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# BOREHOLE LOG

BORING/WELL ID: PLS-08-07

TOTAL DEPTH (ft.): 230'

**PROJECT:** Pall Life Sciences  
**SITE LOCATION:** Ann Arbor, Michigan  
**PROJECT NO.:** F96502  
**PROJECT MANAGER:** James W. Brode, Jr., CPG  
**LOGGED BY:** Todd C. Campbell, CPG

**START DATE:** 12/18/08  
**END DATE:** 12/30/08  
**TOC ELEV.:** NA  
**GROUND ELEV.:** approx. 916'  
**STATIC WATER LVL.:** NA

**DRILLING CO.:** Stearns Drilling  
**DRILLER:** Jerry, Sam, Tony  
**RIG TYPE:** CME 95  
**METHOD OF DRILLING:** Hollow Stem Auger  
**SAMPLING METHODS:** Split Spoon, Simulprobe

**NOTES:** Jackson Plaza, Field GPS Coordinates: N42.28243, W083.80399, acc. 25'  
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Static Water Level Page 1 of 4

| DESCRIPTION | PID ppm | GRAPHIC LOG | DEPTH (ft. bgl) | Static Water Level | Sample/Recovery | Sample ID | Blow Counts | COMMENTS |
|-------------|---------|-------------|-----------------|--------------------|-----------------|-----------|-------------|----------|
|-------------|---------|-------------|-----------------|--------------------|-----------------|-----------|-------------|----------|

|  |  |  |    |      |  |         |  |   |
|--|--|--|----|------|--|---------|--|---|
| ASPHALT  |  |  | 0  |      |  |         |  |   |
| SAND AND GRAVEL: Sand, fine to coarse grained; Gravel; Silt. Brown, moderately sorted, dry   |  |  | 2  |      |  |         |  |   |
|  |  |  | 4  |      |  |         |  |   |
|  |  |  | 6  |      |  |         |  |   |
|  |  |  | 8  |      |  |         |  |   |
| Sand, fine to coarse grained (70%); Gravel, fine (20%); Silt (10%). Brown, poorly sorted, loose, wet   |  |  | 10 | 1.2' |  | 4,4,5,6 |  | Boring PLS-08-07 grouted with bentonite grout after drilling was complete |
|  |  |  | 12 |      |  |         |  |   |
|  |  |  | 14 |      |  |         |  |   |
| CLAYEY SILT: Driller notes change  |  |  | 16 |      |  |         |  |   |
| Silt (70%); Clay. Brown, well sorted, moist  |  |  | 18 |      |  |         |  |   |
|  |  |  | 20 | 1.5' |  | 4,3,3,3 |  | Simulprobe sample 19-20.5' (<1 ug/L)                                      |
| SAND AND GRAVEL: Sand, medium to fine grained with some coarse grains (80%); Gravel, fine (20%). Gray, poorly sorted, loose, wet             |  |  | 22 |      |  |         |  |   |
|  |  |  | 24 |      |  |         |  |   |
|  |  |  | 26 |      |  |         |  |   |
| Sand, medium to fine grained; trace Silt. Grayish brown, well sorted, medium dense, wet  |  |  | 28 |      |  |         |  |   |
|  |  |  | 30 | 0.8' |  | 4,7,7   |  | Simulprobe sample 29'-30.5' (<1 ug/L)                                     |
|  |  |  | 32 |      |  |         |  |   |
|  |  |  | 34 |      |  |         |  |   |
|  |  |  | 36 |      |  |         |  |   |
| As above   |  |  | 38 |      |  |         |  |   |
|  |  |  | 40 | 0.5' |  | 3,7,8   |  | Simulprobe sample 39'-40.5' (14 ug/L)                                     |
| DIAMICTON: Driller notes Till  |  |  | 42 |      |  |         |  |   |
|  |  |  | 44 |      |  |         |  |   |
|  |  |  | 46 |      |  |         |  |   |
|  |  |  | 48 |      |  |         |  |   |
| Silt; Sand, fine grained with trace medium grains (40%); trace Gravel, fine; trace Clay. Grayish brown, moderately sorted, medium stiff, dry |  |  | 50 | 1.5' |  | 3,4,3,4 |  |   |
|  |  |  | 52 |      |  |         |  |   |
|  |  |  | 54 |      |  |         |  |   |
|  |  |  | 56 |      |  |         |  |   |
|  |  |  | 58 |      |  |         |  |   |



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Static Water Level Page 2 of 4

| DESCRIPTION | PID<br>ppm | GRAPHIC<br>LOG | DEPTH<br>(ft. bgl) | Static Water<br>Level | Sample/<br>Recovery | Sample<br>ID | Blow<br>Counts | COMMENTS |
|-------------|------------|----------------|--------------------|-----------------------|---------------------|--------------|----------------|----------|
|-------------|------------|----------------|--------------------|-----------------------|---------------------|--------------|----------------|----------|

|   |  |  |     |      |  |  |          |   |
|---|--|--|-----|------|--|--|----------|---|
| Silt; Sand, fine grained (20%); Gravel, fine (10%); trace Clay. Brown, well sorted, medium stiff, dry                 |  |  | 58  |      |  |  |          |   |
|   |  |  | 60  | 0.2' |  |  | 1,2,5,9  |   |
|   |  |  | 62  |      |  |  |          |   |
|   |  |  | 64  |      |  |  |          |   |
|   |  |  | 66  |      |  |  |          |   |
|   |  |  | 68  |      |  |  |          |   |
| As above, 30% Sand  |  |  | 70  | 0.4' |  |  | 3,3,5,7  |   |
| SAND: Sand, coarse to fine grained. Gray, moderately sorted, wet  |  |  | 72  |      |  |  |          |   |
|   |  |  | 74  |      |  |  |          |   |
|   |  |  | 76  |      |  |  |          |   |
| Sand, fine grained; trace Silt. Brown, well sorted, medium dense, wet   |  |  | 78  |      |  |  |          |   |
|   |  |  | 80  | 0.3' |  |  | 5,10     | Simulprobe sample 79'-80.5' (13 ug/L)<br>Added approximately 20 gallons of water to augers  |
|   |  |  | 82  |      |  |  |          |   |
|   |  |  | 84  |      |  |  |          |   |
|   |  |  | 86  |      |  |  |          |   |
|   |  |  | 88  |      |  |  |          |   |
| Infer Sand, as above  |  |  | 90  | 0'   |  |  | 8,15,29  | Simulprobe sample 89'-90.5' (1 ug/L)  |
|   |  |  | 92  |      |  |  |          |   |
|   |  |  | 94  |      |  |  |          |   |
|   |  |  | 96  |      |  |  |          |   |
|   |  |  | 98  |      |  |  |          |   |
| Sand, coarse to medium grained with some fine grains (80%); Gravel, fine (20%). Grayish brown, moderately sorted, wet |  |  | 100 | 1.0' |  |  | 5,9,14   | Simulprobe sample 99'-100.5' (<1 ug/L)<br>Added approximately 30 gallons of water to augers |
|   |  |  | 102 |      |  |  |          |   |
|   |  |  | 104 |      |  |  |          |   |
|   |  |  | 106 |      |  |  |          |   |
|   |  |  | 108 |      |  |  |          |   |
|   |  |  | 110 | 1.1' |  |  | 11,20,42 | Simulprobe sample 109'-110.5' (6 ug/L)  |
|   |  |  | 112 |      |  |  |          |   |
|   |  |  | 114 |      |  |  |          |   |
| DIAMICTON: Silt; Sand, fine grained (30%); trace Gravel, fine; trace Clay. Gray, moderately sorted, hard, dry         |  |  | 116 |      |  |  |          |   |



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Static Water Level Page 3 of 4

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|-------------|---------|-------------|-----------------|--------------------|-----------------|-----------|-------------|----------|
|-------------|---------|-------------|-----------------|--------------------|-----------------|-----------|-------------|----------|

|   |   |     |     |      |      |  |              |   |   |
|---|---|-----|-----|------|------|--|--------------|---|---|
| Silt; trace Clay. Grayish brown, well sorted, hard, dry   |   |     | 118 |      |      |  |              |   |   |
|   |   |     | 120 | 1.2' |      |  | 7,31,50 (4") |   |   |
|   |   |     | 122 |      |      |  |              |   |   |
|   |   |     | 124 |      |      |  |              |   |   |
|   |   |     | 126 |      |      |  |              | Added approximately 30 gallons of water to augers   |   |
|   |   |     | 128 |      |      |  |              |   |   |
|   | Silt; Sand, fine grained (40%). Grayish brown, well sorted, hard, dry                                     |     |     | 130  | 0.6' |  |              | 8,10,40   |   |
|   |   |     |     | 132  |      |  |              |   |   |
|   |   |     |     | 134  |      |  |              |   |   |
|   |   |     |     | 136  |      |  |              |   |   |
| SILTY SAND: Sand, fine grained (60%); Silt (40%). Grayish brown, well sorted, wet (interbedded Clayey Silt seams throughout)                            |   |     | 138 |      |      |  |              |   |   |
|   |   |     | 140 | 1.3' |      |  | 8,10,10      | Simulprobe sample 139'-140.5' (<1 ug/L)   |   |
|   |   |     | 142 |      |      |  |              |   |   |
|   |   |     | 144 |      |      |  |              |   |   |
|   |   |     | 146 |      |      |  |              |   |   |
|   | Silty Sand, as above  |     |     | 148  |      |  |              |   |   |
|   |   |     |     | 150  | 0.1' |  |              | 7,7,8   | Simulprobe sample 149'-150.5' (1 ug/L)<br>Added approximately 30 gallons of water to augers |
|   |   |     |     | 152  |      |  |              |   |   |
|   |   |     |     | 154  |      |  |              |   |   |
|   | SAND: Sand, fine to medium grained (90%); Gravel, fine (10%); trace Silt. Grayish brown, well sorted, wet |     |     | 156  |      |  |              |   |   |
|   |   |     | 158 |      |      |  |              |   |   |
|   |   |     | 160 | 0.4' |      |  | 110,50 (4")  | Simulprobe sample 159'-160' (4 ug/L)<br>Added approximately 30 gallons of water to augers |   |
|   |   |     | 162 |      |      |  |              |   |   |
| SAND AND GRAVEL: Sand, coarse to fine grained (80%); Gravel, fine to 2"; trace Silt. Grayish brown, poorly sorted, wet coarse Gravel/Cobbles throughout |   |     | 164 |      |      |  |              |   |   |
|   |   |     | 166 |      |      |  |              |   |   |
|   |   |     | 168 |      |      |  |              |   |   |
|   |   |     | 170 | 1.1' |      |  | 100,112      | Simulprobe sample 169'-170' (2 ug/L)  |   |
|   |   |     | 172 |      |      |  |              |   |   |
|   |   | 174 |     |      |      |  |              |   |   |



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|-------------|------------|----------------|--------------------|-----------------------|---------------------|--------------|----------------|----------|
|-------------|------------|----------------|--------------------|-----------------------|---------------------|--------------|----------------|----------|

|   |  |     |      |      |  |          |                  |  |
|---|--|-----|------|------|--|----------|------------------|--|
| As above  |  |     | 176  |      |  |          |                  |  |
|   |  |     | 178  |      |  |          |                  |  |
| Cobbles throughout  |  |     | 180  | 0.8' |  |          | 18,31,75<br>(3") | Simulprobe sample 179'-180.5' (2 ug/L) |
|   |  |     | 182  |      |  |          |                  |  |
|   |  |     | 184  |      |  |          |                  |  |
|   |  |     | 186  |      |  |          |                  |  |
|   |  |     | 188  |      |  |          |                  |  |
| As above  |  |     | 190  | 1.0' |  |          | 40,75<br>(3")    | Simulprobe sample 189'-190' (2 ug/L)   |
|   |  |     | 192  |      |  |          |                  |  |
|   |  |     | 194  |      |  |          |                  |  |
| DIAMICTON: Driller notes Till   |  |     | 196  |      |  |          |                  |  |
|   |  |     | 198  |      |  |          |                  |  |
| Silt; Sand, fine grained (30%); trace Gravel, fine; trace Clay. Grayish brown, moderately sorted, hard, dry |  |     | 200  | 0.6' |  |          | 100 (4")         |  |
|   |  |     | 202  |      |  |          |                  |  |
|   |  |     | 204  |      |  |          |                  |  |
|   |  |     | 206  |      |  |          |                  |  |
|   |  |     | 208  |      |  |          |                  |  |
| Interbedded Sand seams throughout. Attempted to collect Simulprobe water sample, no water recovered         |  |     | 210  | 1.3' |  |          | 18,21,27         |  |
|   |  |     | 212  |      |  |          |                  |  |
|   |  |     | 214  |      |  |          |                  |  |
|   |  | 216 |      |      |  |          |                  |  |
|   |  | 218 |      |      |  |          |                  |  |
| Silt; Sand, fine grained (30%); trace Gravel, fine; trace Clay. Grayish brown, moderately sorted, hard, dry |  | 220 | 0.8' |      |  | 100 (5") |                  |  |
|   |  | 222 |      |      |  |          |                  |  |
|   |  | 224 |      |      |  |          |                  |  |
| Silt; Clay; Sand, fine grained (10-20%); Gravel, fine (10%). Gray, hard, dry                                |  | 226 | 0.1' |      |  | 150 (1") |                  |  |
|   |  | 228 |      |      |  |          |                  |  |
| SHALE: Shale, platy. Gray, hard, dry  |  | 230 | 0.3' |      |  | 89 (5")  |                  |  |