent 25 duplicate values. Acceptance limits for analytical spikes for Flame AAS and for ICP-AES are generated for 95% confidence intervals for each element/matrix/analytical procedure using the most recent 25 spike recoveries. Acceptance limits for analytical spikes for Furnace AAS are set at 85-115%. Acceptance limits for matrix spikes are 80-120% recovery; when matrix spikes fail an acceptable analytical spike must be prepared and analyzed.

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## MERCURY DETERMINATIONS

**Analyst:**

Not Responsive Based on Revised Sco
[redacted]
LMES Chemist

**WAD:** 0397101

**TDF:** 0306

**METHOD:**

Samples 970401-04 through 970401-05 from Robert Wooler were analyzed for total mercury using EPA Method 245.5[1].

Results for solid samples are reported in ug/g (ppm) **DRY** weight at 60 degrees centigrade. This Percent Dry Weight test pertains only to metals results. The drying temperature of 60 degrees centigrade is selected to retain volatile elements. The Percent Dry Weight (60°C) is reported to allow for conversion to wet weight.

[1]Methods for Chemical Analysis of Water and Wastes, EPA 600/4-79-020.

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# TOTAL CYANIDE DETERMINATIONS

**Analyst:**

Not Responsive Based on Revised Scope
[redacted]
LMES Chemist

**WAD #: 0397101**

**TDF #: 0406**

**Method:**

Sample 970401-04 and sample 970401-05 from Robert Wooler were analyzed for Total Cyanide determination using EPA Method 335.4.

[1]Methods for Chemical Analysis of Water and Wastes, EPA 600/4-79-020.

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# ORGANIC ANALYTICAL REPORT

## ROBERT WOOLER

## SUPERFUND REMOVAL/REMEDIAL

## Account #: 97 T 03N FAX A343SI00

## Lab Request # REQ97099

ORIGINAL (Red)

U.S. EPA Region III
Office of Analytical Services
and Quality Assurance
Annapolis, Maryland

Section: ORGANIC
Page: A1

Facility: ROBERT WOOLER
Program: SUPERFUND REMOVAL/REMEDIAL

Account #: 97 T 03N FAX A343SI00
Lab Request #: REQ97099

## ORGANIC ANALYTICAL SAMPLE RESULTS

| Sample Number: | 97040101 | 97040102 | 97040103 | 97040104 | 97040105 | 97040106 | 97040107 | 97040108 |
|---|---|---|---|---|---|---|---|---|
| ANALYTES | SAMPLE | SAMPLE | SAMPLE | SAMPLE | SAMPLE | SAMPLE | SAMPLE | SAMPLE |
| **Percent Dry Weight** | | | | | | | | |
| Percent Dry Weight (105C) | | | | % 71.2 | % 72.4 | | | |
| NQL Factor: | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **Volatile Organics by Purge and Trap GC/MS Units:** | ug/L | ug/L | ug/L | ug/Kg | ug/Kg | ug/L | ug/L | ug/L |
| Acetone | | | | 5 J | | 5.9 | | |
| Chloroform | 0.4 J | 2.7 | | | | | 2.4 | |
| 1,1-Dichloroethane | 0.4 J | | | | | | | |
| 1,1-Dichloroethene | 10.8 | | | | | | | |
| Cis-1,2-Dichloroethene | 0.9 J | 0.2 J | | 0.6 J | | | | |
| Methylene Chloride | 0.5 B | 0.4 B | 0.4 B | 2 B | 2 B | 0.5 B | 0.5 B | 0.2 B |
| Tetrachloroethene | 6.0 | 0.3 J | | | | | | |
| 1,1,1-Trichloroethane | 7.4 | | | | | | | |
| Trichloroethene | 36.9 | 0.3 J | | | 1 J | 0.7 J | | |

| Sample Number: | 97040109 | 97040110 | 97040111 | 97040112 |
|---|---|---|---|---|
| ANALYTES | SAMPLE | SAMPLE | SAMPLE | TRIP BLANK |
| NQL Factor: | 1 | 1 | 1 | 1 |
| **Volatile Organics by Purge and Trap GC/MS Units:** | ug/L | ug/L | ug/L | ug/L |
| Acetone | | | | |
| Chloroform | | | | |
| 1,1-Dichloroethane | | | | |
| 1,1-Dichloroethene | 0.4 J | | | |
| Cis-1,2-Dichloroethene | 0.2 J | | | |
| Methylene Chloride | 0.5 B | 0.6 B | 0.5 B | 0.5 B |
| Tetrachloroethene | 0.2 J | | | |
| 1,1,1-Trichloroethane | 0.3 J | | | |
| Trichloroethene | 1.2 | | | |

ORIGINAL (Red)

U.S. EPA Region III
Office of Analytical Services
and Quality Assurance
Annapolis, Maryland

Section: ORGANIC
Page: B1

Facility: ROBERT WOOLER
Program: SUPERFUND REMOVAL/REMEDIAL

Account #: 97 T 03N FAX A343SI00
Lab Request #: REQ97099

# ORGANIC QUALITY CONTROL (SURROGATE RECOVERIES)

Matrix: SOLIDS

| SURROGATES | Surrogate Limits | 97040104 SAMPLE | 97040105 SAMPLE |
|---|---|---|---|
| **Volatile Organics by Purge and Trap GC/MS** | **Range** | **%** | **%** |
| Bromofluorobenzene | (59-113) | 96 | 96 |
| d4-1,2-Dichloroethane | (70-121) | 103 | 100 |
| d8-Toluene | (84-138) | 101 | 101 |

Matrix: WATER

| SURROGATES | Surrogate Limits | 97040101 SAMPLE | 97040102 SAMPLE | 97040103 SAMPLE | 97040106 SAMPLE | 97040107 SAMPLE | 97040108 SAMPLE | 97040109 SAMPLE | 97040110 SAMPLE | 97040111 SAMPLE |
|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organics by Purge and Trap GC/MS** | **Range** | **%** | **%** | **%** | **%** | **%** | **%** | **%** | **%** | **%** |
| Bromofluorobenzene | (86-115) | 104 | 105 | 104 | 103 | 102 | 99 | 104 | 104 | 103 |
| d4-1,2-Dichloroethane | (76-114) | 104 | 102 | 104 | 100 | 103 | 97 | 108 | 106 | 104 |
| d8-Toluene | (88-110) | 94 | 95 | 95 | 98 | 97 | 96 | 92 | 91 | 92 |

Matrix: WATER

| SURROGATES | Surrogate Limits | 97040112 TRP BLANK |
|---|---|---|
| **Volatile Organics by Purge and Trap GC/MS** | **Range** | **%** |
| Bromofluorobenzene | (86-115) | 105 |
| d4-1,2-Dichloroethane | (76-114) | 107 |
| d8-Toluene | (88-110) | 93 |

ORIGINAL (Red)

U.S. EPA Region III
Office of Analytical Services
and Quality Assurance
Annapolis, Maryland

Section: ORGANIC
Page: C1

Facility: ROBERT WOOLER
Program: SUPERFUND REMOVAL/REMEDIAL

Account #: 97 T 03N FAX A343SI00
Lab Request #: REQ97099

## ORGANIC QUALITY CONTROL (MATRIX SPIKE RECOVERIES)

**Matrix: SOLIDS**

| ANALYTES | 97040105 Spike Recovery MS | MSD | Recovery Limits | RPD | RPD Limits |
|---|---|---|---|---|---|
| **Volatile Organics by Purge and Trap GC/MS** | **%** | **%** | **Range** | **RPD** | **Limit** |
| Benzene | 89 | 93 | (66-142) | 4 | 21 |
| Chlorobenzene | 89 | 93 | (60-133) | 4 | 21 |
| 1,1-Dichloroethene | 84 | 92 | (59-172) | 9 | 22 |
| Toluene | 94 | 99 | (59-139) | 5 | 21 |
| Trichloroethene | 83 | 90 | (62-137) | 8 | 24 |

ORIGINAL (Red)

U.S. EPA Region III
Office of Analytical Services
and Quality Assurance
Annapolis, Maryland

Section: ORGANIC
Page: C2

Facility: ROBERT WOOLER
Program: SUPERFUND REMOVAL/REMEDIAL

Account #: 97 T 03N FAX A343SI00
Lab Request #: REQ97099

## ORGANIC QUALITY CONTROL (MATRIX SPIKE RECOVERIES)

**Matrix: WATER**

| ANALYTES | 97040111 Spike Recovery MS | MSD | Recovery Limits | RPD | RPD Limits |
|---|---|---|---|---|---|
| **Volatile Organics by Purge and Trap GC/MS** | % | % | Range | RPD | Limit |
| Benzene | 99 | 99 | (76-127) | 0 | 11 |
| Chlorobenzene | 99 | 98 | (75-130) | 1 | 13 |
| 1,1-Dichloroethene | 102 | 104 | (61-145) | 1 | 14 |
| Toluene | 93 | 93 | (76-125) | 0 | 13 |
| Trichloroethene | 99 | 100 | (71-120) | 1 | 14 |

ORIGINAL (Red)

U.S. EPA Region III
Office of Analytical Services
and Quality Assurance
Annapolis, Maryland

Section: ORGANIC
Page: D1

Facility: ROBERT WOOLER
Program: SUPERFUND REMOVAL/REMEDIAL

Account #: 97 T 03N FAX A343SI00
Lab Request #: REQ97099

# LABORATORY REAGENT BLANK RESULTS

**Method: Volatile Organics by Purge and Trap GC/MS**

Run: OH975011 17 LRB

| SURROGATES | NQL Factor | % Rec |
|---|---|---|
| Bromofluorobenzene | 1 | 101 |
| d4-1,2-Dichloroethane | 1 | 102 |
| d8-Toluene | 1 | 98 |

| ANALYTES | NQL Factor | ug/L |
|---|---|---|
| Methylene Chloride | 1 | 0.5 J |

Run: OH975011 18 LRB

| SURROGATES | NQL Factor | % Rec |
|---|---|---|
| Bromofluorobenzene | 1 | 101 |
| d4-1,2-Dichloroethane | 1 | 100 |
| d8-Toluene | 1 | 100 |

| ANALYTES | NQL Factor | ug/Kg |
|---|---|---|
| Methylene Chloride | 1 | 2 J |

ORIGINAL (Red)

U.S. EPA Region III
Office of Analytical Services
and Quality Assurance
Annapolis, Maryland

Section: ORGANIC
Page: E1

Facility: ROBERT WOOLER
Program: SUPERFUND REMOVAL/REMEDIAL

Account #: 97 T 03N FAX A343SI00
Lab Request #: REQ97099

## ORGANIC WET/DRY CONVERSION

| Sample Number: | 97040104 | | 97040105 | |
|---|---|---|---|---|
| | WET SAMPLE | DRY SAMPLE | WET SAMPLE | DRY SAMPLE |
| ANALYTES | | | | |
| **Percent Dry Weight** | % | | % | |
| Percent Dry Weight (105C) | 71.2 | | 72.4 | |
| NQL Factor: | 1 | | 1 | |
| **Volatile Organics by Purge and Trap GC/MS** Units: | ug/Kg | ug/Kg | ug/Kg | ug/Kg |
| Acetone | 5 J | 7 J | | |
| Cis-1,2-Dichloroethene | 0.6 J | 0.8 J | | |
| Methylene Chloride | 2 B | 3 B | 2 B | 3 B |
| Trichloroethene | | | 1 J | 1 J |

The wet/dry weight conversion table is presented for the convenience of the data user. The attached analyst narratives state whether a test was determined on a wet or dry weight basis. Any difference in significant figures between the two columns is an artifact of the reporting function and does not imply that the calculated value has greater precision than the measured value.

ORIGINAL (Red)

U.S. EPA Region III
Office of Analytical Services
and Quality Assurance
Annapolis, Maryland

Section: ORGANIC
Page: E1

Facility: ROBERT WOOLER
Program: SUPERFUND REMOVAL/REMEDIAL

Account #: 97 T 03N FAX A343SI00
Lab Request #: REQ97099

## ORGANIC WET/DRY CONVERSION

| Sample Number: | 97040104 | | 97040105 | |
|---|---|---|---|---|
| | WET | DRY | WET | DRY |
| ANALYTES | SAMPLE | SAMPLE | SAMPLE | SAMPLE |
| **Percent Dry Weight** | % | | % | |
| Percent Dry Weight (105C) | 71.2 | | 72.4 | |
| NQL Factor: | 1 | | 1 | |
| **Volatile Organics by Purge and Trap GC/MS** Units: | ug/Kg | ug/Kg | ug/Kg | ug/Kg |
| Acetone | 5 J | 7 J | | |
| Cis-1,2-Dichloroethene | 0.6 J | 0.8 J | | |
| Methylene Chloride | 2 B | 3 B | 2 B | 3 B |
| Trichloroethene | | | 1 J | 1 J |

The wet/dry weight conversion table is presented for the convenience of the data user. The attached analyst narratives state whether a test was determined on a wet or dry weight basis. Any difference in significant figures between the two columns is an artifact of the reporting function and does not imply that the calculated value has greater precision than the measured value.

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Office of Analytical Services and Quality Assurance
Volatile Organics Analysis
Nominal Quantitation Limits (NQL)

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**Units: Solids = ug/kg (wet) NPTC = Non-Priority Pollutant Target Compound**

Actual Quantitation Limit = (NQL Factor) X NQL

| CAS | ANALYTE | | NQL |
|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane | | 5 |
| 74-87-3 | Chloromethane | | 5 |
| 75-01-4 | Vinyl Chloride | | 5 |
| 74-83-9 | Bromomethane | | 5 |
| 75-00-3 | Chloroethane | | 5 |
| 75-69-4 | Trichlorofluoromethane | | 5 |
| 75-35-4 | 1,1-Dichloroethylene | | 5 |
| 75-15-0 | Carbon Disulfide | NPTC | 5 |
| 67-64-1 | Acetone | NPTC | 5 |
| 75-09-2 | Methylene Chloride | | 5 |
| 156-60-5 | trans-1,2-Dichloroethene | | 5 |
| 75-34-3 | 1,1-Dichloroethane | | 5 |
| 108-05-4 | Vinyl Acetate | NPTC | 5 |
| 590-20-7 | 2,2-Dichloropropane | | 5 |
| 156-59-4 | cis-1,2-Dichloroethene | NPTC | 5 |
| 78-93-3 | 2-Butanone | NPTC | 5 |
| 74-97-5 | Bromochloromethane | NPTC | 5 |
| 65-66-3 | Chloroform | | 5 |
| 71-55-6 | 1,1,1-Trichloroethane | | 5 |
| 56-23-5 | Carbon Tetrachloride | | 5 |
| 563-58-6 | 1,1-Dichloropropene | | 5 |
| 71-43-2 | Benzene | | 5 |
| 107-06-2 | 1,2-Dichloroethane | | 5 |
| 79-01-6 | Trichloroethylene | | 5 |
| 78-87-5 | 1,2-Dichloropropane | | 5 |
| 74-95-3 | Dibromomethane | NPTC | 5 |
| 75-27-4 | Bromodichloromethane | | 5 |
| 110-75-8 | 2-Chloroethylvinyl ether | | 5 |
| 10061-01-6 | trans-1,3-Dichloropropene | NPTC | 5 |
| 108-10-1 | 4-Methyl-2-pentanone | | 5 |
| 108-83-3 | Toluene | | 5 |
| 10061-01-5 | cis-1,3-Dichloropropene | | 5 |
| 79-00-5 | 1,1,2-Trichloroethane | | 5 |
| 127-18-4 | Tetrachloroethylene | | 5 |

| CAS | ANALYTE | | NQL |
|---|---|---|---|
| 142-28-9 | 1,3-Dichloropropane | NPTC | 5 |
| 591-78-6 | 2-Hexanone | NPTC | 5 |
| 124-48-1 | Dibromochloromethane | | 5 |
| 106-93-4 | 1,2-Dibromoethane(EDB) | NPTC | 5 |
| 108-90-7 | Chlorobenzene | | 5 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | NPTC | 5 |
| 100-41-4 | Ethylbenzene | | 5 |
| 108-38-3 | m-Xylene (m & p isomers | NPTC | 5 |
| 106-42-3 | p-Xylene together) | NPTC | 5 |
| 95-47-6 | o-Xylene | NPTC | 10 |
| 100-42-5 | Styrene | NPTC | 10 |
| 75-25-2 | Bromoform | | 5 |
| 98-82-8 | Isopropylbenzene | NPTC | 5 |
| 108-86-1 | Bromobenzene | NPTC | 5 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | | 5 |
| 96-18-4 | 1,2,3-Trichloropropane | NPTC | 5 |
| 103-65-1 | n-Propylbenzene | NPTC | 5 |
| 95-49-8 | 2-Chlorotoluene | NPTC | 5 |
| 106-43-4 | 4-Chlorotoluene | NPTC | 5 |
| 108-67-8 | 1,3,5-Trimethylbenzene | NPTC | 5 |
| 98-06-6 | tert-Butylbenzene | NPTC | 5 |
| 93-63-6 | 1,2,4-Trimethylbenzene | NPTC | 5 |
| 135-98-8 | sec-Butylbenzene | NPTC | 5 |
| 541-73-1 | 1,3-Dichlorobenzene | | 5 |
| 106-46-7 | 1,4-Dichlorobenzene | | 5 |
| 99-87-6 | p-Isopropyltoluene | NPTC | 5 |
| 95-50-1 | 1,2-Dichlorobenzene | | 5 |
| 104-51-8 | n-Butylbenzene | NPTC | 5 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | | 5 |
| 120-82-1 | 1,2,4-Trichlorobenzene | | 5 |
| 91-20-3 | Naphthalene | | 5 |
| 87-68-3 | Hexachlorobutadiene | | 5 |
| 87-61-6 | 1,2,3-Trichlorobenzene | NPTC | 5 |

The "Nominal Quantitation Limit" factor is an overall correction factor applied to the method's NQLs for analytical adjustments made during the analysis (i.e., for analyses of more or less than the ideal 5 grams for soil samples, for sample dilutions prior to analysis).

For example, if the NQL factor for an OASQA soil sample is 2, the estimated Actual Quantitation Limit for vinyl chloride would be 10 ug/kg (i.e., 2 x 5 ug/kg).

Rev. October 16, 1996

Office of Analytical Services and Quality Assurance
Volatile Organics Analysis
Nominal Quantitation Limits (NQL)

ORIGINAL (Red)

**Units: Water = ug/L NPTC = Non-Priority Pollutant Target Compound**

Actual Quantitation Limit = (NQL Factor) X NQL

| CAS | ANALYTE | | NQL |
|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane | | 1 |
| 74-87-3 | Chloromethane | | 1 |
| 75-01-4 | Vinyl Chloride | | 1 |
| 74-83-9 | Bromomethane | | 1 |
| 75-00-3 | Chloroethane | | 1 |
| 75-69-4 | Trichlorofluoromethane | | 1 |
| 75-35-4 | 1,1-Dichloroethylene | | 1 |
| 75-15-0 | Carbon Disulfide | NPTC | 1 |
| 67-64-1 | Acetone | NPTC | 1 |
| 75-09-2 | Methylene Chloride | | 1 |
| 156-60-5 | trans-1,2-Dichloroethene | | 1 |
| 75-34-3 | 1,1-Dichloroethane | | 1 |
| 108-05-4 | Vinyl Acetate | NPTC | 1 |
| 590-20-7 | 2,2-Dichloropropane | | 1 |
| 156-59-4 | cis-1,2-Dichloroethene | NPTC | 1 |
| 78-93-3 | 2-Butanone | NPTC | 1 |
| 74-97-5 | Bromochloromethane | NPTC | 1 |
| 65-66-3 | Chloroform | | 1 |
| 71-55-6 | 1,1,1-Trichloroethane | | 1 |
| 56-23-5 | Carbon Tetrachloride | | 1 |
| 563-58-6 | 1,1-Dichloropropene | | 1 |
| 71-43-2 | Benzene | | 1 |
| 107-06-2 | 1,2-Dichloroethane | | 1 |
| 79-01-6 | Trichloroethylene | | 1 |
| 78-87-5 | 1,2-Dichloropropane | | 1 |
| 74-95-3 | Dibromomethane | NPTC | 1 |
| 75-27-4 | Bromodichloromethane | | 1 |
| 110-75-8 | 2-Chloroethylvinylether | | 1 |
| 10061-01-6 | trans-1,3-Dichloropropene | NPTC | 1 |
| 108-10-1 | 4-Methyl-2-pentanone | | 1 |
| 108-83-3 | Toluene | | 1 |
| 10061-01-5 | cis-1,3-Dichloropropene | | 1 |
| 79-00-5 | 1,1,2-Trichloroethane | | 1 |
| 127-18-4 | Tetrachloroethylene | | 1 |

| CAS | ANALYTE | | NQL |
|---|---|---|---|
| 142-28-9 | 1,3-Dichloropropane | NPTC | 1 |
| 591-78-6 | 2-Hexanone | NPTC | 1 |
| 124-48-1 | Dibromochloromethane | | 1 |
| 106-93-4 | 1,2-Dibromoethane(EDB) | NPTC | 1 |
| 108-90-7 | Chlorobenzene | | 1 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | NPTC | 1 |
| 100-41-4 | Ethylbenzene | | 1 |
| 108-38-3 | m-Xylene (m & p isomers | NPTC | 1 |
| 106-42-3 | p-Xylene together) | NPTC | 1 |
| 95-47-6 | o-Xylene | NPTC | 2 |
| 100-42-5 | Styrene | NPTC | 2 |
| 75-25-2 | Bromoform | | 1 |
| 98-82-8 | Isopropylbenzene | NPTC | 1 |
| 108-86-1 | Bromobenzene | NPTC | 1 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | | 1 |
| 96-18-4 | 1,2,3-Trichloropropane | NPTC | 1 |
| 103-65-1 | n-Propylbenzene | NPTC | 1 |
| 95-49-8 | 2-Chlorotoluene | NPTC | 1 |
| 106-43-4 | 4-Chlorotoluene | NPTC | 1 |
| 108-67-8 | 1,3,5-Trimethylbenzene | NPTC | 1 |
| 98-06-6 | tert-Butylbenzene | NPTC | 1 |
| 93-63-6 | 1,2,4-Trimethylbenzene | NPTC | 1 |
| 135-98-8 | sec-Butylbenzene | NPTC | 1 |
| 541-73-1 | 1,3-Dichlorobenzene | | 1 |
| 106-46-7 | 1,4-Dichlorobenzene | | 1 |
| 99-87-6 | p-Isopropyltoluene | NPTC | 1 |
| 95-50-1 | 1,2-Dichlorobenzene | | 1 |
| 104-51-8 | n-Butylbenzene | NPTC | 1 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | | 1 |
| 120-82-1 | 1,2,4-Trichlorobenzene | | 1 |
| 91-20-3 | Naphthalene | | 1 |
| 87-68-3 | Hexachlorobutadiene | | 1 |
| 87-61-6 | 1,2,3-Trichlorobenzene | NPTC | 1 |

The "Nominal Quantitation Limit" factor is an overall correction factor applied to the method's NQLs for analytical adjustments made during the analysis (i.e., for analyses of less than the ideal volume for aqueous samples, and for sample dilutions prior to analysis).

For example, if the NQL factor for an OASQA water sample is 2, the estimated Actual Quantitation Limit for vinyl chloride would be 2 ug/L (i.e., 2 x 1 ug/L).

Rev. October 16, 1996

ORIGINAL (Red)



# VOA ANALYSIS BY GC/MS

**Analyst:**

Not Responsive Based on Revised Scope [redacted]

LMES Chemist

**WAD:** 0397101

**TDF:** 0307

**Method:**

Two (2) soils and ten (10) aqueous samples from Robert Wooler were analyzed for the presence of volatile organic compounds amenable to purge and trap and identifiable by mass spectrometry. Samples were collected on March 31, 1997. These samples were analyzed on April 02 and 04, 1997 following Standard Operating Procedure (SOP) #R3-QA210.1. This SOP is derived from the Superfund Contract Laboratory Program Statement of Work and from RCRA methodology (SW 846). Instrumentation consisted of a purge and trap apparatus (Tekmar ALS 2016/LSC 2000) interfaced to a gas chromatograph/mass spectrometer (HP 5890/HP 5970) equipped with a fused silica capillary column (VOCOL 105m x 0.53mm ID x 3.0um film thickness). Concentrations of compounds were determined using the relative response of authentic standards to the closest internal standard. Only detected results are reported. Sample target compound values outside the calibration range were labeled with a "**J**". This indicates that the mass spectrum obtained for the compound met the identification criteria, yet the quantity present was outside the level for which the instrument accurately quantitates. All results qualified with a "**J**" are estimated quantities. The soil samples were reported on a **wet** weight basis. The NQLs (nominal quantitation limits) are the quantitation limits that have been determined for each parameter analyzed by this method. The actual quantitation limit is the NQL multiplied by a factor specific for each sample. The NQL factor for all parameters analyzed was equal to 1.

The samples were also examined for the presence of compounds in addition to those on the Target Compound list. Authentic standards were not available to verify these tentatively identified compounds (TICs). Tentative identification of these compounds was made on the comparison of sample spectra to the EPA/NIST Mass Spectral Library. Concentrations for these compounds were estimated based on the response of the closest internal standard and the assumption that the instrument response for a given tentative compound was the same as the instrument response for the internal standards. These compounds have been reported as tentative identifications with the associated quantitation values reported as estimated concentrations and qualified with a "T".

ORIGINAL (Red)



**Quality Control:**

Before acquisition of any sample data, the mass spectrometer is calibrated using FC43. The calibration is verified by obtaining the spectrum of a known compound Bromofluorobenzene (BFB). All mass assignments and relative abundances are found to be in acceptable ranges or the instrument is adjusted until an acceptable spectrum of the known is obtained. All samples for this site except 970401-10 and 970401-11 were analyzed within the twelve hour BFB time criteria.

Immediately before analysis, each sample is spiked with internal standards obtained commercially. All quantitations or estimates of concentrations are made in comparison to the internal standard nearest to the compound of interest.

The initial calibration for soil (heated) method consisted of a five-point calibration curve (5.0, 10.0, 50.0, 100.0 and 200.0 ug/L standards). Five (5) grams of soil sample for the heated method were purged. The daily calibration check standard was analyzed at a concentration of 50.0 ug/L. The NQL for all targets was equal to 5 except ketones and 2-chloroethylvinylether. The NQL for ketones and 2-chloroethylvinylether was 10 because a four (4) point calibration curve (10.0, 50.0, 100.0 and 200.0 ug/L) was utilized.

A lower detection limit (1.0 ug/L) was requested for the low concentration method analysis of the aqueous samples. In order to achieve this detection limit, the following modifications to the above method were implemented: 1) twenty-five (25) milliliters of sample were purged, 2) The initial calibration curve was analyzed at 1.0, 5.0, 10.0, 20.0 and 40.0 ug/L and 3) the daily calibration check standard was analyzed at a concentration of 10.0 ug/L. The NQL for all targets was equal to 1 except for ketones and 2-chloroethylvinylether. The NQL for ketones and 2-chloroethylvinylether was 5 because a four (4) point calibration curve (5.0, 10.0, 20.0 and 40.0 ug/L) was utilized. The lower detection limit was achieved for all other compounds.

For each day of sample analysis, a method blank (lab reagent blank - LRB) was prepared and examined for laboratory introduced contamination. All compounds which were found in a LRB, trip, rinsate and/or field blank and a sample were qualified "B" if the concentration of the compound in the sample was less than ten times (<10X) the compound's concentration in the blank.

The percent Relative Standard Deviation (%RSD) for all compounds in the initial calibration of the instrument on March 31, 1997 for the aqueous method was below the maximum %RSD limits listed in the SOP. The %RSD for all compounds in the initial calibration of the instrument on April 04, 1997 for the heated method was below the maximum %RSD limits listed in the SOP. The %D for all compounds in the continuing calibration standard on April 02, 1997 for the aqueous method was below the maximum %D limits, when comparing the daily calibration standard to the initial calibration curve. For the soil samples, the 50 ug/L standard curve point was used for quantitation.

ORIGINAL (Red)



The samples and related QC were spiked with a mixture of surrogate compounds prior to analysis. Recovery for each was determined to check for matrix interferences. The target QC limits are those established by the CLP. All surrogate recoveries were within acceptable recovery QC limits.

Two (2) aliquots of aqueous sample 970401-11 and soil sample 970401-05 were spiked with 5 ul of the matrix spike target mix containing all spike compounds at a concentration of 10 ug/L and 50 ug/Kg respectively. The recovery for each compound was determined to check for matrix effect. Recoveries have been corrected for target compounds present in the sample. The target QC limits are those established by the CLP. All MS/MSD recoveries and RPDs were within CLP QC target limits.

## TENTATIVELY IDENTIFIED COMPOUNDS

Site: Robert Wooler
Program: Superfund Removal/Remedial

UNITS: ug/L

| SAMPLE NO. | CAS # | TIC NAME | RT | CONC |
|---|---|---|---|---|
| 970401-01 | 470677 | 7-Oxabicyclo[2.2.1] heptane, 1-methyl- | 31.68 | 1 T |

UNITS: ug/L

| SAMPLE NO. | CAS # | TIC NAME | RT | CONC |
|---|---|---|---|---|
| 970401-02 | 556672 | Cyclotetrasiloxane, octamethyl- | 28.40 | 1 T |

UNITS: ug/L

| SAMPLE NO. | CAS # | TIC NAME | RT | CONC |
|---|---|---|---|---|
| 970401-03 | | None Detected | | |

UNITS: ug/Kg

| SAMPLE NO. | CAS # | TIC NAME | RT | CONC |
|---|---|---|---|---|
| 970401-04 | | None Detected | | |

UNITS: ug/Kg

| SAMPLE NO. | CAS # | TIC NAME | RT | CONC |
|---|---|---|---|---|
| 970401-05 | | None Detected | | |

UNITS: ug/L

| SAMPLE NO. | CAS # | TIC NAME | RT | CONC |
|---|---|---|---|---|
| 970401-06 | 544763 | Hexadecane | 36.64 | 1 T |

ORIGINAL (Red)



UNITS: ug/L

| SAMPLE NO. | CAS # | TIC NAME | RT | CONC |
|---|---|---|---|---|
| 970401-07 | | None Detected | | |

UNITS: ug/L

| SAMPLE NO. | CAS # | TIC NAME | RT | CONC |
|---|---|---|---|---|
| 970401-08 | | None Detected | | |

UNITS: ug/L

| SAMPLE NO. | CAS # | TIC NAME | RT | CONC |
|---|---|---|---|---|
| 970401-09 | | None Detected | | |

UNITS: ug/L

| SAMPLE NO. | CAS # | TIC NAME | RT | CONC |
|---|---|---|---|---|
| 970401-10 | 556672 | Cyclotetrasiloxane, octamethyl- | 28.41 | 2 T |

UNITS: ug/L

| SAMPLE NO. | CAS # | TIC NAME | RT | CONC |
|---|---|---|---|---|
| 970401-11 | | None Detected | | |

UNITS: ug/L

| SAMPLE NO. | CAS # | TIC NAME | RT | CONC |
|---|---|---|---|---|
| 970401-12 | | None Detected | | |

**Fed** *USA Airbill* Tracking Number 4269798260

**1 From**

Date 3/21/97 [redacted]

Not Responsive Based on Revised Scope

Sender's Name [redacted] Phone

Dept./Floor/Suite/Room

Company

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City State Zip

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**3 To**

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Dept./Floor/Suite/Room

Company U.S. EPA Region III Westgate Lab

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☐ Hold Weekday (Not available with FedEx First Overnight)

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**5 Packaging** ☐ FedEx Letter ☐ FedEx Pak ☐ FedEx Box ☐ FedEx Tube ☒ Other Pkg

**6 Special Handling**

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☐ Dry Ice ☐ Cargo Aircraft Only

**7 Payment**

Bill to: ☐ Sender ☐ Recipient ☒ Third Party ☐ Credit Card ☐ Cash/Check

| Total Packages | Total Weight | Total Declared Value | Total Charges |
|---|---|---|---|
| 1 | | $ .00 | $ |

CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY SERVICE

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272

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ORIGINAL (Red)

# Precautionary Measures Against Hidden Hazards in Laboratory Samples

ORIGINAL (Red)

## Notice to Laboratory Personnel

### Background

Under the authority of Section 104 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) of 1980, Section 311 of the Clean Water Act, and Subtitle I of the Resource Conservation and Recovery Act (RCRA), EPA has been delegated the responsibility to undertake response actions with respect to the release or potential release of oil, petroleum, or hazardous substances that pose a substantial threat to human health or welfare, or the environment. In addition, EPA provides technical assistance to help mitigate endangerment of the public health, welfare or environment during other emergencies and natural disasters.

EPA's successful implementation of these emergency response action responsibilities requires that technical support capabilities be provided in the form of contracted Technical Assistance Teams (TAT) for each EPA Region. The WESTON TAT Contract 68-W0-0036 provides support to EPA Regions I, II, III, IV, ERT - Edison, and Headquarters - Washington,DC.

### Hazard Communication

The samples which accompany this notice have been shipped to your laboratory for analysis in accordance with applicable D.O.T. or IATA Regulations and were collected by the WESTON TAT and were tentatively designated by the field response team as either environmental or hazardous material samples.

In general, *Environmental Samples* are collected from streams, farm ponds, small lakes, wells, and off-site soils that are not reasonably expected to be contaminated with hazardous materials. Samples of on-site soils or water, and materials collected from drums, bulk storage tanks, obviously contaminated ponds, impoundments, lagoons, pools, and leachates from hazardous waste sites are considered *Hazardous Samples*. Samples which are obtained from a known radioactive material contamination site or which demonstrate beta or gamma activity greater than three times average background as scanned with a Geiger-Mueller radiation survey meter are considered *Radioactive Samples*.

The samples which accompany this notice have been tentatively classified by the field response team as:

_X_ Environmental ____ Hazardous ____ Comb. (Envir.& Haz.) ____ Radioactive

The field team which collected the samples used the following Level(s) of personal protection as designated by EPA and OSHA conventions to provide protection against possible radiological or chemical exposure:

____ Level A ____ Level B ____ Level C _X_ Level D

*This information is intended for use as a guide for the safe handling of these laboratory samples in accordance with EPA and OSHA regulations. The sample classification(s) and Levels of personal protection used by the WESTON TAT are not represented to be, nor are they adequate or applicable in all situations, nor are they intended to serve as substitutes for professional/personal judgement.*

Not Responsive Based on Revised Scope

This form was prepared by: [redacted] 3/31/97

Analytical Services TDD No. N/A Date __/__/__

WESTON Office: Delran, NJ Phone: (b) (6) [redacted] FAX: 609-461-4916

Laboratory Name: U.S. EPA Region III Bestgate Labs

Off f Enforcement

# CHAIN OF CUS DY RECORD

841 Chest St.
Philadelphia, Penns, nia 19107

PROJ. NO. 3152

PROJECT NAME Robert Wooler

Not Responsive Based on Revised Scope [redacted]

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | VOC | TAL Inorganics | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RWGW01 | 3/31/97 | 0918 | | X | Wooler Well | 3 | X | | 9 | 7 | 0 | 4 | 0 | 1 0 1 | 40 ml VOA 2196851-52-53 |
| RWGW04 | | 1015 | | X | [redacted] | 3 | X | | 9 | 7 | 0 | 4 | 0 | 1 0 2 | 40 ml VOA 2196854-55-56 |
| RWGW02 | | 1040 | | X | (b) (6) [redacted] | 3 | X | | 9 | 7 | 0 | 4 | 0 | 1 0 3 | 40 ml VOA 2196857-58-59 |
| RWSS02 | | 1105 | | X | Sediment Upstream | 1 | X | | 9 | 7 | 0 | 4 | 0 | 1 0 4 | 4 oz VOA 2196860 |
| RWSS02 | | 1105 | | X | Sediment upstream | 2 | | X | | | | | | | 8 oz Widemouth 2196861-62 |
| RWSS01 | | 1105 | | X | Sediment outfall | 1 | X | | 9 | 7 | 0 | 4 | 0 | 1 0 5 | 4 oz. VOA 2196863 |
| RWSS01 | | 1105 | | X | Sediment outfall | 2 | | X | | | | | | | 8 oz. Widemouth 2196864-65 |
| RWSW01 | | 1110 | | X | Surface Water Outfall | 3 | X | | 9 | 7 | 0 | 4 | 0 | 1 0 6 | 40 ml VOA 2196866-67-68 |
| RWGW05 | | 1145 | | X | (b) (6) [redacted] | 3 | X | | 9 | 7 | 0 | 4 | 0 | 1 0 7 | 40 ml VOA 2196869-70-72 |
| RWSW03 | | 1220 | | X | Mouth of Tributary | 3 | X | | 9 | 7 | 0 | 4 | 0 | 1 0 8 | 40 ml VOA 2196873-74-75 |
| RWSW02 | | 1245 | | X | 200 ft. downstream | 3 | X | | 9 | 7 | 0 | 4 | 0 | 1 0 9 | 40 ml. VOA 2196876-77-78 |
| RWGW03 | | 1315 | | X | (b) (6) [redacted] | 3 | X | | 9 | 7 | 0 | 4 | 0 | 1 1 0 | 40 ml VOA 2196879-80-81 |
| RWGW06 | | 1400 | | X | [redacted] | 3 | X | | 9 | 7 | 0 | 4 | 0 | 1 1 1 | 40 ml VOA 2196882-83-84 |
| RWBL01 | | 0800 | | X | Trip Blank | 3 | X | | 9 | 7 | 0 | 4 | 0 | 1 1 2 | 40 ml. VOA 2196898-99-900 |
| Temp01 | | 1400 | | X | Temperature Blank | 1 | | | | | | | | | 40 ml. VOA =4°C |

Not Responsive Based on Revised Scope [redacted]

| Relinquished by: (Signature) | Date / Time | Received by: (Signature) | Relinquished by: (Signature) | Date / Time | Received by: (Signature) |
|---|---|---|---|---|---|
| | 3/31/97 1600 | | | | |
| Relinquished by: (Signature) | Date / Time | Received by: (Signature) | Relinquished by: (Signature) | Date / Time | Received by: (Signature) |
| | | | | | |
| Relinquished by: (Signature) | Date / Time | Not Responsive Based on Revised Scope [redacted] | Date / Time | Remarks | |
| | | | 4/6/97 0955 | Fed Ex Airbill 4269779526 | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

ORIGINAL (Red)

3 19310

ORIGINAL (Red)

# APPENDIX 2

## 1997 SI Blended System Apportionment Calculations

ORIGINAL (Red)

# BLENDED SYSTEM CALCULATIONS

**Supplier Name:** Ambler Borough Water Dept.

**No. of Groundwater Wells[1]:** 10
**No. of Surface Water Intakes[1]:** 0
**Total** 10

**Interconnections[1]:** yes
3 emergency (excluded)

**Approximate population serviced by Supplier[2]:** 25,000 persons

**Wells within 4 mile study area with associated distances[1]:**

(b) (9)

[redacted]

**Population/unit:** 25,000 **persons**
10 **Units**

**Each unit serves approximately** 2500 **people.**

| Distance from site | Wells within distance | Population served |
|---|---|---|
| 0 - ¼ mile | 0 | |
| ¼ - ½ mile | 0 | |
| ½ - 1 mile | 0 | |
| 1 - 2 mile | 0 | |
| 2 - 3 mile | (b) (9) [redacted] | 17,500 |
| 3 - 4 mile | | 5000 |

1 - Montgomery County Planning Commission, 1992, *Water Supply Facilities 1990 Status Report*, Montgomery County Planning Commission, Norristown, Pennsylvania.

2 - Ecology and Environment, Inc., February 1993, *Preliminary Assessment for the Robert Wooler Company Site, Dresher, Montgomery County, Pennsylvania*, EPA Work Assignment No. 85-12-3JZZ, Philadelphia, Pennsylvania. EPA.

ORIGINAL (Red)

# BLENDED SYSTEM CALCULATIONS

**Supplier Name:** Hatboro Borough Water Authority

**No. of Groundwater Wells[1]:** 11
**No. of Surface Water Intakes[1]:** 0
**Total** 11

**Interconnections present[1]:** 4
4 supply

**Approximate population serviced by Supplier[2]:** 19,000 persons
**Population served by 4 interconnections[1]:** 61,778 persons
**Total:** 80,778 persons

**Wells within 4 mile study area with associated distances[1]:**

(b) (9)

[redacted]

**Population/unit:** 80,778 persons / 11 **Units**

**Each unit serves approximately** 7344 **people.**

| Distance from site | Wells within distance | Population served |
|---|---|---|
| 0 - ¼ mile | 0 | |
| ¼ - ½ mile | 0 | |
| ½ - 1 mile | 0 | |
| 1 - 2 mile | 0 | |
| 2 - 3 mile | 0 | |
| 3 - 4 mile | (b) (9) [redacted] | 51, 408 |

1 - Montgomery County Planning Commission, 1992, *Water Supply Facilities 1990 Status Report*, Montgomery County Planning Commission, Norristown, Pennsylvania.

2 - Ecology and Environment, Inc., February 1993, *Preliminary Assessment for the Robert Wooler Company Site, Dresher, Montgomery County, Pennsylvania*, EPA Work Assignment No. 85-12-3JZZ, Philadelphia, Pennsylvania. EPA.

ORIGINAL (Red)

# BLENDED SYSTEM CALCULATIONS

**Supplier Name:** Horsham Township Water Authority

**No. of Groundwater Wells[1]:** 14
**No. of Surface Water Intakes[1]:** 0
**Total** 14

**Interconnections present[1]:** yes
2 emergency (excluded), 2 supply

**Approximate population serviced by Supplier[2]:** 17,663 persons
**Population served by 2 interconnections[1]:** 2923 persons
**Total:** 20,586 persons

**Wells within 4 mile study area with associated distances[1]:**

(b) (9)

[redacted]

**Population/unit:** 20,586 **persons**
14 **Units**

**Each unit serves approximately** 1470.4 **people.**

| Distance from site | Wells within distance | Population served |
|---|---|---|
| 0 - ¼ mile | 0 | |
| ¼ - ½ mile | 0 | |
| ½ - 1 mile | 0 | |
| 1 - 2 mile | 0 | |
| 2 - 3 mile | (b) (9) [redacted] | 1470 |
| 3 - 4 mile | | 11,763 |

1 - Montgomery County Planning Commission, 1992, *Water Supply Facilities 1990 Status Report*, Montgomery County Planning Commission, Norristown, Pennsylvania.

2 - Ecology and Environment, Inc., February 1993, *Preliminary Assessment for the Robert Wooler Company Site, Dresher, Montgomery County, Pennsylvania*, EPA Work Assignment No. 85-12-3JZZ, Philadelphia, Pennsylvania. EPA.

ORIGINAL (Red)

# BLENDED SYSTEM CALCULATIONS

**Supplier Name:** North Wales Water Authority

**No. of Groundwater Wells[1]:** 25
**No. of Surface Water Intakes[1]:** 0
**No. of Receiving Interconnections:** 6
**Total** 31

**Interconnections present[1]:** 15
1 Supply, 8 Emergency and 6 Receiving

**Approximate population serviced by Supplier[2]:** 50,000 persons
**Population served by 1 interconnections[1]:** 1070 persons
**Total:** 51,070 persons

**Wells within 4 mile study area with associated distances[1]:**

(b) (9)

**Population/unit:** 51,070 **persons**
31 **Units**

**Each unit serves approximately** 1647 **people.**

| Distance from site | Wells within distance | Population served |
|---|---|---|
| 0 - ¼ mile | 0 | |
| ¼ - ½ mile | 0 | |
| ½ - 1 mile | 0 | |
| 1 - 2 mile | (b) (9) | 1647 |
| 2 - 3 mile | | 3294 |
| 3 - 4 mile | | 3294 |

1 - Montgomery County Planning Commission, 1992, *Water Supply Facilities 1990 Status Report*, Montgomery County Planning Commission, Norristown, Pennsylvania.
2 - Ecology and Environment, Inc., February 1993, *Preliminary Assessment for the Robert Wooler Company Site, Dresher, Montgomery County, Pennsylvania*, EPA Work Assignment No. 85-12-3JZZ, Philadelphia, Pennsylvania. EPA.

ORIGINAL (Red)

# BLENDED SYSTEM CALCULATIONS

**Supplier Name:** Philadelphia Suburban Water Company

**No. of Groundwater Wells[1]:** 39
**No. of Surface Water Intakes[1]:** 6
**No. of Receiving Interconnections:** 1
**Total** 46

**Interconnections present[1]:** 12
5 Supply, 6 Emergency and 1Recieveing

**Approximate population serviced by Supplier[2]:** 833,997 persons
**Population served by 5 interconnections[1]:** 9640 persons*
**Total:** 843,637 persons

**Wells within 4 mile study area with associated distances[1]:**

(b) (9)

[redacted]

Wells 10, 11, 6 and 8 are completed in the Conestoga and Elbrook formations, which are interconnected with the Ledger and Stockton formations.

**Population/unit:** 843,637 **persons** / 46 **Units**

**Each unit serves approximately** 18,340 **people.**

| Distance from site | Wells within distance | Population served |
|---|---|---|
| 0 - ¼ mile | 0 | |
| ¼ - ½ mile | 0 | |
| ½ - 1 mile | 0 | |
| 1 - 2 mile | (b) (9) [redacted] | 55,020 |
| 2 - 3 mile | | 36,680 |
| 3 - 4 mile | | 18,340 |

1 - Montgomery County Planning Commission, 1992, *Water Supply Facilities 1990 Status Report*, Montgomery County Planning Commission, Norristown, Pennsylvania.
2 - Ecology and Environment, Inc., February 1993, *Preliminary Assessment for the Robert Wooler Company Site, Dresher, Montgomery County, Pennsylvania*, EPA Work Assignment No. 85-12-3JZZ, Philadelphia, Pennsylvania. EPA.
* - A value of 5000 persons was estimated for the interconnections to Bucks County as the actual value was not available.

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PRE ORIGINAL (Red)

# ATTACHMENT 1

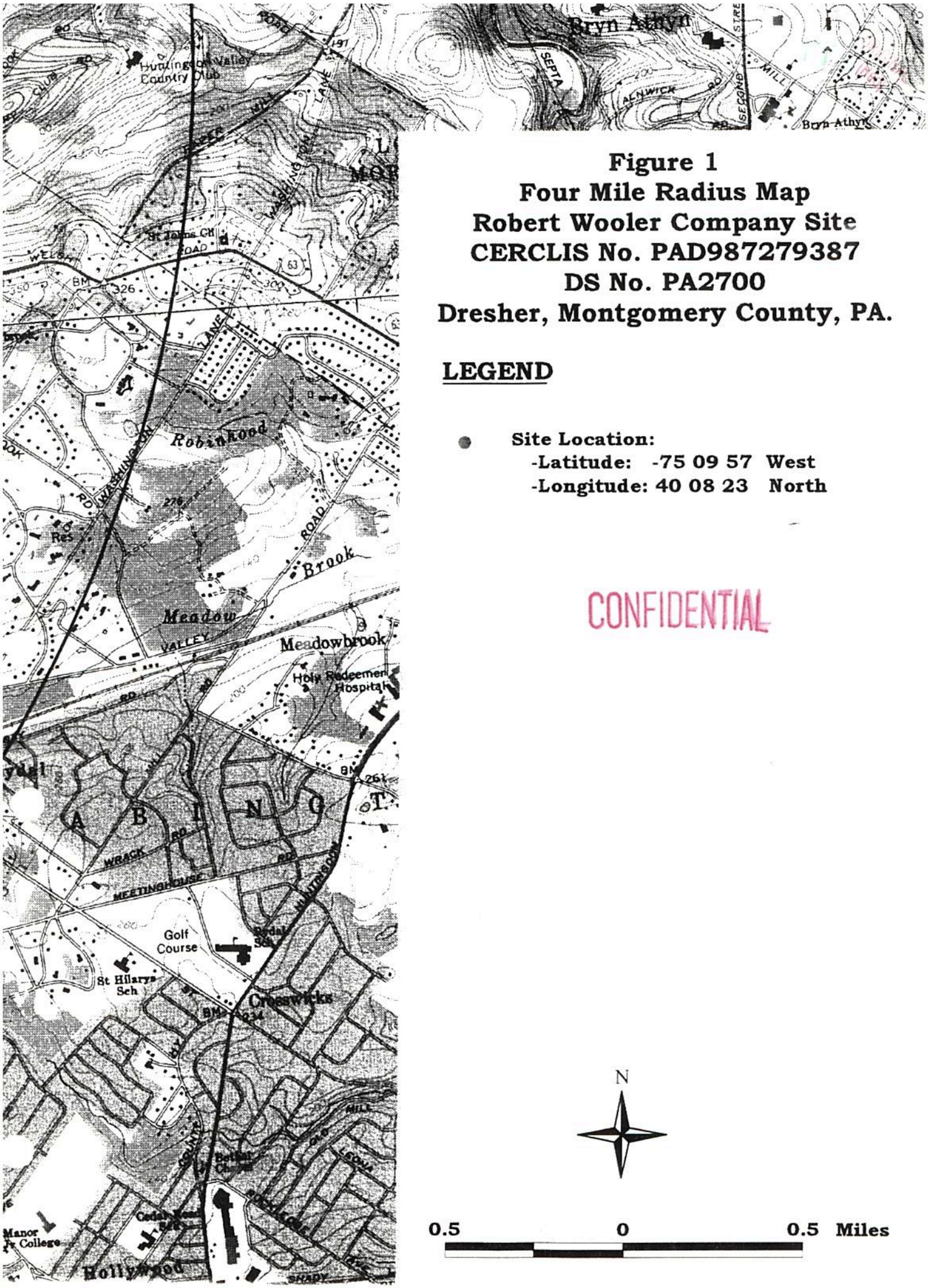
## Reference Citations

ORIGINAL (Red)

CONFIDENTIAL

# Reference 1

U.S. Geologic Survey. 1966; 1983 photorevised. Ambler PA. 1967; 1983 photorevised. Germantown, PA. 1967; 1983 photorevised. Frankford, PA. 1966; 1983 photorevised. Hatboro, PA. (7.5 Minute Series Topographic Map).




# Figure 1
# Four Mile Radius Map
# Robert Wooler Company Site
# CERCLIS No. PAD987279387
# DS No. PA2700
# Dresher, Montgomery County, PA.

## LEGEND

● **Site Location:**
**-Latitude: -75 09 57 West**
**-Longitude: 40 08 23 North**

CONFIDENTIAL

N

**0.5 0 0.5 Miles**

ORIGINAL (Red)

CONFIDENTIAL

## Reference 2

Not Responsive Based on Revised Scope [redacted] 1993. Site Manager, Ecology and Environment, Inc. Written correspondence with Maggie Jennis, U.S. EPA (Environmental Protection Agency) concerning submittal of Robert Wooler Preliminary Assessment report. 26 February.

ORIGINAL (Red)

CONFIDENTIAL

**ecology and environment, inc.**
1528 WALNUT STREET, PHILADELPHIA, PENNSYLVANIA 19102, TEL. (215) 546-9901
International Specialists in the Environment

February 26, 1993

Ms. Maggie Jennis
Work Assignment Manager
U.S. Environmental Protection Agency
841 Chestnut Building
Philadelphia, PA 19107

Re: Robert Wooler Site Final Preliminary Assessment (PA)
ZE5580

Dear Ms. Jennis:

Attached please find one copy of the final PA report for the Robert Wooler site (DSN PA-2700), Montgomery County, Pennsylvania. Please also note the PAscore printout and diskette, and cover letter for your information and use.

Comments made by EPA have been addressed as follows:

- The Allied Concrete facility located across Susquehanna Road from the site uses a well to supply contact process water. Employees utilize bottled water for potable supply. This information was added to Section 2.2 and 3.1. The paper company adjacent to Allied Concrete is called Springfield Paper Company, and leases building space from Allied. Springfield is connected to the Philadelphia Suburban Water Company. Information on the paper company was not received in time to be included in the final version of the report, but this information is included in the site file.

- The typographical errors on Page 4-1 and B-5 have been corrected.

As of this date, comments have not been received from the Pennsylvania Department of Environmental Resources.

CONFIDENTIAL



Should you have any questions, please do not hesitate to call.

Sincerely,

Not Responsive Based on Revised Scope

[redacted]

Site Manager

Not Responsive Based on Revised S

[redacted]

Attachment

PFE ORIGINAL (Red)

CONFIDENTIAL

## Reference 3

U.S. Department of Commerce. 1993. *Climatic Atlas of the United State*.

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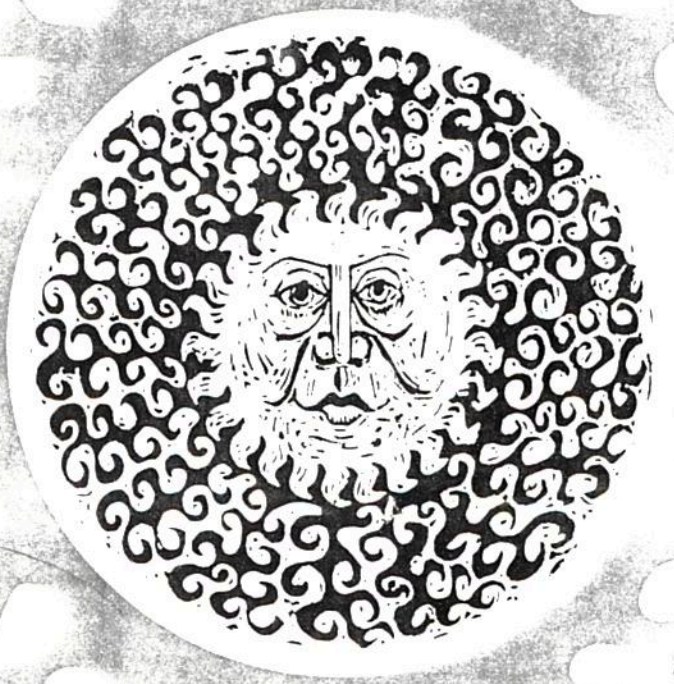

# CLIMATIC ATLAS OF THE UNITED STATES

tmospheric Administration • National Environmental Satellite, Data, and Information Service

PFE
ORIGINAL (Red)

CONFIDENTIAL

## Reference 4

U.S. Department of Commerce. 1996. *Rainfall Frequency Atlas of the United States*, Technical Paper No. 40. November.

U.S. DEPARTMENT OF COMMERCE
LUTHER H. HODGES, Secretary

WEATHER BUREAU
F. W. REICHELDERFER, Chief

TECHNICAL PAPER NO. 40

# RAINFALL FREQUENCY ATLAS OF THE UNITED STATES

## for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years

Prepared by
DAVID M. HERSHFIELD
Cooperative Studies Section, Hydrologic Services Division
for
Engineering Division, Soil Conservation Service
U.S. Department of Agriculture

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ORIGINAL (Red)

ORIGINAL (Red)

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# Reference 5

Ecology and Environment, Inc. 1993. *Preliminary Assessment for the Robert Wooler Company Site, Dresher, Montgomery County, Pennsylvania.* Reported by [redacted] February.

ORIGINAL
(Red)

ORIGINAL
(Red)

CONFIDENTIAL

PRELIMINARY ASSESSMENT FOR
ROBERT WOOLER COMPANY SITE
Dresher, Montgomery County, Pennsylvania
Dump Site No. PA-2700
EPA ID No. PAD987279387

ecology and environment, inc.
International Specialists in the Environment

ORIGINAL (Red)

CONFIDENTIAL

# Reference 6

Not Responsive Based on Revis [redacted] 1997. Field logbook for Robert Wooler Company Site Sampling Event. SATA-03-A-923. WESTON SATA. 31 March.

ORIGINAL (Red)

Ardt
603234

Not Responsive Based on Revised Scope

[redacted]

CONFIDENTIAL

5 UNDERWOOD CT.
DELRAN NJ 08075

EMP #002747
DATE ISS. 9/20/95

SATA 03 A 923

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ORIGINAL (Red)

18

3/31/92 Robert Wooler Co. Site Sampling event.

0730 Arrived at Urban office and loaded equipment for Sampling event.

0800 Departed office for site.

0905 Arrived at site and conducted a site drive-by

- Site in an industrial/commercial zone
- Site slopes towards Susquehanna Rd
- Majority of site is covered in Bldg. & Asphalt w/ 2 entry ways off of Susque. Rd (one paved/one dirt).

0930 Arrived at Robert Wooler and spoke w/ops. manager Robert Cogle and conducted interview to confirm info in ~~SWI~~ PA and begin Sampling event.

- Well used for Process supply only
- Operations on 24 hour basis
- Septic fields behind building in field approx 4-6 feet down. No maps ~~of~~ or surveys of fields.
- Oils used in process are recycled onsite (stored near process line unless being recycled
- Septic field used until early 80's when connected to ~~W~~ Municipal sewer
- Problem w/ algaecide discharge to unnamed waterway to the north corrected in 1992 under PADEP.
- TCE used in Past was recycled by Gold Shield no records or manifests on quantities removed.
- No previous spill history
- Still use dewpointers for materials

1000

1015

1030

1035

1045

ORIGINAL (Red)

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testing onsite.

Mr. Coyle conducted a site tour of the facility showing the 2 onsite storage tanks secured in a fenced area to the south of the Bld. He also showed SATA the abandoned septic fields along NW of property. No visible signs of stressed or disturbed (crocled) soil/vegetation were seen. Supposed septic fields backfilled in early 80's

- No air readings above bkgd on microtip during sampling.
- No fence around property.
- Septic fields upgradient from bld.
- Surface water flows towards Susque. Rd along road edge (dirt driveway to waterway ∝ 200 ft. north.

1000 Departed Wooler for Manufacturers C.C. for sample

1015 Collected sample from onsite well
- C.C. has ∝ 100 members and 40 workers

1030 Departed C.C. for (b) (6) [redacted] home.

1035 Arrived at (b) (6) [redacted] home and collected well sample.

1045 Departed (b) (6) [redacted] home and went to junction of ~~W&R~~ Susquehanna Rd and Unnamed waterway. Began collecting surface water and surface sediment samples.

- PPE approx. 24 inches from storm drain outfall for Susque Rd.
- Followed waterway ∝ 2 miles to

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ORIGINAL (Red)

confluence w/ Sandy Run (?).

1135 Arrived at [redacted] (b) (6) home and collected well sample.

1215 Returned to confluence of tributary w/ Sandy Run (?) and collected SW sample.

1240 Returned to 200 ft. downstream from suspected PPE and collected SW sample

1310 Arrived at [redacted] (b) (6) home and collected well sample.

- [redacted] (b) (6) referred to stream as RAPP RUN that unnamed trib. flows into. RAPP Run flows into Sandy Run.

1355 Completed sampling and returned to Delcam office.

1500 Arrived at office and backed samples for shipment to CRL lab in Annapolis.

1630 FedEx picked-up samples. End of day

Not Responsive Based on Revised Scope

[redacted]

3/31/97

ORIGINAL (Red)

CONFIDENTIAL

## Reference 7

NUS Corporation, Superfund Division. 1990. *Site Inspection of Selas Corporation of America, Dresher, Montgomery County, Pennsylvania*. Reported by [redacted] February.

NUS CORPORATION
A Halliburton Company

CONFIDENTIAL

8807-23-62

ORIGINAL (Red)

SITE INSPECTION OF
SELAS CORPORATION OF AMERICA
PREPARED UNDER

TDD NO. F3-8807-23
EPA NO. PA-2216
CONTRACT NO. 68-01-7346

# FIELD INVESTIGATION TEAM ACTIVITIES AT UNCONTROLLED HAZARDOUS SUBSTANCES FACILITIES — ZONE I

NUS CORPORATION
SUPERFUND DIVISION

ORIGINAL (Red)

CONFIDENTIAL

# Reference 8

Not Responsive Based on Revised S

[redacted] 1997. Site Lead. WESTON SATA. Telephone conversation with Roncetti, N.R. Water Quality Specialist, Pennsylvania Department of Environmental Protection, Division of Water Quality, concerning Robert Wooler Company and Dresher area municipal water authorities. 20 February.

WESTON
MANAGERS DESIGNERS/CONSULTANTS

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Not Responsive Based on Revised Scope
[redacted]
Originator

ORIGINAL (Red)

# PHONE CONVERSATION RECORD

**Conversation with:**

Name: Rich N. Roncetti

Company: PADEP Water Quality

Address: Norristown PA

Phone: (BT 610) 800 438 2474

**Subject:** Robert Wooler SI

**Date:** 2 / 20 / 97

**Time:** 1010 AM PM

☒ Originator Placed Call

☐ Originator Received Call

W.O. NO. 3152

**Notes:**

- Established SI of Wooler property - thought issue closed w SEIAS report.
- No knowledge of previous spill but none come to mind since 1992 NOV over algacide discharge.
- No know problems w/ any municipal water supplys in area of Wooler except PSUC, however, they use strippers on wells to comply w/ PADEP WQ regs.
- will look into past NOV's for Wooler and call if any can be found.

☐ File

☐ Tickle File ___ / ___ / ___

☐ Follow-Up By:

☐ Copy/Route To:

Follow-Up-Action: None at this time. Rich will call back if further developments over history

Not Responsive Based on Revised Scope
[redacted]

Originator's Initia[redacted]

REM 110 4 82

ORIGINAL
(Red)

CONFIDENTIAL

## Reference 9

Montgomery County Planning Commission. 1992. *Water Supply Facilities 1990 Status Report*. Map Attachment B. Norristown, PA.

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Figure 3
Robert Wooler Company SI Report
October 1997

# MONTGOMERY COUNTY PENNSYLVANIA

# 1992 EXISTING WATER FACILITIES

PFE ORIGINAL (Red)

CONFIDENTIAL

# Reference 10

Montgomery County Planning Commission, 1992, *Water Supply Facilities 1990 Status Report*. Norristown, PA.

ORIGINAL (Red)

CONFIDENTIAL

# WATER SUPPLY FACILITIES

## 1990 STATUS REPORT

Montgomery County, Pennsylvania

ORIGINAL (Red)

CONFIDENTIAL

# Reference 11

Not Responsive Based on Revi [redacted] 1997. Site Lead. WESTON SATA. Telephone conversation with Not Responsive Based on Revised Scope [redacted] Laboratory Coordinator, Philadelphia Suburban Water Company, concerning municipal connections in the Dresher area. 27 January.

WESTON
MANAGERS DESIGNERS/CONSULTANTS

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Not Responsive Based on Revised Scope
[redacted]
Originator

ORIGINAL (Red)

# PHONE CONVERSATION RECORD

Conversation with:
Name (b) (6) [redacted]
Company Phila. Suburban Water Co.
Address 762 Lancaster Avenue
Bryn Mawr, PA 19010
Phone 610 645 1132
Subject Well location and analytical

Date 1 / 27 / 97
Time 1500 AM/PM

☒ Originator Placed Call
☐ Originator Received Call
W.O. NO.

Notes:
- Established well names and location in relation to site
- (b) (6) [redacted] said analytical is available w/ written request.
- Discovered several wells have TCE + PCE in trace amounts, North Hills well has an stripper on it to counter this problem.
- Ground water into the South - Southwest from Drake
- Maple Glen Well - shut down due to a sprayer/capacitor plant suspected of release to the G.W.!
- Enfield Well (#6 on map) shut-down a year ago due to contamination.
- North Hills sampled weekly rest are monthly/quarterly
- Method 502.2 used for well testing.
- Quarry in White Marsh Stenton Ave + Joshua Rd.

☐ File
☐ Tickle File / /
☐ Follow-Up By:
☐ Copy/Route To:

Follow-Up-Action: Sent written request for analytical on 1/27/97

Not Responsive Based on Revised Scope
Originator's Initials [redacted]

RFW 110 4 83

PFE ORIGINAL (Red)

CONFIDENTIAL

## Reference 12

Not Responsive Based on Rev [redacted] 1997. Site Lead. WESTON SATA. Telephone conversation with (b) (6) [redacted] Grounds Manager, Manufacturers Country Club, concerning well usage and sampling event schedule. 13 March.

WESTON
MANAGERS DESIGNERS/CONSULTANTS

CONFIDENTIAL

Not Responsive Based on Revised Scope [redacted]
Originator

ORIGINAL (Red)

# PHONE CONVERSATION RECORD

**Conversation with:**

Name (b) (6) [redacted] (Grounds Manager)

Company Manufacturer's C.C.

Address Oseland, PA

Phone (215)8863200

**Subject** Sampling of C.C. for Work SI

Date 3 / 13 / 97

Time 1340 AM/PM

☒ Originator Placed Call

☐ Originator Received Call

W.O. NO. 3152

**Notes:**

- Established C.C. uses well primarily w/ Municipal connection for back-up.
- Set a sample date of 3/31/97 @ 0930
- Approximately 100 members but much more than that due to dinning facilities (Banquets)
- Currently 40 full-time staff members w/ several P/T for Banquets (as needed)
- Ask for him when arrive for Samples.
- Pager # if need to reach (215)5099488

☐ File

☐ Tickle File ___/___/___

☐ Follow-Up By:

☐ Copy/Route To:

Follow-Up-Action: Collect samples as arranged.

Originator's Initials

ORIGINAL (Red)

CONFIDENTIAL

## Reference 13

Montgomery County Planning Commission. 1992. *Water Supply Facilities 1990 Status Report*. Map Attachment A. Norristown, PA.

ORIGINAL (Red)

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# MONTGOMERY COUNTY PENNSYLVANIA

# 1992 EXISTING WATER FACILITIES

ORIGINAL
(Red)

CONFIDENTIAL

## Reference 14

U.S. Department of Commerce, Bureau of Census. 1994. *County and City Data Book*. Washington DC.

12th Edition

# County and City Data Book 1994

CONFIDENTIAL

U.S. Department of Commerce
Economics and Statistics Administration
BUREAU OF THE CENSUS

ORIGINAL (Red)

CONFIDENTIAL

## Reference 15

EPA. 1996. *National Primary Drinking Water Standards*. Office of Water, Washington, DC. EPA 822-R-96-001. February.

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ORIGINAL (Red)

# DRINKING WATER REGULATIONS

# AND HEALTH ADVISORIES

by

Office of Water
U.S. Environmental Protection Agency
Washington, D.C.

February 1996

Recycled/Recyclable
Printed on paper that contains
at least 50% recycled fiber.

ORIGINAL (Red)

CONFIDENTIAL

## Reference 16

U.S. EPA Region III. 1997. *Risk-Based Concentration Table*. Prepared by R. L. Smith. 14 March.

only for info on front
not tables

ORIGINAL (Red)

# EPA Region III Risk-Based Concentration Table

Background Information

EPA

CONFIDENTIAL

Roy L. Smith, Ph.D.
Toxicologist
April 19, 1996

## Development of Risk-Based Concentrations

### General

Separate carcinogenic and non-carcinogenic risk-based concentrations were calculated for each compound for each pathway. The concentration in the table is the lower of the two, rounded to two significant figures. The following terms and values were used in the calculations:

| Exposure variables | Value | Symbol |
|---|---|---|
| *General:* | | |
| Carcinogenic potency slope oral (risk per mg/kg/d): | * | CPSo |
| Carcinogenic potency slope inhaled (risk per mg/kg/d): | * | CPSi |
| Reference dose oral (mg/kg/d): | * | RfDo |
| Reference dose inhaled (mg/kg/d): | * | RfDi |
| Target cancer risk: | 1e-06 | TR |
| Target hazard quotient: | 1 | THQ |
| Body weight, adult (kg): | 70 | BWa |
| Body weight, age 1-6 (kg): | 15 | BWc |
| Averaging time carcinogens (d): | 25550 | ATc |
| Averaging time non-carcinogens (d): | ED*365 | ATn |
| Inhalation, adult (m3/d): | 20 | IRAa |
| Inhalation, child (m3/d): | 12 | IRAc |
| Inhalation factor, age-adjusted (m3-y/kg-d): | 11.66 | IFAadj |
| Tap water ingestion, adult (L/d): | 2 | IRWa |
| Tap water ingestion, age 1-6 (L/d): | 1 | IRWc |
| Tap water ingestion factor, age-adjusted (L-y/kg-d): | 1.09 | IFWadj |
| Fish ingestion (g/d): | 54 | IRF |
| Soil ingestion, adult (mg/d): | 100 | IRSa |
| Soil ingestion, age 1-6 (mg/d): | 200 | IRSc |
| Soil ingestion factor, age adjusted (mg-y/kg-d): | 114.29 | IFSadj |
| *Residential:* | | |
| Exposure frequency (d/y): | 350 | EFr |
| Exposure duration, total (y): | 30 | EDtot |
| Exposure duration, age 1-6 (y): | 6 | EDc |
| Volatilization factor (L/m3): | 0.5 | K |
| *Occupational:* | | |

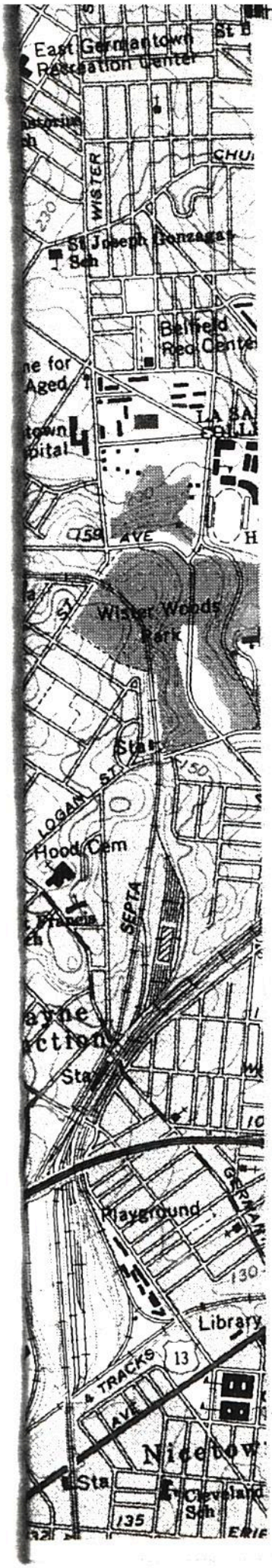
ORIGINAL (Red)

CONFIDENTIAL

## Reference 17

U.S. Geological Survey. 1966; 1983 photorevised. Ambler, PA. 1967; 1994 photorevised. Camden, NJ. 1967; 1983 photorevised. Frankford, PA. 1967; 1983 photorevised. Germantown, PA. 1966; 1983 photorevised. Hatboro, PA. 1967; 1994 photorevised. Philadelphia, PA. (7.5 Minute Series Topographic Map).

# Figure 6
# Fifteen Mile Surface Water Pathway
# Robert Wooler Company Site
# CERCLIS No. PAD987279387
# DS No. PA2700
# Dresher, Montgomery County, PA.




## LEGEND

**RWC Site Location:**
- **-Latitude: -75 09 57 West**
- **-Longitude: 40 08 23 North**

**Fifteen Mile Surface Water Pathway**

**Surface Water Pathway Mile Marker**

CONFIDENTIAL

N

**0.5 0 0.5 Miles**

**SOURCE: USGS 7.5 Minute Series (Topographic) Quadrangles: Ambler, PA, 1966, photorevised 1983; Camden, NJ, 1967, photorevised 1994; Frankford, PA, 1967, photorevised 1983; Germantown, PA, 1967, photorevised 1983; Hatboro, PA, 1966, photorevised 1983; Philadelphia, PA, 1967, photorevised 1994.**

**Date: 10/21/97**

WESTON
MANAGERS DESIGNERS/CONSULTANTS

FEDERAL PROGRAMS DIVISION

ORIGINAL (Red)

ORIGINAL (Red)

CONFIDENTIAL

## Reference 18

Federal Emergency Management Agency. 1996. *Flood Insurance Rate Map, Montgomery County*. Map No. 42091C0293 E.

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NATIONAL FLOOD INSURANCE PROGRAM

# FIRM

D-15

## FLOOD INSURANCE RATE MAP

MONTGOMERY COUNTY,
PENNSYLVANIA
(ALL JURISDICTIONS)

## PANEL 293 OF 451

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

| COMMUNITY | NUMBER | PANEL | SUFFIX |
|---|---|---|---|
| ABINGTON, TOWNSHIP OF | 420695 | 0293 | E |
| UPPER DUBLIN, TOWNSHIP OF | 420708 | 0293 | E |

Notice to User: The MAP NUMBER shown below should be used when placing map orders; the COMMUNITY NUMBER shown above should be used on insurance applications for the subject community.

**MAP NUMBER**
**42091C0293 E**

**EFFECTIVE DATE:**
**DECEMBER 19, 1996**

Federal Emergency Management Agency

Silver Spring, Maryland 20910

ORIGINAL (RED)

CONFIDENTIAL

## Reference 19

*Historical Streamflow Daily Values for Wissahickon Creek at Mouth, Philadelphia, PA*. [online]. October 1997. (http://h20.usgs.gov/swr/pa).

PTL ORIGINAL (Red)
CONFIDENTIAL

USGS
science for a changing world

# Pennsylvania Surface-Water Data Retrieval

new **NWIS-W**, the new version of this software, is now available with more recent historical data for Pennsylvania. Click here to go to NWIS-W.

If you know the USGS station number, you may enter it here:

Retrieve Data

## Locate Stations of Interest

- You may search the list of Pennsylvania gaging stations using station information such as a partial station name or the county where it is located.
- You may locate the station(s) of interest using a map of Pennsylvania or a list of counties in Pennsylvania.

Go to the Pennsylvania Water Resources page
Get help with the terms used on these pages
Other states with USGS surface-water data retrieval pages

**Comments and questions are welcome!** Please visit our feedback page or email h2oteam@qvarsx.er.usgs.gov.

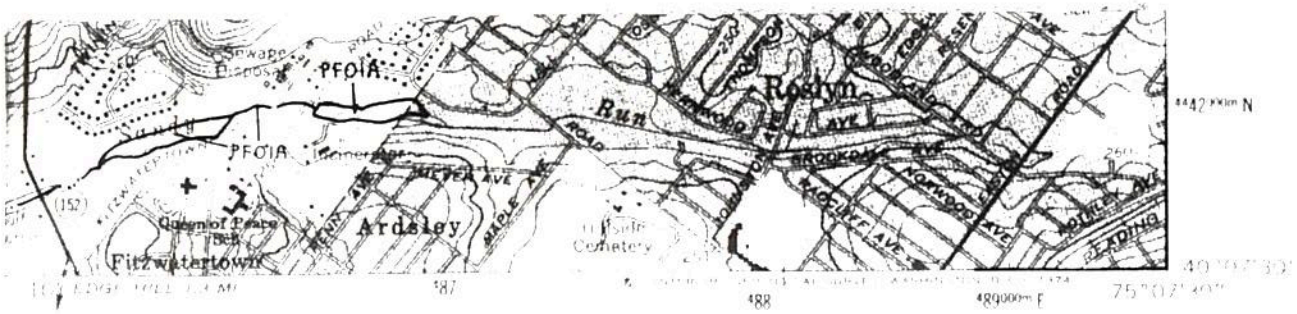
This page was created in real time by the SWR package: ( SWR: 2.1 ; API: 2.0 ; index.cgi: 2.1 )

ORIGINAL (Red)

CONFIDENTIAL

## Reference 20

U.S. Department of the Interior, Office of Biological Services. *National Wetland Inventory Maps*. 1981. Ambler, PA. 1982. Germantown, PA. 1972. Philadelphia, PA.




AMBLER, PA.

**NOTES TO THE USER**

- Wetlands which have been field examined are indicated on the map by an asterisk (*).
- Dominance type (either vegetative or sedentary animal) can be added to the map by the interested user.
- Additions or corrections to the wetlands information displayed on this map are solicited. Please forward such information to the address indicated.

## AERIAL PHOTOGRAPHY

DATE: 4 / / 81
SCALE: 1:58 000
TYPE: CIR

DATE: / /
SCALE:
TYPE:

DATE: / /
SCALE:
TYPE:

**U.S. DEPARTMENT OF THE INTERIOR**

**FISH AND WILDLIFE SERVICE**

**Prepared by Office of Biological Services for the National Wetlands Inventory**

Figure 7
Robert Wooler Company SI Report
October 1997

CONFIDENTIAL

ORIGINAL (Red)

GERMANTOWN, PA.

**NOTES TO THE USER**

- Wetlands which have been field examined are indicated on the map by an asterisk (*).
- Dominance type (either vegetative or sedentary animal) can be added to the map by the interested user.
- Additions or corrections to the wetlands information displayed on this map are solicited. Please forward such information to the address indicated.

## AERIAL PHOTOGRAPHY

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## U.S. DEPARTMENT OF THE INTERIOR

### FISH AND WILDLIFE SERVICE

**Prepared by Office of Biological Services for the National Wetlands Inventory**

Figure 7
Robert Wooler Company SI Report
October 1997

CONFIDENTIAL

M — MARINE

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PHILADELPHIA, PA.-N.J.

**NOTES TO THE USER**

- Wetlands which have been field examined are indicated on the map by an asterisk (*).
- Dominance type (either vegetative or sedentary animal) can be added to the map by the interested user.
- Additions or corrections to the wetlands information displayed on this map are solicited. Please forward such information to the address indicated.
- Some areas designated R4SB, R4SBW, or R4SBJ (intermittent streams) may not meet the definition of wetlands.

## AERIAL PHOTOGRAPHY

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### FISH AND WILDLIFE SERVICE

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M — MARINE

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