



MWH Americas, Inc.  
335 Phoenixville Pike  
Malvern, Pennsylvania 19355

**Boring ID: D66\_MWH** *Ec14-11*  
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**Project Name:** 2009 Dissolved Phase Plume Continued Delineation  
**Location:** Delaware City, DE  
**Project Number:** 1006209  
**Date Started:** Unknown  
**Date Finished:** 2/28/2009  
**Drilling Method:** Roto-Sonic  
**Sampling Method:**  
**State Permit Number:** NA

**Boring Location:** Near Eastern Boundary  
**Drilling Company:** Bowser Morner  
**Ground Elevation (ft/msl):**  
**Total Depth (ft):** 139.0'  
**Boring Diameter (in):** 6"  
**Water Level During Drilling (ft/bgs):**  
**Weather Conditions:**  
**Logged By:** Joseph Remenicky

| Depth (feet) | Blow Counts | Recovery (inches) | PID (ppm) | Sample ID | Sample Interval | USCS           | Lithology | Lithologic Description   | Well Diagram | Remarks   |
|--------------|-------------|-------------------|-----------|-----------|-----------------|----------------|-----------|--|--------------|---|
| 0            |             |                   |           |           |                 | ML             |           | 0' - 4.2' Brown (7.5YR 4/4) SILT; low plasticity; organics at surface.<br>0.7' Color grades to yellowish brown (10YR 5/6).<br>2' Color grades to brownish yellow (10YR 6/6).<br>2.8' - 3.5' Trace fine-grained subrounded gravel.<br>4.2' - 9.45' Brownish yellow (10YR 6/6) SILT; some medium-grained sand. |              | Colors were logged several days after soil cores were drilled with exception 124-139' bgs interval. |
| 5            |             | 4.3               |           |           |                 | ML             |           |  |              |   |
| 10           |             |                   |           |           |                 | CH<br>SW       |           | 9.45' - 9.75' Gray (10YR 6/1) CLAY; high plasticity.<br>9.75' - 19' Pale brown (10YR 6/3) fine-grained SAND; little silt; trace medium-grained sand.   |              |   |
| 15           |             | 1                 |           |           |                 |                |           |  |              |   |
| 20           |             |                   |           |           |                 | MH<br>ML       |           | 19' - 20.4' Very dark gray (10YR 3/1) SILT; little fine-grained sand; low plasticity; micaceous.<br>19.5' - 20.4' Little clay.<br>19.8' Clam shell fragment.<br>20.1' Color grades to dark olive gray (5Y 3/2).  |              |   |
| 25           |             | 11                |           |           |                 | SP<br>ML       |           | 20.4' - 22.3' Dark olive gray (5Y 3/2) fine-grained SANDY SILT; trace coarse-grained rounded gravel; micaceous; common large burrow molds comprised of fine glauconitic sands.   |              |   |
| 30           |             |                   |           |           |                 | ML<br>CH<br>ML |           | 22.3' - 24.1' Dark gray (10YR 4/1) fine-grained SAND; little silt; micaceous.  |              |   |
| 35           |             | 10.4              |           |           |                 | ML<br>SP       |           | 24.1' - 26.4' Dark gray (10YR 4/1) fine-grained SANDY SILT; trace coarse-grained rounded gravel; richly micaceous.<br>26.4' - 27.6' Dark gray (10YR 4/1) fine-grained SAND; little silt; micaceous.<br>27.6' - 28.3' Very dark gray (10YR 3/1)   |              |   |



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|--------------|-------------|-------------------|-----------|-----------|-----------------|------|-----------|--|--------------|---------|
| 35           |             |                   |           |           |                 |      |           | fine-grained SANDY SILT; micaceous; indurated burrow molds fragments.  |              |         |
| 38.3         |             |                   |           |           |                 |      |           | 28.3' - 28.5' Very dark gray (10YR 3/1) CLAY; hard; plastic.   |              |         |
| 38.5         |             |                   |           |           |                 |      |           | 28.5' - 29.7' Very dark gray (10YR 3/1) fine-grained SANDY SILT; trace coarse-grained rounded gravel; micaceous. |              |         |
| 39.7         |             |                   |           |           |                 |      |           | 29.7' - 38.9' Dark gray (10YR 4/1) fine-grained SAND; little silt; micaceous.                                    |              |         |
| 38.9         | 11.6        |                   |           |           |                 | ML   |           | 38.9' - 45.3' Very dark gray (10YR 3/1) CLAYEY SILT; little fine-grained sand; micaceous.                        |              |         |
| 45.3         |             |                   |           |           |                 | ML   |           | 45.3' - 106' Very dark gray (10YR 3/1) CLAYEY SILT; micaceous.   |              |         |
| 50           |             |                   |           |           |                 |      |           |  |              |         |
| 55           | 12.7        |                   |           |           |                 |      |           |  |              |         |
| 60           |             |                   |           |           |                 |      |           |  |              |         |
| 65           | 12.3        |                   |           |           |                 |      |           |  |              |         |
| 70           |             |                   |           |           |                 |      |           |  |              |         |
| 75           | 12.1        |                   |           |           |                 |      |           |  |              |         |



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|--------------|-------------|-------------------|-----------|-----------|-----------------|------|-----------|---|--------------|---------|
| 80           |             |                   |           |           |                 |      |           |   |              |         |
| 85           |             | 12.1              |           |           |                 |      |           |   |              |         |
| 90           |             |                   |           |           |                 |      |           |   |              |         |
| 95           |             | 14                |           |           |                 |      |           |   |              |         |
| 100          |             |                   |           |           |                 |      |           |   |              |         |
| 105          |             | 15.4              |           |           |                 |      |           |   |              |         |
| 110          |             |                   |           |           |                 | CH   |           | 106' - 108.5' Some fine-grained sand; trace fine-grained quartz gravel. |              |         |
| 115          |             | 8.1               |           |           |                 |      |           | 108.5' - 117.25' Light gray (10YR 7/1-7/2) CLAY; hard; high plasticity. |              |         |
|              |             |                   |           |           |                 | SP   |           | 117.25' - 132' Light gray (10YR 7/1) fine-grained SAND.                 |              |         |



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|--------------|-------------|-------------------|-----------|-------------------------|-----------------|--|-----------|---|--------------|---------|
| 120          |             | 4                 |           | Grab groundwater sample |                 |  |           | 118.4' Color grades to light brownish gray (10YR 6/2).<br>119' Color grades to gray (10YR 5/1).<br>120.1' Color grades to pinkish gray (7.5YR 7/2).<br>120.75' Color grades to pink (7.5YR 7/4-7/3).<br>122.25' Color grades to pinkish gray (7.5YR 7/2).   |              |         |
| 125          |             | 2.5               |           | Grab groundwater sample |                 |  |           | 126.4' Color grades to reddish yellow (7.5YR 6/6).<br>127.8' Color grades to pinkish gray (7.5YR 7/2).<br>129' Color grades to gray (10YR 6/2); trace partially lithofied quartzite cobbles, clay lenses.   |              |         |
| 130          |             |                   |           | Grab groundwater sample |                 |  |           | 129.8' - 132' Little coarse-grained angular gravel (cobble fragments); trace silt.<br>130' Color grades to light red (2.5YR 6/6).<br>130.25' Color grades to light reddish brown (5YR 6/4).<br>130.5' - 130.9' Cobble-sized siderite grains/fragments.  |              |         |
| 135          |             |                   |           | Grab groundwater sample |                 | SW<br>CL<br>SP<br>SC<br>SP<br>CH<br>CH<br>CH |           | 131.55' Color grades to light red (2.5YR 6/8); some coarse- to fine-grained gravel-sized siderite fragments.<br>132' - 132.3' Light gray (10YR 7/1) fine-grained SAND; little clay; interbedded clay lenses.<br>132.3' - 132.5' Light gray (10YR 7/1) CLAY; little fine-grained sand; medium plasticity.<br>132.5' - 132.8' Light gray (10YR 7/1) fine-grained SAND; little clay.<br>132.8' - 133.7' Light gray (10YR 7/1), light red (2.5YR 6/6) CLAYEY fine-grained SAND.<br>133.7' - 135.2' Light gray (10YR 7/1) fine-grained SAND; grades to coarse- to fine-grained gravel fragments with partially lithofied fine-grained sand.<br>133.75' Color grades to light red (2.5YR 6/6).<br>134' Color grades to dark yellowish brown (10YR 4/6); little medium-grained sand.<br>134.5' - 134.6' Color grades to dark red (2.5YR 3/6).<br>134.6' - 135.2' Color grades to yellowish red (5YR 4/6); lithofied medium- to fine-grained sand, clay fragments.<br>134.7' Color grades to light gray (10YR 7/1); lithofied medium- to fine-grained sand fragments.<br>135.2' - 136.15' Light brownish gray (10YR 6/2) CLAY.<br>135.9' Color grades to gray (10YR 5/1).<br>136.15' - 136.9' Gray (10YR 5/1) CLAY; some fine-grained sand seams; |              |         |
| 140          |             |                   |           |                         |                 |  |           |   |              |         |
| 145          |             |                   |           |                         |                 |  |           |   |              |         |
| 150          |             |                   |           |                         |                 |  |           |   |              |         |
| 155          |             |                   |           |                         |                 |  |           |   |              |         |
| 160          |             |                   |           |                         |                 |  |           |   |              |         |



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|--------------|-------------|-------------------|-----------|-----------|-----------------|------|-----------|---|--------------|---------|
| 165          |             |                   |           |           |                 |      |           | low plasticity; lignite.<br>136.9' - 139' Very dark gray (10YR 3/1) CLAY; hard; high plasticity.<br>138.6' Black (10YR 2/1) lignite; micaceous. |              |         |
| 170          |             |                   |           |           |                 |      |           |   |              |         |
| 175          |             |                   |           |           |                 |      |           |   |              |         |
| 180          |             |                   |           |           |                 |      |           |   |              |         |
| 185          |             |                   |           |           |                 |      |           |   |              |         |
| 190          |             |                   |           |           |                 |      |           |   |              |         |
| 195          |             |                   |           |           |                 |      |           |   |              |         |
| 200          |             |                   |           |           |                 |      |           |   |              |         |