

| PROJECT NUMBER | BORING NUMBER |
|----------------|---------------|
| 170039 | IW-5 |

PROJECT: EBT Treatability Study LOCATION: Memphis Depot

ELEVATION: DRILLING CONTRACTOR: Boart Longyear

DRILLING METHOD AND EQUIPMENT USED: Rotasonic rig (4 inch sample casing / 6 inch outer casing)

| WATER LEVELS : START : 04/18/2002 END: 04/19/2002 LOGG DEPTH BELOW SURFACE (FT) STANDARD SOIL DESCRIPTION INTERVAL (FT) PENETRATION | BER: Bryan Burkingstock COMMENTS |
|---|--|
| | |
| JINTERVAL (FT) FENETRATION | |
| | DEDTIL OF GAOVICE DEVICES TO |
| RECOVERY (%) TEST SOIL NAME, USCS GROUP SYMBOL, COLOR, | DEPTH OF CASING, DRILLING RATE, |
| #/TYPE RESULTS MOISTURE CONTENT, RELATIVE DENSITY, | DRILLING FLUID LOSS, |
| 6"-6"-6" OR CONSISTENCY, SOIL STRUCTURE, | TESTS, AND INSTRUMENTATION. |
| (N) MINERALOGY. | Corrected FID (ppm): (Soil headspace) |
| Gravel (parking lot) | (Soil neadspace) |
| Silt, brown, moist, loess, stiff | |
| -i i | |
| | 0.0 |
| -i i | 0.0 |
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| 1 . ! ! | |
| 5-1 | 0.0 |
| 1 ; ; | 0.0 |
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| ī i | ! |
| 20 _i 100 | 0.0 |
| ! ! | 0.0 |
| - | ! |
| Silt, brown, slight fine sand | |
| Sandy clay, (some silt), brown grading to tan, dense, red and grey sandy clay | |
| inclusions | |
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| | 0.0 |
| | 0.0 |
| 1 i 1 | |
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| -! | |
| 1 4 1 1 | |
| 1 1 1 | |
| 30 100 Same as above, increase of fine sand, tan | |
| Clayey sand, tan increase of fine sand, firm | 0.0 |
| i | |
| | |
| ! ! | |
| -! | |
| | |
| Sand, tan, fine grain, well sorted, moist, loose | |
| 35 | |
| 1 i i 1 1 | |
| Clay, light grey with maroon mottles, dense, stiff | 0.0 |
| Cray, ngrit grey with maroon motities, derise, sun | 0.0 |



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ELEVATION:

DRILLING CONTRACTO

DRILLING METHOD AND EQUIPMENT USED: Rotasonic rig (4 inch sample casing / 6 inch outer casing)

WATER LEVELS:

START: 04/18/2002 END: 04/19/2002

| VATER LEVE | | START : | 04/18/2002 | END: 04/19/2002 | LOGGER : | Bryan Burkingstock |
|-----------------------------|--------------------------------|--------------------------|---|---|----------------------|---|
| | BELOW SURFACE (FT) STANDARD | | | SOIL DESCRIPTION | | COMMENTS |
| INTER' | VAL (FT) RECOVERY (%) #/TYPE | PENETRATION TEST RESULTS | | SROUP SYMBOL, COLOR, IT, RELATIVE DENSITY, | | DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, |
| | | 6"-6"-6" (N) | OR CONSISTENCY, S MINERALOGY. | SOIL STRUCTURE, | | TESTS, AND INSTRUMENTATION. Corrected FID (ppn |
| - - | | | Clay same as above | | | |
| 40 — - - | 100 | | sand, golden to light ye | ellow, fine grain, well sorted, loose | | 14.1 |
| - - - 15 - | | | | fine to medium grained poorly sorted, loose | | |
| - | | | Sand, brownish, yellow subangular, <0.25 inch | , fine to coarse grained, poorly sorted, loose, es diameter | , gravel (<10%) | 0.0 |
| _ 0 _ | 100 | | | | | |
| | | | Sand, fine grain, well so | orted, light yellow, loose | | 140.2 @52.3 ft b |
| 55 | | | Sand, fine to medium g <0.25 inches diameter | rain, poorly sorted, brownish yellow, pebbles | s (<20%), subangular | |
| - - | | | | | | 100.4 @57.5 ft b |
| 60 _ | 100 | | Sand, brownish yellow, | fine grain, well sorted, loose | | |
| -] | | | Sand, brownish yellow gravel (10-20%), <0.5 ii | , fine to medium grained, poorly sorted, loose nches diameter | е | 65 @62.5 ft bg |
| 65 | <u> </u> | | Sand, brownish yellow, | fine to medium grain, well sorted, loose | | |
| - - - - | | | | orted, pebbles (20-30%) <1 inch diameter, fine to medium grain, well sorted, loose | loose | 38.0 |
| - 0 - - | 100 | | | h yellow, fine to coarse grained sand,)-40%), < 1 inch diameter | | 110.4 |



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| ELEVATION: | | | | DRILLING | CONTRACTOR: | Boart Longyear |
| DRILLING MET | HOD AND EQUIPMENT USED | : Rotasonic | rig (4 inch sample | e casing / 6 inch o | outer casing) | |
| WATER LEVEL | S· | START · | 04/18/2002 | END. | 04/19/2002 | LOGGER : Bryan Burkingstock |

| WATER LEVELS | | | START: | 04/18/2002 | END: | 04/19/2002 | LOGGER : | Bryan Burkingstock |
|-----------------------|---------------------------|-------|-------------|-------------------------|-------------------|-----------------------------|----------|---------------------------------------|
| DEPTH BELOW SU | IRFACE (FT |) | STANDARD | | SOIL | . DESCRIPTION | | COMMENTS |
| | INTERVAL (FT) PENETRATION | | PENETRATION | | | | | |
| | RECOVERY | ((%) | TEST | SOIL NAME, USCS GR | ROUP SYMBOL | COLOR. | | DEPTH OF CASING, DRILLING RATE, |
| | #/ | /TYPE | RESULTS | MOISTURE CONTENT | | | | DRILLING FLUID LOSS, |
| | | | 6"-6"-6"-6" | OR CONSISTENCY, S | | | | TESTS, AND INSTRUMENTATION. |
| | | | (N) | MINERALOGY. | | • | | Corrected FID (ppm): |
| iii | | | . , | | | | | , , , , , , , , , , , , , , , , , , , |
| ⁷⁵ — — — — | | | | Gravelly sand, same as | above, brownish | n yellow | | |
| | | | | | | | | 176 |
| _ <u> </u> | | | | | | | | |
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| l i i | | | | | | | | |
| 1 . 7 | | | | | | | | |
| 80 | 100 | | | | | | | 4.470 |
| 1 1 1 | | | | | | | | 1476 |
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| 90 | 100 | | | | | | | 306.0 |
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| l i i | | | | | | | | |
|] _! [| | | | | | | | |
|] ! ! | | | | | | | | |
| - | | | | Sandy clay, light grey | / wet firm | | | |
| <u> </u> | | | | | | | | |
| L., i i | 400 | | | Gravelly sand, brownish | yellow, fine to o | coarse grain, poorly sorted | l, loose | |
| ¹¹⁰ — | 100 | | | | | | | |
| 1 _! ! | | | | | | | | |
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| ELEVATION: | | DRILLING CONTRACTOR: Boart Longyear |
| DRILLING MET | HOD AND EQUIPMENT USED | : Rotasonic rig (4 inch sample casing / 6 inch outer casing) |

| WATER | R LEVELS | : | | START: | 04/18/2002 END: 04/19/2002 LOGGER: | Bryan Burkingstock |
|-------|-----------|--|----------|----------|---|---------------------------------|
| | | | FT) | STANDARD | SOIL DESCRIPTION | COMMENTS |
| I | INITED\/A | ELOW SURFACE (FT) STANDARD NTERVAL (FT) PENETRATION | | | SSIE DESORIE HOR | SSALITIO |
| | | | = 1.7.00 | 1 | | |
| | | RECOVE | RY (%) | TEST | SOIL NAME, USCS GROUP SYMBOL, COLOR, | DEPTH OF CASING, DRILLING RATE, |
| | | | #/TYPE | RESULTS | MOISTURE CONTENT, RELATIVE DENSITY, | DRILLING FLUID LOSS, |
| | | | | 6"-6"-6" | OR CONSISTENCY, SOIL STRUCTURE, | TESTS, AND INSTRUMENTATION. |
| | | | | (N) | MINERALOGY. | Corrected FID (ppm): |
| | !! | | | | | |
| _ | - | | | | | |
| I _ | | | | | Same as above | |
| | i | ! | | | Clay, yellowish brown, dense, moist, stiff | |
| - | i i | | | | | |
| 115 | | | | | | |
| | !! | | | | | |
| _ | <u> </u> | 1 | | | Color change from yellowish brown to yellowish grey to dark grey. | |
| | | | | | Color change from yellowish brown to yellowish grey to dark grey. | |
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