DOE/OR/20722-258
VOLUME III
REVISION 1



Formerly Utilized Sites Remedial Action Program (FUSRAP)
Contract No. DE-AC05-81OR20722

# RADIOLOGICAL, CHEMICAL, AND HYDROGEOLOGICAL CHARACTERIZATION REPORT FOR THE ST. LOUIS DOWNTOWN SITE IN ST. LOUIS, MISSOURI

## GEOLOGIC DRILL LOGS

September 1990

Bechtel National, Inc.

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# RADIOLOGICAL, CHEMICAL, AND HYDROGEOLOGICAL CHARACTERIZATION REPORT FOR THE ST. LOUIS DOWNTOWN SITE IN ST. LOUIS, MISSOURI

## GEOLOGIC DRILL LOGS

SEPTEMBER 1990

Prepared for

UNITED STATES DEPARTMENT OF ENERGY

OAK RIDGE OPERATIONS OFFICE

Under Contract No. DE-AC05-81OR20722

By

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Bechtel National, Inc.

Oak Ridge, Tennessee

Bechtel Job No. 14501

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C01 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 2,108 E 1,507 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-22-88 | 4-22-88 | Layne-Western, Co. | Jackhammer | 4.0" | 10.5 | | 10.5 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 5 | | 420.3 | ▽ 7.5/412.8 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| None | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 420.3 | | | | | |
| SS | 1.6 | 1.2 | | | | | 419.9 | | | | 0.0 - 0.4 Ft. CONCRETE. | 0-10.5 Ft., 2-inch split spoon pushed with electric jackhammer. |
| SS | 2.0 | 1.3 | | | | | | | | | 0.4 - 8.5 Ft. Silty CLAY (CL) and RUBBLE. Moderate yellowish brown (10YR5/4) to grayish brown (5YR3/2). Low moisture content to moist, loose, soft. Rubble consists of slag, carbonaceous material, brick, pebble and sand (Fill). | |
| SS | 2.0 | 1.4 | | | | | | 5 | | | | |
| SS | 2.0 | 1.6 | | | | | | | | | | Hole reamed with 4-inch split spoon. Top of undisturbed material at 8.5 Ft. |
| SS | 2.0 | 2.0 | | | | | 411.8 | | | | 8.5 - 10.5 Ft. Silty CLAY (CL). Dark gray (N3). Moist, medium stiff, slightly plastic. Trace of very fine-grained sand, trace of organic material as blebs. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| | | | | | | | 409.8 | 10 | | | Bottom of boring at 10.5 Ft. Boring grouted to bottom of concrete with bentonite cement grout on 4/29/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and identification by visual examination of soils. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C01

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C02 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 2,065 E 1,521 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-22-88 | 4-22-88 | Layne-Western, Co. | Jackhammer | 4.0" | 10.0 | | 10.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 5 | | 420.3 | ▽ 5.6/414.8 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| None | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 420.3 | | | | | |
| SS | 1.6 | 0.8 | | | | | 419.9 | | | | 0.0 - 0.4 Ft. CONCRETE. | 0-10.0 Ft. 2-inch split spoon pushed with electric jackhammer. |
| SS | 2.0 | 1.7 | | | | | | | | | 0.4 - 6.5 Ft. Silty CLAY (CL) and RUBBLE. Moderate yellowish brown (10YR5/4) to grayish black (N2). Low moisture content to moist, loose, soft. Rubble consists of slag, carbonaceous material, gravel and brick fragmants. | |
| SS | 2.0 | 1.0 | | | | | | 5 | | | | |
| | | | | | | | | | | | | Hole reamed with 4-inch split spoon. |
| SS | 2.0 | 1.7 | | | | | | | | | | |
| | | | | | | | 412.8 | | | | 6.5-7.5 Ft. Silty SAND (SM). Moderate yellowish brown (10YR5/4) to olive gray (5Y4/1). Moist, soft; medium coarse-grained quartz sand. Fill material. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.7 | | | | | | | | | | |
| | | | | | | | 410.3 | 10 | | | 7.5 - 10.0 Ft. Silty CLAY (CL). Dark gray (N3). Moist, soft to medium-stiff consistency. Moderately plastic. Trace of very fine-grained sand. Trace of organic material as blebs. | VOA sample collected 4.0-6.0 Ft. |
| | | | | | | | | | | | | Top of undisturbed material at 7.5 Ft. |
| | | | | | | | | | | | Bottom of boring at 10.0 Ft. Boring grouted to bottom of concrete with bentonite cement grout on 4/28/88. | |
| | | | | | | | | | | | | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and identification by visual examination of soils. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C02

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C03 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 2,088 E 1,547 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-1-88 | 4-1-88 | Layne-Western, Co. | CME-55 | 6.5" | 10.5 | | 10.5 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 5 | | 419.9 | ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 419.9 | | | | | |
| SS | 1.4 | 0.8 | 3-3-3/5" | | | | 419.3<br>418.7 | | | | 0.0 - 0.6 Ft. CONCRETE.<br>0.6 - 1.2 Ft. Sandy GRAVEL (GP). | 0-10.5 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| SS | 2.0 | 0.6 | 2-4-2<br>2 | | | | | | | | 1.2 - 7.8 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture content, loose. Rubble consists of carbonaceous material, slag and sand. Fe staining; patches of moderate yellowish brown (10YR5/4) silty clay. | |
| SS | 2.0 | 0.6 | 1-2-2<br>2 | | | | | 5 | | | | |
| SS | 2.0 | 1.8 | 1-2-3<br>4 | | | | 412.1 | | | | | Radiologically sampled and gamma-logged by TMA/Eberline. Top of undisturbed material at 7.8 Ft. |
| SS | 2.0 | 1.9 | 3-4-5<br>7 | | | | | | | | 7.8 - 10.5 Ft. Silty CLAY (CL). Medium dark gray (N4) to dark gray (N3). Moist, soft to medium-stiff consistency; slightly plastic. Minor amounts of organics as bleba. | |
| | | | | | | | 409.4 | 10 | | | Bottom of boring at 10.5 Ft.<br>Boring grouted to bottom of concrete with bentonite cement grout on 4/12/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and identification by visual examination of soils. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C03

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C04 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 2,038 E 1,550 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-1-88 | 4-1-88 | Layne-Western, Co. | CME-55 | 6.5" | 10.5 | | 10.5 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 5 | | 420.0 | ▽ 6.0/414.0 4/1/88 ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. |
|---|---|---|---|---|---|---|
| SS | 1.0 | 0.5 | 6-4 | | | |
| SS | 2.0 | 1.4 | 4-7-4 3 | | | |
| SS | 2.0 | 0.9 | 1-1-1 1 | | | |
| SS | 2.0 | 1.4 | 1-2-1 2 | | | |
| SS | 2.0 | 2.0 | 1-2-3 4 | | | |

ELEV. 420.0 | DEPTH | GRAPHICS | SAMPLE

419.3
418.8
412.6
409.5

DEPTH: 5, 10

**DESCRIPTION AND CLASSIFICATION**

0.0 - 0.7 Ft. CONCRETE.

0.7 - 1.2 Ft. Sandy GRAVEL (GP).

1.2 - 7.4 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture to moist, loose. Rubble consists of carbonaceous material, slag and gravel. Fe staining. Patches of dark yellowish brown (10YR4/2) to moderate yellowish brown (10YR5/4) silty clay.

7.4 - 10.5 Ft. Silty CLAY (CL). Dark gray (N3). Moist, soft to medium-stiff consistency, moderately plastic. Trace of organic material as blebs.

Bottom of boring at 10.5 Ft.
Boring grouted to bottom of concrete with bentonite cement grout on 4/12/88.

**NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.**

0-10.5 Ft. advanced with 6.5-inch O.D. hollow-stem auger.

Radiologically sampled and gamma-logged by TMA/Eberline. Top of undisturbed material at 7.4 Ft.

Color descriptions from the GSA Rock Color Chart (1948).

Description and identification by visual examination of soils.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C04

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C05 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,757 E 1,780 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-11-88 | 4-11-88 | Layne-Western, Co. | CME-55 | 6.5" | 14.0 | | 14.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 419.6 | ▽ 11.4/408.2 4/11/88 ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 419.6 | | | | | |
| SS | 2.0 | 1.6 | 7-8-16<br>9 | | | | 419.1 | | | | 0.0 - 0.5 Ft. Sandy GRAVEL (GP).<br>0.5 - 8.5 Ft. Silty CLAY (CL) and RUBBLE.<br><br>0.5-1.5 Ft. Moderate yellowish brown (10YR5/4). Low moisture content, medium-stiff consistency. Some gravel and brick. | 0-14.0 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.7 | 10-40-31<br>19 | | | | | | | | | |
| SS | 2.0 | 1.7 | 3-3-6<br>3 | | | | | 5 | | | 1.5-8.5 Ft. Brownish black (5YR2/1) to grayish black (N2). Low moisture content, loose. Rubble consists of carbonaceous material, slag, gravel, brick, sand and particle board. | Radiologically sampled and gamma-logged by TMA/Eberline. Top of undisturbed material at 12.0 Ft. |
| SS | 2.0 | 2.0 | 2-2-3<br>2 | | | | | | | | | |
| SS | 2.0 | 2.0 | 1-1-2<br>1 | | | | 411.1 | | | | 8.5 - 14.0 Ft. Silty CLAY (CL).<br><br>8.5-12.0 Ft. Grayish olive green (5GY3/2) to olive gray (5Y4/1). Moist, soft. Trace of organic material as blebs. Some brick fragments, pebbles, particle board and glass. | |
| SS | 2.0 | 2.0 | 1-1-4<br>3 | | | | | 10 | | | | |
| SS | 2.0 | 1.3 | 3-6-7<br>6 | | | | | | | | 12.0-14.0 Ft. Olive gray (5Y4/1). Moist, soft to medium-stiff consistency, slightly to moderately plastic. Minor amounts of very fine-grained sand. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | 405.6 | | | | Bottom of boring at 14.0 Ft.<br>Boring grouted to surface with bentonite cement grout on 4/14/88. | Description and identification by visual examination of soils. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C05

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C06A |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,780 E 1,890 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-11-88 | 4-11-88 | Layne-Western, Co. | CME-55 | 6.5" | 4.3 | | 4.3 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 2 | | 420.0 | ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 420.0 | | | | | |
| SS | 2.0 | 1.2 | 10-12-8<br>7 | | | | 419.6 | | | | 0.0 - 0.4 Ft. Sandy GRAVEL (GP). | 0-4.3 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| | | | | | | | | | | | 0.4 - 4.3 Ft. Silty CLAY (CL). | |
| SS | 2.0 | 1.5 | 4-12-19<br>17 | | | | | | | | 0.4-2.7 Ft. Moderate yellowish brown (10YR5/4). Low moisture content, medium-stiff consistency. Some brick rubble. | |
| SS | 0.3 | 0.3 | 50/4" | | | | 415.7 | | | | 2.7-4.3 Ft. Olive gray (5Y4/1) to olive black (5Y2/1). Low moisture content, medium stiff, some gravel. | Radiologically sampled by TMA/Eberline. |
| | | | | | | | | | | | Bottom of boring at 4.3 Ft. Auger refusal. Boring grouted to surface with bentonite cement grout on 4/14/88. | Auger refusal at 4.3 Ft. |
| | | | | | | | | | | | | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and identification by visual examination of soils. |

SS = SPLIT SPOON; ST = SHELBY TUBE; O = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C06A

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C06B |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,785 E 1,890 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-11-88 | 4-11-88 | Layne-Western, Co. | CME-55 | 6.5" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 5 | | 420.0 | ▽ 7.8/412.2 4/11/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. |
|---|---|---|---|---|---|---|
| SS | 2.0 | 1.8 | 4-2-2 2 | | | |
| SS | 2.0 | 1.5 | 3-2-2 2 | | | |
| SS | 2.0 | 1.6 | WH-2-2 3 | | | |
| SS | 2.0 | 1.9 | 1-2-6 12 | | | |
| SS | 2.0 | 1.8 | 3-4-6 7 | | | |

ELEV. 420.0 | DEPTH | GRAPHICS | SAMPLE

419.6 — 0.0 - 0.4 Ft. **GRAVEL** (GW).

0.4 - 10.0 Ft. **Silty CLAY (CL) and RUBBLE**.

0.4-2.7 Ft. Moderate yellowish brown (10YR5/4). Low moisture content, medium-stiff consistency. Some brick.

5

2.7-4.0 Ft. Olive gray (5Y4/1) to olive black (5Y2/1). Low moisture content, medium stiff. Some gravel.

4.0-5.5 Ft. Rubble.

5.5-10.0 Ft. Grayish black (N2). Low moisture content to moist, loose. Rubble consists of carbonaceous material, brick, particle board and gravel.

410.0 — 10

10.0 - 16.0 Ft. **Silty SAND** (SM).

10.0-13.1 Ft. Greenish gray (5G6/1) to dark greenish gray (5GY4/1). Moist, soft. Some brick fragments and pieces of particle board. At 10.0 Ft. sampler advanced 6 in. by the weight of the hammer and rods only; no weight drop.

15

13.1-16.0 Ft. Olive gray (5Y4/1). Moist, soft to medium-stiff consistency, slightly plastic. Very fine-grained sand.

404.0 — 14.5-16.0 Ft. Clay stringers. Highly plastic, trace of organic material.

Bottom of boring at 16.0 Ft.
Boring grouted to surface with bentonite cement grout on 4/14/88.

NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.

0-16.0 Ft. advanced with 6.5-inch O.D. hollow-stem auger.

Unable to collect sample at 4.0-6.0 Ft. due to rubble.

Radiologically sampled and gamma-logged by TMA/Eberline. VOA sample collected 6.0-8.0 Ft.

Top of undisturbed material at 13.1 Ft.

Color descriptions from the GSA Rock Color Chart (1948).

Description and identification by visual examination of soils.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. B16C06B

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C07 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,750 E 1,705 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-6-88 | 4-6-88 | Layne-Western, Co | CME-55 | 6.5" | 12.0 | | 12.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 6 | | 420.0 | ▽ 7.5/412.5 4/6/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 420.0 | | | | | |
| SS | 1.6 | 1.0 | 11-7-6 3/1" | | | | 419.7 | | | | 0.0 - 0.3 Ft. ASPHALT. | 0-12.0 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| | | | | | | | 419.5 | | | | 0.3 - 0.7 Ft. Sandy GRAVEL (GM). | |
| SS | 2.0 | 1.3 | 9-8-2 7 | | | | | | | | 0.7 - 8.1 Ft. Silty CLAY (CL) and RUBBLE. Grayish brown (5YR3/2) to brownish black (N2. Low moisture content to moist, loose. Rubble consists of slag, carbonaceous material and gravel. Fe staining. | |
| SS | 2.0 | 1.5 | 7-3-2 10 | | | | | 5 | | | | |
| SS | 2.0 | 2.0 | 19-18-13 13 | | | | | | | | | Radiologically sampled and gamma-logged by TMA/Eberline. Top of undisturbed material at 8.1 Ft. |
| | | | | | | | 411.9 ▽ | | | | | |
| SS | 2.0 | 1.6 | 2-2-2 2 | | | | | | | | 8.1 - 12.0 Ft. Silty CLAY (CL). | |
| SS | 2.0 | 1.6 | 1-2-3 3 | | | | | 10 | | | 8.1-11.4 Ft. Moderate brown (5YR4/4). Moist, soft, moderately to highly plastic. Trace of very fine-grained sand. | |
| | | | | | | | 408.0 | | | | 11.4-12.0 Ft. Olive gray (5Y4/1) to olive black (5Y2/1). Moist, soft, slightly to moderately plastic. Trace of organic material as blebs. Minor amounts of medium-grained quartz sand. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | Bottom of boring at 12.0 Ft. Boring grouted to bottom of asphalt with bentonite cement grout on 4/8/88. | Description and identification by visual examination of soils. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C07

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C08 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,694 E 1,678 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-25-88 | 4-25-88 | Layne-Western Co. | Mobile B-40 | 6 3/4" | 18.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 419.5 | ▽ / / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 419.5 | | | | | 0-18.0 Ft. advanced with 6 3/4-in. O.D. hollow-stem auger. |
| | | | | | | | 418.7 | | | | 0.0 - 0.8 Ft. **CONCRETE**. | |
| SS | 1.2 | 1.0 | 4-4 | | | | | | | | 0.8 - 8.6 Ft. **FILL**. Dusky brown (5YR 2/2) grading to greenish black (5G 2/1). Silt, clay, and crushed rock. Becomes gravelly with depth. Wet and loose. Pieces of wood. | Radiologically sampled and gamma-logged by TMA/Eberline, Inc. |
| SS | 2.0 | 0.3 | 1-1-1 2 | | | | | | | | | |
| SS | 2.0 | 1.1 | 6-4-6 2 | | | | | 5 | | | | |
| SS | 2.0 | 1.4 | 3-1/1' 3 | | | | | | | | | |
| SS | 2.0 | 1.0 | 3-2-1 1 | | | | 410.9 | | | | | VOA samples collected 8-9 Ft. |
| SS | 2.0 | 1.3 | 1-1-1 1 | | | | | 10 | | | 8.6 - 18.0 Ft. **Silty CLAY** (CL). Dark greenish gray (5G4/1) grading to grayish olive green (5GY3/2). Moist, firm consistency. Increases in silt content and plasticity with depth. Brittle rupture when deformed. Small black specks, probably decomposed organic matter. | Top of undisturbed material at 8.6 Ft. |
| SS | 2.0 | 2.0 | 2-2-1 1 | | | | | | | | | |
| SS | 2.0 | 2.0 | 2-2-3 2 | | | | | 15 | | | | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | 401.5 | | | | Bottom of boring at 18.0 Ft. Borehole backfilled with bentonite cement, 4/25/88. | Description and identification by visual examination of soils. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. B16C08

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C09 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,664 E 1,674 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBUROEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-25-88 | 4-25-88 | Layne-Western Co. | Mobile B-40 | 6 3/4" | 18.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 419.5 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 419.5 | | | | | |
| | | | | | | | 419.0 | | | | 0.0 - 0.5 Ft. CONCRETE. | 0-18.0 Ft. advanced with 6 3/4 in. O.D. hollow-stem auger. |
| SS | 1.5 | 1.5 | 3-6-7 | | | | | | | | 0.5 - 10.4 Ft. FILL. Dusky yellowish brown (10YR2/2) becoming grayish brown (5YR3/2) and black (N1) with depth. Clayey silt to gravelly silt, coal, and slag. Wet with petrochemical smell. | |
| SS | 2.0 | 1.7 | 6-6-13 13 | | | | | | | | | Radiologically sampled and gamma-logged by TMA-Eberline. |
| SS | 2.0 | 1.5 | 7-7-10 13 | | | | | 5 | | | | |
| SS | 2.0 | 2.0 | 6-9-6 10 | | | | | | | | | Top of undisturbed material at 18.0 Ft.(?) |
| SS | 2.0 | 1.5 | 4-7-7 6 | | | | | | | | | |
| SS | 2.0 | 0.7 | 3-3-1 1 | | | | 409.0 | 10 | | | 10.4 - 18.0 Ft. Silty CLAY (CL). Olive gray (5Y3/2). Soft consistency, moderately plastic. Silt content increases with depth. Dark streak, possible decomposed organics. Black streaks thin out. | |
| SS | 2.0 | 1.4 | 2-2-3 3 | | | | | | | | | |
| SS | 2.0 | 2.0 | 1-1-1/1- | | | | | 15 | | | | |
| SS | 2.0 | 2.0 | 2-2-1 1 | | | | | | | | 15.0 Ft. Sampler advances 1.0 Ft. with one blow. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | 401.5 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 18.0 Ft. Borehole backfilled with bentonite cement grout, 4/25/88. | Description and identification by visual examination of soils. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C09

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C10 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,708 E 1,646 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-19-88 | 3-19-88 | Layne-Western Co. | Mobile B-40 | 6 3/4" | 13.0 | | 13.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 6 | | 419.5 | ▽ / / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 419.5 | | | | | |
| SS | 1.5 | 1.5 | 5-9-34 | | | | 419.0 | | | | 0.0 - 0.5 Ft. CONCRETE. | 0-13.0 Ft. advanced with 6-3/4 in. O.D. hollow-stem auger. |
| SS | 2.0 | 2.0 | 18-31-35 52 | | | | | | | | 0.5 - 8.2 Ft. FILL and clayey SILT (ML). Dusky yellowish brown (10YR2/2). Silt, coal, and slag. Dry and loose. | Radiologically sampled and gamma-logged by TMA-Eberline. |
| SS | 2.0 | 1.9 | 10-27-15 16 | | | | | 5 | | | 4.0 Ft. Clayey silt is greenish black (5G2/1) to grayish olive (10Y4/2). Moist, slightly plastic. Crumbles when deformed. | Top of undisturbed material at 8.2 Ft. |
| SS | 2.0 | 1.9 | 7-7-5 4 | | | | | | | | | |
| SS | 2.0 | 0.7 | 1-1-5 7 | | | | 411.3 | | | | 8.2 - 13.0 Ft. Silty CLAY (CL). Olive gray (5Y3/2) to light olive gray (5Y5/2). Wet, moderately plastic, soft consistency. Becomes very stiff and increases in clay content at 10 Ft. | |
| SS | 2.0 | 2.0 | 0-1-1-1 | | | | | 10 | | | 10.0 Ft. Sampler advances 6 in. by weight of rods and hammer upon seating. | |
| | | | | | | | 406.5 | | | | Bottom of borehole at 13.0 Ft. Borehole backfilled with bentonite cement, 3/19/88. | |

Color descriptions from the GSA Rock Color Chart (1948).

Description and identification by visual examination of soils.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C10

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C11 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,650 E 1,645 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-18-88 | 3-21-88 | Layne-Western Co. | Mobile B-40 | 6 3/4" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 419.5 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 419.5 | | | | | |
| | | | | | | | 418.8 | | | | 0.0 - 0.7 Ft. CONCRETE. | Boring advanced 0-16.0 Ft. with 6-3/4 in. O.D. hollow-stem auger. Advanced 16-20.0 Ft. with 4 in. O.D. solid-stem auger. |
| SS | 1.3 | 1.1 | 8-7-5 | | | | | | | | 0.7 - 3.4 Ft. SILTY SAND (SM) and FILL. Dusky yellowish brown (10YR 2/2) to dark yellowish brown (10YR4/2) debris. Dry, loose consistency. Slag. Gets wet with depth. | |
| ~~SS~~ | ~~0.2~~ | ~~0.0~~ | ~~20/2"~~ | | | | 416.1 | | | | | |
| | | | | | | | 415.6 | | | | 3.4 - 3.9 Ft. CONCRETE. | |
| SS | 2.0 | 1.4 | 4-1-4 9 | | | | | 5 | | | 3.9 - 8.3 Ft. Silty SAND (SM) and FILL. Grayish black (N2) to greenish black (5GY2/1). Silty sand and slag. Wet. Saturated after 5 Ft. Loose. | |
| SS | 2.0 | 1.0 | 10-3-2 10 | | | | | | | | | Radiologically sampled and gamma-logged by TMA-Eberline. |
| SS | 2.0 | 1.6 | 3-2-4 5 | | | | 411.2 | | | | 8.3 - 10.5 Ft. SILT (MH). Light olive gray (5Y5/2). Wet. Slightly plastic, firm consistency. | |
| | | | | | | | 409.0 | 10 | | | 10.5 - 14.0 Ft. Silty CLAY (CL). Color varies from dusky yellow green (5GY5/2) to grayish olive green (5GY3/2) with depth. Consistency becomes stiffer as silt content decreases with depth. Moist, slightly plastic. | Top of undisturbed material at 8.3 Ft. |
| SS | 1.5 | 1.5 | 2-2-3 | | | | | | | | | |
| SS | 2.0 | 1.8 | 1-1-2 2 | | | | 405.5 | | | | 14.0 - 20.0 Ft. Clayey SILT (ML). Light olive gray (5Y5/2). Moist, soft consistency. | |
| SS | 2.0 | 0.5 | 1-1-1 2 | | | | | 15 | | | | Color descriptions from the GSA Rock Color Chart (1948). |
| SS | 2.0 | 2.0 | 5-2-2 3 | | | | | | | | | |
| SS | 2.0 | 1.0 | 1-4-4 3 | | | | | | | | | |
| | | | | | | | 399.5 | 20 | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 3/21/88. | Description and identification by visual examination of soils. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C11

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C12 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,601 E 1,636 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBUROEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-18-88 | 3-18-88 | Layne-Western Co. | Mobile B-40 | 6 3/4" | 15.0 | | 15.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 6 | | 419.5 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 In. | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 419.5 | | | | | |
| SS | 1.5 | 1.5 | 10-35-28 | | | | 419.0 | | | | 0.0 - 0.5 Ft. CONCRETE. | 0-15.0 Ft. advanced with 6-3/4 in. O.D. hollow-stem auger. |
| SS | 0.7 | 0.6 | 11-20/2" | | | | 416.9 | | | | 0.5 - 2.6 Ft. FILL. Dark yellowish brown (10YR4/2) to dusky yellowish brown (10YR2/2). Clayey silt and slag, contains sand grains. Dry and loose. Becomes wet at 2.3 Ft. | |
| SS | 0.0 | 0.0 | 20/0" | | | | | | | | | |
| SS | 2.0 | 1.1 | 7-8-7 7 | | | | 415.2 | | | | 2.6 - 4.3 Ft. CONCRETE. | Radiologically sampled and gamma-logged by TMA-Eberline. |
| | | | | | | | | 5 | | | 4.3 - 8.2 Ft. FILL. Dusky yellowish brown (10YR2/2). Clayey silt and gravelly silt and slag. Small amounts of sulfur; dark yellowish orange (10YR6/6). | |
| SS | 2.0 | 1.1 | 1-1-1 1 | | | | | | | | | |
| SS | 1.5 | 1.8 | 1-1/1.0- | | | | 411.3 | | | | 8.0 Ft. Sampler advanced 1.0 Ft. in one blow. | Top of undisturbed materials at 8.2 Ft. |
| | | | | | | | | 10 | | | 8.2 - 15.0 Ft. Clayey SILT (ML). Light olive gray (5Y5/2). Highly plastic, decreasing with depth. Moisture varies from saturated to moist with depth. Consistency becomes stiffer. Clay content increases. | |
| SS | 2.0 | 1.8 | 1-1-2 2 | | | | | | | | | |
| | | | | | | | 404.5 | 15 | | | Bottom of borehole at 15.0 Ft. Borehole backfilled with bentonite cement, 3/18/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and identification by visual examination of soils. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C12

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C13 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,703 E 1,750 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-5-88 | 4-5-88 | Layne-Western, Co. | CME-55 | 6.5" | 14.0 | | 14.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 419.0 | ▽ 7.0/412.0 4/5/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 419.0 | | | | | |
| | | | | | | | 418.5 | | | | 0.0 - 0.5 Ft. CONCRETE. | 0-14.0 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| SS | 0.8 | 0.5 | 10-7/4" | | | | | | | | 0.5 - 10.5 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose to medium-stiff consistency. Rubble consists of slag, carbonaceous material, gravel and sand. Fe staining. Patches of light olive gray (5Y6/1) to moderate yellowish brown (10YR5/4) silty clay. | |
| SS | 2.0 | 1.3 | 7-11-8 9 | | | | | | | | | |
| SS | 2.0 | 1.7 | 6-7-14 35 | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.8 | 27-15-12 14 | | | | | | | | | |
| SS | 2.0 | 0.8 | 1-1-1/1- | | | | | | | | | |
| SS | 2.0 | 1.9 | 1-2-4 5 | | | | 408.5 | 10 | | | 10.5 - 13.3 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to dark greenish gray (5GY4/1). Moist, soft, moderately plastic. Minor amounts of organic material. | VOA sample collected 6.0-8.0 Ft. |
| SS | 2.0 | 1.2 | 2-2-2 1 | | | | 405.7 | | | | | Top of undisturbed material at 10.5 Ft. |
| | | | | | | | 405.0 | | | | 13.3 - 14.0 Ft. Silty SAND (SM). Olive gray (5Y4/1). Moist, soft. Very fine- to fine-grained sand. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | Bottom of boring at 14.0 Ft. Boring grouted to bottom of concrete with bentonite cement grout on 4/12/88. | |
| | | | | | | | | | | | | Description and identification by visual examination of soils. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. B16C13

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C36 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,525 E 2,306 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-20-88 | 4-20-88 | Layne-Western, Co. | Jackhammer | 4.0" | 17.0 | | 17.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 424.2 | ▽ 15.3/408.9 4/20/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| None | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.2 | | | | | |
| SS | 1.5 | 0.9 | | | | | 423.7 | | | | 0.0 - 0.5 Ft. CONCRETE. | |
| SS | 2.0 | 1.4 | | | | | | | | | 0.5 - 15.0 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose, soft. Rubble consists of brick, gravel, slag, carbonaceous material, pebbles and porcelain. Fe staining. Patches of moderate yellowish brown (10YR5/4). | 0-17.0 Ft. advanced with 2-inch split spoon on an electric jackhammer. |
| SS | 2.0 | 1.7 | | | | | | 5 | | | | |
| SS | 2.0 | 2.0 | | | | | | | | | 2.4-5.3 Ft. Three 2 to 4-inch layers of medium- to coarse-grained sand. | Hole reamed with 4-inch split spoon. |
| SS | 2.0 | 1.3 | | | | | | | | | | |
| SS | 2.0 | 1.8 | | | | | | 10 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. Top of undisturbed material at 15.0 Ft. |
| SS | 2.0 | 1.8 | | | | | | | | | | |
| SS | 2.0 | 1.8 | | | | | 409.2 ▽ | 15 | | | 15.0 - 15.9 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to dark yellowish green (5GY4/1). Moist, medium stiff, moderately plastic. Trace of very fine-grained sand. Trace of organic material as blebs. | |
| SS | 1.0 | 1.0 | | | | | 408.3 | | | | | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | 407.2 | | | | 15.9 - 17.0 Ft. Silty SAND. Olive gray (5Y4/1), saturated, soft, very fine- to fine-grained sand. | |
| | | | | | | | | | | | Bottom of boring at 17.0 Ft. Boring grouted to bottom of concrete with bentonite cement on 4/29/88. | |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C36

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 2 OF 2 | B16C33 |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | 16.0 Ft. Abundant olive black spots (1.5 mm). Trace of fibrous organics. | |
| | | | | | | | | | | | Bottom of borehole at 18.0 Ft.<br>Borehole backfilled with bentonite cement, 4/28/88. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. B16C33

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C34 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,661 E 2,285 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-24-88 | 3-24-88 | Layne-Western, Co. | CME-55 | 6.5" | 18.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 424.0 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.0 | | | | | |
| SS | 1.5 | 0.9 | 3-12-4/5 | | | | 423.4 | | | | 0.0 - 0.6 Ft. ASPHALT. | 0-18.0 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| | | | | | | | 422.8 | | | | 0.6 - 1.2 Ft. Sandy GRAVEL (GP). | |
| SS | 2.0 | 1.5 | 3-6-9 8 | | | | | | | | 1.2 - 4.3 Ft. Silty CLAY (CL). Moderate yellowish brown (10YR5/4) to light olive gray (5Y6/1). Dry to low moisture content, medium stiff, trace of gravel. | |
| SS | 2.0 | 1.8 | 4-8-9 6 | | | | 419.7 | | | | 4.3 - 14.5 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of slag, carbonaceous material, sand, gravel and brick. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| | | | | | | | | 5 | | | | |
| SS | 2.0 | 1.8 | 2-2-4 5 | | | | | | | | 6.9-12.3 Ft. Light olive gray (5Y6/1) to medium gray (N5). Moist, soft to medium stiff. Light brown (5YR5/6) to light olive brown (5Y5/6) Fe staining. Trace of brick and gravel. | |
| SS | 2.0 | 1.8 | 1-3-3 4 | | | | | | | | | |
| | | | | | | | | 10 | | | | Top of undisturbed material at 14.5 Ft. |
| SS | 2.0 | 1.1 | 2-4-6 5 | | | | | | | | | |
| SS | 2.0 | 0.9 | 3-3-4 3 | | | | | | | | 12.3-14.5 Ft. Brownish black (5YR2/1) to grayish black (N2). Moist, loose. Rubble consists of carbonaceous material, slag and brick. Patches of light olive gray (5Y6/1) to greenish gray (5G6/1) silty clay. | |
| SS | 2.0 | 1.7 | 3-3-12 16 | | | | 409.5 | | | | | |
| | | | | | | | 408.7 | 15 | | | 14.5 - 15.3 Ft. Silty CLAY (CL). Medium gray (N5) to dark gray (N3). Moist, medium stiff, moderately plastic. Minor amounts of organics as blebs. | |
| SS | 2.0 | 1.4 | 7-6-6 7 | | | | | | | | | |
| | | | | | | | 406.0 | | | | 15.3 - 18.0 Ft. Silty SAND (SM). Olive gray (5Y4/1) to light olive gray (5Y5/2). Moist, medium stiff, slightly plastic. Light brown (5YR5/6) Fe staining. Minor amounts of clay. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | 16.5-16.8 Ft. Very coarse-grained well-sorted quarts sand with trace of well-rounded chert pebbles. | Description and identification by visual examination of soils. |
| | | | | | | | | | | | 16.8-17.2 Ft. Silt with moderate reddish brown (10R4/6) Fe stained dessication cracks. | |
| | | | | | | | | | | | Bottom of boring at 18.0 Ft.<br>Boring grouted to bottom of asphalt with bentonite cement on 3/31/88. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C34

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C35 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,505 E 2,271 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-18-88 | 4-18-88 | Layne-Western, Co. | Jackhammer | 4.0" | 17.0 | | 17.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 424.2 | ▽ 13.7/410.5 4/18/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| None | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.2 | | | | 0.0 - 0.7 Ft. CONCRETE. | |
| SS | 1.3 | 0.8 | | | | | 423.5 | | | | 0.7 - 3.2 Ft. Gravelly SAND. Medium- to coarse-grained sand. | 0-17.0 Ft. advanced with 2-inch split spoon on an electric jackhammer. |
| SS | 2.0 | 1.4 | | | | | 421.0 | | | | 3.2 - 15.2 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of carbonaceous material, slag, brick, gravel, sand, wood and glass. | |
| SS | 2.0 | 1.5 | | | | | | 5 | | | | Hole reamed with 4-inch split spoon. |
| SS | 2.0 | 2.0 | | | | | | | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 0.0 | | | | | | 10 | | | | VOA sample collected 10.0-12.0 Ft. |
| SS | 2.0 | 1.8 | | | | | | | | | | Top of undisturbed material at 15.2 Ft. |
| SS | 2.0 | 1.2 | | | | | | | | | | |
| SS | 2.0 | 1.0 | | | | | 409.0 | 15 | | | 15.2 - 17.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to dark greenish gray (5GY4/1). Moist, medium stiff, moderately plastic. Trace of very fine-grained sand. Trace of organic material as blebs. | Color descriptions from the GSA Rock Color Chart (1948). |
| SS | 1.0 | 0.8 | | | | | 407.2 | | | | Bottom of boring at 17.0 Ft. Boring grouted to bottom of concrete with bentonite cement on 4/29/88. | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. B16C35

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C37 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,506 E 2,445 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-21-88 | 3-21-88 | Layne-Western, Co. | CME-55 | 6.5" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 422.1 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 In. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.1 | | | | | |
| | | | | | | | 421.4 | | | | 0.0 - 0.7 Ft. CONCRETE. | 0-16.0 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| SS | 1.1 | 0.9 | 5-9-3/2" | | | | 421.0 | | | | 0.7 - 1.1 Ft. Sandy GRAVEL | |
| SS | 2.0 | 1.5 | 6-13-12 7 | | | | | | | | 1.1 - 12.5 Ft. Silty CLAY (CL) and RUBBLE. | |
| SS | 2.0 | 1.2 | 4-5-2 2 | | | | | 5 | | | 1.1-3.3 Ft. Brownish black (5YR2/1) to grayish black (N2). Low moisture content, loose. Rubble consists of brick, slag, carbonaceous material, pebbles and glass. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.4 | 1-1-2 2 | | | | | | | | 3.3-12.5 Ft. Light olive gray (5Y6/1). Low moisture content to moist, soft. Minor amounts of gravel, brick, sand and wood. Light brown (5YR5/6) Fe staining. | |
| SS | 2.0 | 1.5 | 0-1-2-2 | | | | | | | | 8.0 Ft. Sampler advances 6" under weight of hammer and rods upon seating. | |
| SS | 2.0 | 1.0 | 1-2-3 3 | | | | | 10 | | | | Top of undisturbed material at 12.5 Ft. |
| SS | 2.0 | 1.3 | 1-2-3 5 | | | | 409.6 | | | | 12.5 - 15.5 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to dark greenish gray (5GY4/1). Moist, medium stiff, moderately plastic. Trace of organic material as blebs. | |
| SS | 2.0 | 1.6 | 3-6-13 18 | | | | | 15 | | | | |
| | | | | | | | 406.6 | | | | | |
| | | | | | | | 406.1 | | | | 15.5 - 16.0 Ft. Silty SAND (SM). Olive gray (5Y4/1). Moist, medium stiff, slightly plastic. Very fine-grained sand. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | Bottom of boring at 16.0 Ft. Boring grouted to bottom of concrete with bentonite cement on 3/24/88. | |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C37

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C38 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,506 E 2,555 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-21-88 | 3-21-88 | Layne-Western, Co. | CME-55 | 6.5" | 19.0 | | 19.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 422.9 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.9 | | | | | |
| | | | | | | | 422.7 | | | | 0.0 - 0.2 Ft. **ASPHALT**. | 0-19.0 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| | | | | | | | 422.1 | | | | | |
| SS | 1.0 | 1.0 | 1-2 | | | | 421.9 | | | | 0.2 - 0.8 Ft. **CONCRETE**. | |
| SS | 2.0 | 0.9 | 2-3-4 3 | | | | 421.1 | | | | 0.8 - 1.0 Ft. **Sandy GRAVEL** (GP). | |
| | | | | | | | | | | | 1.0 - 1.8 Ft. **SAND**. Trace gravel. | |
| SS | 2.0 | 1.0 | 1-2-2 3 | | | | | 5 | | | 1.8 - 15.0 Ft. **Silty CLAY (CL) and RUBBLE**. | |
| SS | 2.0 | 1.7 | 2-3-8 6 | | | | | | | | 1.8-6.0 Ft. Dark yellowish brown (10YR4/2). Low moisture content, soft. Minor amounts of rubble consisting of brick fragments, carbonaceous material, sand and pebbles. Patches of light olive gray (5Y6/1) to moderate yellowish brown (10YR5/4). | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.1 | 2-4-2 2 | | | | | | | | | |
| SS | 2.0 | 1.3 | 2-2-3 4 | | | | | 10 | | | 6.0-8.2 Ft. Brownish black (5YR2/1) to grayish black (N2). Low moisture content, loose. Rubble consists of slag and carbonaceous material. Patches of light olive gray (5Y6/1) silty clay. | Top of undisturbed material at 15.0(?) Ft. |
| SS | 2.0 | 1.4 | 3-3-2 2 | | | | | | | | 8.2-15.0 Ft. Light brown (5YR5/6) to moderate yellowish brown (10YR5/4). Low moisture content to moist, soft to medium stiff. Minor amounts of rubble consisting of brick, particle board and pebbles. Fe staining. | |
| SS | 2.0 | 1.8 | 2-2-2 4 | | | | 407.9 | 15 | | | 15.0 - 19.0 Ft. **Silty CLAY** (CL). Olive gray (5Y3/2). Moist, medium stiff, moderately plastic. Trace of organic material as blebs including a 3/4-in. piece of decayed wood. | |
| SS | 2.0 | 1.3 | 1-2-3 3 | | | | | | | | | |
| | | | | | | | 403.9 | | | | Bottom of boring at 19.0 Ft. Boring grouted to bottom of asphalt with bentonite cement on 3/24/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; O = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C38

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C39 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,511 E 2,654 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-22-88 | 3-22-88 | Layne-Western, Co. | CME-55 | 6.5" | 19.0 | | 19.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 423.4 | ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 423.4 | | | | | |
| | | | | | | | 422.7 | | | | 0.0 - 0.7 Ft. CONCRETE. | |
| SS | 1.3 | 1.1 | 4-5-4/3" | | | | | | | | 0.7 - 15.6 Ft. Silty CLAY (CL) and RUBBLE. | 0-19.0 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.5 | 2-5-4 4 | | | | | | | | 0.7-6.3 Ft. Dark yellowish brown (10YR4/2). Low moisture content, soft to medium stiff. Minor amounts of rubble consisting of brick, gravel, carbonaceous material, slag, sand and pebbles. Light brown (5YR5/6) Fe staining. | |
| SS | 2.0 | 1.5 | 4-4-4 5 | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.8 | 1-14-20 15 | | | | | | | | 6.3-15.6 Ft. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of carbonaceous material, slag, brick, glass and wood. Patches of dark yellowish brown (10YR4/2) silty clay. Fe staining. | |
| SS | 2.0 | 1.5 | 6-5-3 2 | | | | | | | | | |
| SS | 2.0 | 1.0 | 2-2-2 2 | | | | | 10 | | | | Top of undisturbed material at 15.6 Ft. |
| SS | 2.0 | 1.5 | 3-2-3 3 | | | | | | | | | |
| SS | 2.0 | 1.6 | 2-8-3 2 | | | | | | | | | |
| | | | | | | | 407.8 | 15 | | | | |
| SS | 2.0 | 1.8 | 1-2-3 7 | | | | | | | | 15.6 - 17.2 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to dark greenish gray (5GY4/1). Moist, medium stiff, moderately plastic. Trace of organic material as blebs including several 1/2-in. pieces of decayed wood. | |
| | | | | | | | 406.2 | | | | | |
| | | | | | | | 404.4 | | | | 17.2 - 19.0 Ft. Silty SAND (SM-ML) Olive gray (5Y4/1). Moist, soft to medium stiff, slightly plastic. Very fine-grained sand. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | Bottom of boring at 19.0 Ft. Boring grouted to bottom of concrete with bentonite cement on 3/22/88. | |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C39

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C40 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,446 E 2,225 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-11-88 | 3-11-88 | Layne-Western, Co. | CME-55 | 6.5" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 422.2 | ▽ 12.0/410.2 3/11/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.2 | | | | | |
| SS | 1.5 | 0.5 | 12-11-8 | | | | 422.0<br>421.7 | | | | 0.0 - 0.2 Ft. **ASPHALT**.<br>0.2 - 0.5 Ft. **GRAVEL** (GW). | 0-18.0 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.1 | 5-5-3<br>4 | | | | 420.2<br>419.0 | | | | 0.5 - 2.0 Ft. **Silty CLAY** (CL). Pale brown (5YR5/2) to grayish black (N2). Dry, medium stiff. Some gravel and carbonaceous material. | |
| SS | 2.0 | 0.7 | 3-1-1<br>2 | | | | | 5 | | | 2.0 - 3.2 Ft. **Sandy GRAVEL** (GP). | |
| SS | 2.0 | 1.5 | 2-2-2<br>2 | | | | | | | | 3.2 - 12.5 Ft. **Silty CLAY (CL) and RUBBLE**. Brownish black (5Y2/1) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of slag, brick, carbonaceous material, glass and gravel. Fe staining. Patches of greenish gray (5G6/1) to olive gray (5Y3/2) silty clay. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.0 | 2-3-3<br>4 | | | | | | | | | |
| SS | 2.0 | 1.3 | 2-2-2<br>2 | | | | | 10 | | | | Top of undisturbed material at 12.5 Ft. |
| SS | 2.0 | 1.4 | 2-5-8<br>14 | | | | 409.7 ▽ | | | | 12.5 - 16.0 Ft. **Sandy SILT** (ML). Medium dark gray (N4) to dark gray (N3). Low moisture content, medium stiff, slightly plastic. Minor amounts of very fine-grained sand with a trace of medium-grained quartzose sand. Trace of organic material as blebs. | |
| SS | 2.0 | 1.6 | 2-8-12<br>18 | | | | | 15 | | | | |
| | | | | | | | 406.2 | | | | Bottom of boring at 16.0 Ft.<br>Boring grouted to bottom of asphalt with bentonite cement on 3/21/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C40

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C42 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,442 E 2,700 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 2-25-88 | 2-25-88 | Layne-Western, Co. | CME-55 | 6 3/4" | 17.5 | | 17.5 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 12 | | 424.1 | ▽ 12.4/411.7 3/7/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.7 | 16-7-5 5 | | | | 424.1 | | | | 0.0 - 16.4 Ft. Silty CLAY (CL) and RUBBLE. Brick fragments, slag products, crushed limestone fill throughout. Column held together with varying clay matrices. | 0-17 Ft. advanced with 6-3/4 in. O.D. hollow-stem auger. |
| SS | 1.5 | 1.1 | 5-11-10 | | | | | | | | | Radiologically sampled and gamma-logged by TMA-Eberline. |
| SS | 1.5 | 1.1 | 4-4-3 | | | | | | | | 0.2-2.0 Ft Silty CLAY (CL). Brownish black (5YR2/1). Very hard, possibly frozen. Fine-grained sand. | |
| SS | 1.5 | 1.2 | 2-2-2 | | | | | 5 | | | 2.0-3.5 Ft. Silty SAND. Grayish red (5R4/2). Fine- to medium-grained sand. | |
| SS | 1.5 | 1.1 | 2-2-9 | | | | | | | | 3.5-5.0 Ft. CLAY. Moderate brown (5YR4/4). Hard, possibly frozen. | |
| SS | 1.0 | 0.9 | 2-2 | | | | | | | | 4.5-5.0 Ft. Brownish black (5YR2/1). Dry, soft, crumbles easily. | VOA samples collected from 8-10 Ft. |
| SS | 1.0 | 1.0 | 2-2 | | | | | | | | | |
| SS | 1.5 | 0.8 | 1-2-1 | | | | | 10 | | | 5.0-6.5 Ft. Silty CLAY. Moderate yellowish brown (10YR5/4). Small amounts of fine-grained sand. | Top of undisturbed material at 16.4 Ft. |
| SS | 1.5 | 1.3 | 2-1-4 | | | | | | | | 6.5-8.0 Ft. Moderate brown (5YR4/4). Moist. Fine-grained sand. Organics. | |
| SS | 1.5 | 0.8 | 3-4-4 | | | | | | | | 8.0-10.0 Ft. Medium gray (N5). Stiff consistency, slightly plastic, moist. | |
| SS | 1.5 | 0.6 | 2-2-2 | | | | | 15 | | | 10.0-11.5 Ft. Dark gray (N3). Firm, moist, moderately plastic. | |
| SS | 1.5 | 1.2 | 1-3-7 | | | | 407.7 | | | | 11.5-16.4 Ft. Light olive gray (5Y5/2). Increase in moisture. Becomes saturated at approximately 13.2 Ft. Moderately plastic. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | 406.6 | | | | 16.4 - 17.5 Ft. CLAY (CH). Grayish black (N2). Varies from soft near top to stiff near bottom. Highly plastic, stiff thread, homogeneous. | |
| | | | | | | | | | | | Bottom of borehole at 17.5 Ft. Borehole backfilled with bentonite cement, 3/11/88. | |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. B16C42

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C43 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,400 E 3,050 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 2-24-88 | 2-24-88 | Layne-Western, Co. | Mobile B-53 | 8 1/4" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 422.7 | ▽ 11.1/411.6 3/7/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G.Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.7 | | | | | |
| SS | 1.8 | 1.3 | 7-8-15 19 | | | | 422.5 | | | | 0.0 - 0.2 Ft. GRAVEL. | 0-16.0 Ft. advanced with 8 1/4-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.2 | 7-8-8 10 | | | | | | | | 0.2 - 13.0 Ft. Silty CLAY (CL) and RUBBLE. 0.2-1.2 Ft. Moderate yellowish brown (10YR5/4). Dry, stiff. Fe staining. | |
| SS | 2.0 | 1.3 | 7-8-8 10 | | | | | 5 | | | 1.2-6.0 Ft. Moderate yellowish brown (10YR5/4). Dry to low moisture content, medium stiff. Rubble consists of gravel, coarse sand, glass and slag. Prominent Fe staining. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.5 | 4-4-4 4 | | | | | | | | | |
| SS | 2.0 | 1.3 | 8-5-4 3 | | | | | | | | 6.0-13.0 Ft. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of brick, slag, glass, gravel and particle board. | |
| SS | 2.0 | 0.6 | 2-4-3 5 | | | | | 10 | | | | Top of undisturbed material at 13.0 Ft. |
| SS | 2.0 | 0.0 | 5-7-5 3 | | | | 409.7 | | | | 13.0 - 16.0 Ft. Sandy SILT (ML). Olive gray (5Y4/1) to greenish gray (5GY4/1). Moist, slightly plastic, soft. Very fine-grained sand. Trace of organic material. | |
| SS | 2.0 | 2.0 | 4-4-5 3 | | | | | 15 | | | | |
| | | | | | | | 406.7 | | | | Bottom of borehole at 16.0 Ft. Borhole grouted to surface with bentonite cement, 3/9/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C43

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C44 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,416 E 2,607 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-18-88 | 3-18-88 | Layne-Western Co. | MOBILE B-40 | 6 3/4" | 19.0 | | 19.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 425.0 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 In. | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 425.0 | | | | | |
| | | | | | | | 424.1 | | | | 0.0 - 0.9 Ft. CONCRETE. | 0-19 Ft. advanced with 6-3/4 in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.5 | 10-10-5<br>4 | | | | | | | | 0.9 - 3.5 Ft. FILL. Olive black (5Y2/1). Silty, loosely packed. Pieces of limestone and brick. | |
| SS | 2.0 | 1.8 | 8-6-3<br>4 | | | | 421.5 | | | | 3.5 - 4.8 Ft. SILT (ML). Olive gray (5Y4/1). Moist, hard consistency, nonplastic. Weak thread, very dense. | Radiologically sampled and gamma-logged by TMA-Eberline. |
| SS | 2.0 | 1.8 | 2-4-12<br>5 | | | | 420.2<br>419.8 | 5 | | | 4.8 - 5.2 Ft. FILL. Black (N1). Silty, coal and slag products. Moist. | |
| SS | 2.0 | 1.1 | 3-3-3<br>4 | | | | 419.1<br>418.9<br>416.9 | | | | 5.2 - 5.9 Ft. CLAY (CL). Olive gray (5Y4/1). Moist, moderately plastic, medium-stiff thread. | |
| SS | 2.0 | 0.9 | 3-3-3<br>7 | | | | | 10 | | | 5.9 - 6.1 Ft. BRICK. | |
| SS | 2.0 | 1.8 | 7-5-2<br>2 | | | | | | | | 6.1 - 8.1 Ft. Clayey SILT (ML). Brownish gray (5YR4/1) grades to olive gray (5Y4/1). Dry. Slightly plastic, stiff consistency, weak thread. Small amounts of slag products and coal. | Top of undisturbed material at 15.1 Ft. |
| SS | 2.0 | 0.8 | 7-5-4<br>4 | | | | | | | | 8.1 - 15.1 Ft. FILL. Olive black (5Y2/1). Moist. Coal and slag products. Bands of clay. Firm consistency and slightly plastic. | ENMET alarm: LEL: 5 bars, Toxic: 10 bars. Vented hole to reduce potential hazards. |
| SS | 2.0 | 1.4 | 3-4-5<br>6 | | | | 409.9 | 15 | | | 15.1 - 19.0 Ft. CLAY (CL). Dark greenish gray (5GY4/1). Moderately plastic, moist, firm consistency, medium-stiff thread. | |
| | | | | | | | 406.0 | | | | Bottom of borehole at 19.0 Ft. Borehole backfilled with bentonite cement, 3/18/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C44

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C45 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,392 E 2,550 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-29-88 | 3-29-88 | Layne-Western Co. | Mobile B-40 | 6 3/4" | 19.0 | | 19.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 425.0 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 425.0 | | | | | |
| | | | | | | | 424.1 | | | | 0.0 - 0.9 Ft. CONCRETE. | 0-19 Ft. advanced with 6-3/4 in. O.D. hollow-stem auger. |
| SS | 2.1 | 1.7 | 6-9-5 2 | | | | | | | | 0.9 - 17.3 Ft. FILL. Dusky yellowish brown (10YR2/2) to brownish black (5YR2/1). Coal, slag, broken glass. Dry, loose. Pieces of brick. | Radiologically sampled and gamma-logged by TMA-Eberline. |
| SS | 2.0 | 1.6 | 1-3-4 4 | | | | | | | | | |
| SS | 2.0 | 1.2 | 2-8-8 4 | | | | | 5 | | | 4.3-4.6 Ft. CLAY. Grayish orange (10YR7/4) to mottled greenish gray (5G6/1). Firm consistency, slightly plastic, moist. Blocky structure. | |
| SS | 2.0 | 1.8 | 3-2-2 1 | | | | | | | | 5.3-5.9 Ft. CLAY, dusky yellowish green (10GY3/2) to grayish green (10GY5/2). Moderately plastic, medium-stiff thread, firm consistency, moist. | |
| SS | 2.0 | 1.6 | 2-4-3 2 | | | | | 10 | | | 5.9-6.2 Ft. SILT and FILL. Dark greenish gray (5G4/1). Blocky structure, stiff consistency, nonplastic, moist. Limestone gravel. | Top of undisturbed material at 17.3 Ft. |
| SS | 2.0 | 1.1 | 2-2-5 5 | | | | | | | | 7.5-7.9 Ft. CLAY. Light olive gray (5Y6/1). Dry, blocky stucture. Very low dry strength. | |
| SS | 2.0 | 1.7 | 1-2-4 4 | | | | | | | | 9.5-10.2 Ft. CLAY. Light bluish gray (5B7/1). Moist, stiff consistency, slightly plastic, blocky structure. | |
| SS | 2.0 | 1.5 | 4-4-3 2 | | | | | 15 | | | 13.2-14.7 Ft. CLAY, grayish green (10GY5/2 to 5G5/2). Moist. Weak thread, moderately plastic, firm consistency. Contains brick, coal, and slag. | ENMET alarm: LEL: >20%, Toxic: 100 ppm. Vented hole to reduce potential hazards. Color descriptions from the GSA Rock Color Chart (1948). |
| SS | 2.0 | 1.6 | 1-2-2 4 | | | | 407.7 | | | | 15.0-15.8 Ft. CLAY. Olive gray (5Y4/1). Dry, firm consistency. | |
| | | | | | | | 406.0 | | | | 17.0 Ft. Fill becomes wet. | |
| | | | | | | | | | | | 17.3 - 19.0 Ft. Silty CLAY (CL). Medium gray (N5). Weak thread, slightly plastic, moist, stiff consistency. | |
| | | | | | | | | | | | Bottom of borehole at 19.0 Ft. Borehole backfilled with bentonite cement, 3/29/88. | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; O = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C45

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C46 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,323 E 2,582 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TDTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-30-88 | 3-30-88 | Layne-Western Co. | Mobile B-40 | 6 3/4" | 19.0 | | 19.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 425.0 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 425.0 | | | | | |
| | | | | | | | 424.1 | | | | 0.0 - 0.9 Ft. CONCRETE. | 0-19 Ft. advanced with 6-3/4 in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.8 | 5-3-3 6 | | | | | | | | 0.9 - 17.3 Ft. FILL. Coal, slag, and brick. | |
| SS | 2.0 | 1.2 | 3-9-5 4 | | | | | | | | 0.9-2.7 Ft. Brownish black (5YR2/1). Low moisture, loose. | Radiologically sampled and gamma-logged by TMA-Eberline. |
| SS | 2.0 | 1.4 | 2-1-2 6 | | | | | 5 | | | 1.5-2.0 Ft. Sand and silt, very fine-grained. Very light gray (N8). | |
| SS | 2.0 | 1.1 | 5-2-2 2 | | | | | | | | 2.7-5.8 Ft. Dusky yellowish brown (10YR2/2). Some organics present. | |
| SS | 2.0 | 1.1 | 2-2-2 4 | | | | | 10 | | | 5.0 Ft. Fill material becomes moist. | |
| SS | 2.0 | 0.9 | 4-8-7 5 | | | | | | | | 5.8-6.4 Ft. CLAY. Pale yellowish brown (10YR6/2). Firm consistency, weak thread, slightly plastic, moist. Contains minor amounts of rubble. | |
| SS | 2.0 | 0.2 | 6-4-5 3 | | | | | | | | 7.0-7.4 Ft. Mixture of silt, clay, and coal. Saturated. Black (N1). | 11.0 Ft. ENMET alarm: LEL: >20%, Toxic: 300 ppm. Vented hole to reduce potential hazards. |
| SS | 2.0 | 1.7 | 2-4-5 4 | | | | | 15 | | | 7.4-11.3 Ft. CLAY. Dark greenish gray (5GY4/1). Mottled medium bluish gray (5B5/1). Stiff consistency, slightly plastic, medium-stiff thread, moist. Increased plasticity with depth. | |
| SS | 2.0 | 1.7 | 2-3-3 4 | | | | 407.7 | | | | 13.0 Ft. Fill becomes saturated. | 15.0 Ft. ENMET alarm: LEL: 50%, Toxic: 300 ppm. Vented hole to reduce potential hazards. |
| | | | | | | | 406.0 | | | | 15.5-15.9 Ft. Silty CLAY (CL). Dark greenish gray (5G4/1). Soft consistency, wet, moderately plastic, soft thread. | Top of undisturbed material at 17.3 Ft. |
| | | | | | | | | | | | 17.3 - 19.0 Ft. Silty CLAY. Medium dark gray (N4). Firm consistency, stiff thread, moderately plastic, moist. Organics present. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | Bottom of borehole at 19.0 Ft. Borehole backfilled with bentonite cement, 3/30/88. | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C46

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C47 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,401 E 2,945 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-25-88 | 3-25-88 | Layne-Western Co. | Tripod | 4" | 19.0 | | 19.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 425.0 | ▽ / / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 425.0 | | | | | |
| | | | | | | | 424.0 | | | | 0.0 - 1.0 Ft. CONCRETE. | 0-19 Ft. advanced with 3 1/2 in. O.D. split spoon. |
| SS | 2.0 | 1.9 | 9-10-12 9 | | | | | | | | 1.0 - 17.7 Ft. FILL. Brownish black (5YR2/1). Mottled moderate yellowish brown (10YR5/4). Dry, loose consistency. Coal and slag. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.0 | 10-11-8 5 | | | | | | | | 3.0-4.0 Ft. Pieces of limestone gravel and crushed brick. Some clayey silt. Dry. Very low dry strength, slightly plastic. | |
| SS | 2.0 | 0.2 | 6-5-4 5 | | | | | 5 | | | 5.0-7.0 Ft. Clay, pale yellowish brown (10YR6/2). Intermixed with coal and slag. Clay is moist, firm consistency, slightly plastic. | |
| SS | 2.0 | 1.3 | 3-3-3 4 | | | | | | | | 7.0-8.3 Ft. Clay, olive gray (5Y4/1). Moist. Wood and porcelain chips. | |
| | | | | | | | | 10 | | | | Top of undisturbed material at 17.7 Ft. |
| SS | 2.0 | 2.0 | 4-4-5 5 | | | | | | | | | |
| SS | 2.0 | 1.0 | 3-13-5 3 | | | | | | | | 13.0 Ft. Fill becomes wet. | |
| SS | 2.0 | 0.7 | 4-4-2 4 | | | | | 15 | | | | |
| SS | 2.0 | 1.3 | 4-8-6 4 | | | | | | | | 15.6-15.7 Ft. Silty CLAY (CL). Dark gray (N3). Highly plastic, medium-stiff thread, soft consistency. Organics present. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | 407.3 | | | | | |
| | | | | | | | 406.0 | | | | 17.7 - 19.0 Ft. Silty CLAY (CH). Medium dark gray (N4). Highly plastic. Wet. Firm consistency, medium-stiff thread, highly plastic. Organics. | |
| | | | | | | | | | | | Bottom of borehole at 19.0 Ft. Borehole backfilled with bentonite cement, 3/25/88. | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C47

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C48 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,330 E 2,901 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-16-88 | 3-16-88 | Layne-Western Co. | MOBILE B-40 | 6 3/4" | 19.0 | | 19.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 425.0 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 425.0 | | | | | |
| | | | | | | | 424.1 | | | | 0.0 - 0.9 Ft. CONCRETE. | 0-19 Ft. advanced with 6-3/4 in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.5 | 1-6-8 6 | | | | 423.9 | | | | 0.9 - 1.1 Ft. VOID. | |
| | | | | | | | | | | | 1.1 - 16.0 Ft. FILL. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.0 | 4-10-8 5 | | | | | | | | 1.1-1.5 Ft. CLAY. Olive gray (5Y4/1). Dry, firm conistency. | |
| SS | 2.0 | 0.8 | 2-3-9 10 | | | | | 5 | | | 1.5-3.0 Ft. FILL. Black (N1). Dry, loose consistency. Predominantly slag and coal. Trace of brick and limestone pieces. | |
| SS | 2.0 | 1.5 | 2-7-4 3 | | | | | | | | 3.0-3.5 Ft. CLAY. Olive gray (5Y4/1). Dry, firm consistency, weak thread. | Top of undisturbed material at 16.0 Ft. |
| SS | 2.0 | 0.8 | 3-1-1 1 | | | | | | | | 3.5-5.5 Ft. FILL, black (N1). Silty, dry and loose. Slag, large pieces of limestone. | |
| SS | 2.0 | 0.3 | 3-3-5 5 | | | | | 10 | | | 5.5-6.0 Ft. SILT. Moderate yellowish brown (10YR5/4). Dry, stiff consistency, weak thread, nonplastic. Small pieces of brick and fill. | VOA samples collected from 9-11 Ft. |
| SS | 2.0 | 0.5 | 2-2/1' 2 | | | | | | | | 6.0-16.0 Ft. FILL. Dusky yellowish brown (10YR2/2) grading to olive black (5Y2/1). Silty, dry, loose. Pieces of brick, some organics throughout. | |
| SS | 2.0 | 1.1 | 3-3-24 3 | | | | | 15 | | | 13.0 Ft. Fill becomes saturated. | |
| | | | | | | | 409.0 | | | | 16.0 - 19.0 Ft. Silty CLAY (ML-CL). Grayish black (N2). Firm consistency, medium-stiff thread, moderately plastic, rapid dilatancy, moist to wet. | Color descriptions from the GSA Rock Color Chart (1948). |
| SS | 2.0 | 1.2 | 1-1-2 3 | | | | 406.0 | | | | Bottom of borehole at 19.0 Ft. Borehole backfilled with bentonite cement, 3/16/88. | |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. B16C48

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C49 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,302 E 2,885 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-16-88 | 3-16-88 | Layne-Western Co. | MOBILE B-40 | 6 3/4" | 18.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 425.0 | ▽ / ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 425.0 | | | | | |
| | | | | | | | 424.2 | | | | 0.0 - 0.9 Ft. CONCRETE. | 0-18 Ft. advanced with 6-3/4 in. O.D. hollow-stem auger. |
| SS | 2.0 | 0.9 | 3-2-2 2 | | | | 424.0 | | | | 0.9 - 1.0 Ft. VOID | |
| | | | | | | | 423.1 | | | | 1.0 - 1.9 Ft. Clayey SILT (ML). Brownish gray (5YR4/1). Slightly moist, soft consistency, weak thread. Slow dilatancy. Some rubble as brick and limestone particles. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.3 | 2-1-3 2 | | | | | | | | | |
| SS | 2.0 | 1.7 | 3-1-2 4 | | | | | 5 | | | 1.9 - 15.1 Ft. FILL. Olive gray (5Y4/1). Large pieces of broken brick and concrete. Random broken glass and pieces of wood. Some clay and silt throughout interval. Dry, slightly plastic. Brownish gray (5YR4/1) mottled olive gray (5Y4/1). | |
| SS | 2.0 | 1.6 | 4-4-5 5 | | | | | | | | | |
| SS | 2.0 | 1.6 | 2-4-3 2 | | | | | 10 | | | | Top of undisturbed material at 15.1 Ft. |
| SS | 2.0 | 1.3 | 4-3-1 1 | | | | | | | | | |
| SS | 2.0 | 0.6 | 1-1-1 1 | | | | | | | | 12.1 Ft. Fill becomes wet. | |
| SS | 2.0 | 1.1 | 1-2-2 3 | | | | 409.9 | 15 | | | 15.1 - 18.0 Ft. Silty CLAY (CH). Medium gray (N5). Moist, stiff consistency, highly plastic. Organics and mica flakes. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | 407.0 | | | | Bottom of borehole at 18.0 Ft. Borehole backfilled with bentonite cement, 3/16/88. | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C49

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C50 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,350 E 2,180 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-7-88 | 3-7-88 | Layne-Western, Co. | CME-55 | 6.5" | 18.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 424.2 | ▽ 3.5/420.7 3/10/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.2 | | | | | |
| SS | 1.5 | 0.5 | 2-8-3 | | | | 423.9 | | | | 0.0 - 0.3 Ft. Sandy GRAVEL (GP). | 0-18.0 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| SS | 1.5 | 0.9 | 3-3-2 | | | | | | | | 0.3 - 13.5 Ft. FILL. | |
| SS | 2.0 | 1.7 | 2-1-1 3 | | | | | | | | 0.3-3.5 Ft. Silty CLAY. Moderate yellowish brown (10YR5/4) to brownish black (5YR2/1). Low moisture content, soft to medium stiff. Trace of gravel, carbonacous material, and particle board. Fe staining. | |
| SS | 2.0 | 0.8 | 4-3-3 5 | | | | | 5 | | | 3.5-3.7 Ft. SAND. Medium-grained quartzose sand. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.5 | 2-2-4 5 | | | | | | | | 3.7-13.5 Ft. Silty CLAY and RUBBLE. Light olive gray (5Y5/2) to brownish black (5Y2/1). Moist, loose. Rubble consists of brick, gravel, carbonaceous material, glass, pebbles and sand. | VOA sample collected 7.0-9.0 Ft. |
| SS | 2.0 | 1.1 | 8-3-4 3 | | | | | 10 | | | | Top of undisturbed material at 13.5 Ft. |
| SS | 2.0 | 1.0 | 2-2-4 13 | | | | | | | | | |
| SS | 2.0 | 0.3 | 3-4-3 5 | | | | 410.7 | | | | 13.5 - 18.0 Ft. Clayey SILT (ML). Olive gray (5Y4/1). Moist, soft to medium stiff, slightly plastic. Minor amounts of very fine-grained sand. Trace of organic material as blebs. | |
| SS | 2.0 | 1.3 | 4-6-6 8 | | | | | 15 | | | | |
| | | | | | | | 406.2 | | | | Bottom of borehole at 18.0 Ft. Boring grouted to surface with bentonite cement, 3/10/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C50

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C51 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,255 E 2,181 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-1-88 | 3-1-88 | Layne-Western, Co. | CME-55 | 6.5" | 18.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 424.0 | ▽ 3.3/420.7 3/10/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.0 | | | | | |
| SS | 2.0 | 0.9 | 3-1-8<br>10 | | | | 423.8 | | | | 0.0 - 0.2 Ft. Sandy GRAVEL (GP). | 0-18.0 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| SS | 2.0 | 0.6 | 4-4-4<br>5 | | | | | | | | 0.2 - 15.5 Ft. Silty CLAY (CL) and RUBBLE.<br>0.2-2.0 Ft. Grayish black (N2). Low moisture content, loose. Rubble consists of brick and slag. | |
| SS | 2.0 | 1.4 | 3-2-4<br>4 | | | | | 5 | | | 2.0-13.5 Ft. Moderate yellowish brown (10YR5/4) to dark yellowish brown (10YR4/2). Low moisture content to moist, medium stiff. Rubble consists of brick, gravel, slag and loose sand. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.6 | 2-1-2<br>2 | | | | | | | | | |
| SS | 2.0 | 1.6 | 2-1-2<br>2 | | | | | 10 | | | | Top of undisturbed material at 15.5 Ft. |
| SS | 2.0 | 1.2 | 1-1-1<br>2 | | | | | | | | | |
| SS | 2.0 | 1.4 | 2-2-2<br>4 | | | | | | | | | |
| SS | 2.0 | 2.0 | 2-3-3<br>5 | | | | | 15 | | | 13.5-15.5 Ft. Brownish black (5YR2/1) to grayish black (N2). Moist, loose. Rubble consists of brick, slag, glass, gravel and coarse-grained sand. | |
| SS | 2.0 | 1.2 | 1-1-2<br>3 | | | | 408.5 | | | | 15.5 - 18.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to greenish gray (5GY6/1). Moist, medium stiff, moderately plastic. Trace of organic material including rootlets. Trace of coarse-grained quartzose sand and well-rounded chert pebbles. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | 406.0 | | | | Bottom of borehole at 18.0 Ft.<br>Boring grouted to surface with bentonite cement, 3/10/88. | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C51

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C52 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,277 E 2,649 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 2-29-88 | 2-29-88 | Layne-Western Co. | CME-55 | 6 3/4" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 422.0 | ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.0 | | | | | |
| SS | 2.0 | 1.8 | 2-2-3 3 | | | | | | | | 0.0 - 13.4 Ft. Silty CLAY (CL) and RUBBLE. | 0-16.0 Ft. advanced with 6-3/4 in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.7 | 2-4-4 4 | | | | | | | | 0.0-5.1 Ft. CLAY (CL). Moderate yellowish brown (10YR5/4) to dark yellowish brown (10YR4/2). Mottled greenish gray (5G6/1). Wet for first 0.2 feet, moist for remainder of column. Moderately plastic, firm consistency. Also pieces of wood chips, glass, and small amounts of fill material. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.7 | 2-4-2 4 | | | | | 5 | | | | |
| SS | 2.0 | 0.6 | 3-2-4 3 | | | | | | | | 5.1-8.3 Ft. FILL. Grayish purple (5P4/2). Wet. Held together by clay. Nonplastic. Predominantly slag, crushed limestone fragments, and bricks. Contains fine-grained sand particles throughout. | |
| SS | 2.0 | 0.5 | 2-2-1 2 | | | | | | | | 5.3-6.0 Ft. Fill is moist. | |
| SS | 2.0 | 0.5 | 2-1-2 3 | | | | | 10 | | | 6.0-8.3 Ft. Fill becomes wet. Nail found at 8.0 Ft. | Top of undisturbed material at 13.4 Ft. |
| SS | 2.0 | 1.4 | 2-2-2 3 | | | | | | | | 8.3-10.0 Ft. Silty CLAY, greenish gray (5G6/1). Moist, highly plastic. Small amounts of mottling moderate yellowish brown (10YR5/4). | |
| | | | | | | | 408.6 | | | | | |
| SS | 2.0 | 1.9 | 2-3-2 3 | | | | | 15 | | | 10.0-13.4 Ft. FILL. Small amounts of silty clay, greenish gray (5G6/1). Fill contains pieces of building rubble, slag, porcelain, and rubber. Wet, musky odor. | |
| | | | | | | | 406.0 | | | | 13.4 - 16.0 Ft. CLAY (CH). Medium dark gray (N4). Stiff consistency, highly plastic, homogeneous, wet. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | Bottom of borehole at 16.0 Ft. Borehole backfilled with bentonite cement, 2/29/88. | |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C52

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C53 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,268 E 2,506 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-1-88 | 3-1-88 | Layne-Western, Co. | CME-55 | 6.5" | 18.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 425.2 | ▽ 11.0/414.3 3/7/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. / LEN CORE | SAMPLE REC. / CORE REC. | SAMPLE BLOWS "N" / % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.7 | 4-7-5 / 5 | | | | 425.2 / 425.0 | | | | 0.0 - 0.2 Ft. Sandy GRAVEL (GP). | 0-18.0 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.6 | 4-8-4 / 3 | | | | | | | | 0.2 - 15.6 Ft. Silty CLAY (CL) and RUBBLE. | |
| SS | 2.0 | 1.8 | 3-6-3 / 2 | | | | | | | | 0.2-3.2 Ft. Dark yellowish brown (10YR4/2). Low moisture content, stiff. Minor amounts of rubble consisting of brick, slag and ash. | |
| SS | 2.0 | 1.2 | 3-4-1 / 8 | | | | | 5 | | | 3.2-15.6 Ft. Brownish black (5YR2/1) to grayish black (N2). Moderate moisture content to saturated, loose. Rubble consists slag, brick, gravel, sand and pieces of porcelain. Minor amounts of moderate yellowish brown (10YR5/4). | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.2 | 12-8-4 / 4 | | | | | | | | | VOA sample collected 10.0-12.0 Ft. |
| SS | 2.0 | 1.2 | 3-2-2 / 1 | | | | | 10 | | | | |
| SS | 2.0 | 1.0 | 2-1-1 / 4 | | | | | | | | 11.5-15.6 Ft. Saturated, debris ranging from 1/8" to 1/4" in daimeter. | Top of undisturbed material at 15.6 Ft. |
| SS | 2.0 | 2.0 | 1-4-1 / 2 | | | | | 15 | | | | |
| SS | 2.0 | 2.0 | 2-1-3 / 4 | | | | 409.6 / 407.2 | | | | 15.6 - 18.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to dark greenish gray (5GY6/1). Moist, medium stiff, moderately plastic. Trace of organic material as blebs. | |
| | | | | | | | | | | | Bottom of borehole at 18.0 Ft. Boring grouted to surface with bentonite cement, 3/10/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C53

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C14 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,685 E 1,795 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-5-88 | 4-5-88 | Layne-Western, Co. | CME-55 | 6.5" | 10.5 | | 10.5 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 5 | | 418.6 | ▼ 6.5/412.1 4/5/88 ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. |
|---|---|---|---|---|---|---|
| SS | 1.5 | 0.9 | 3-5-3 | | | |
| SS | 2.0 | 1.2 | 5-3-1 2 | | | |
| SS | 0.5 | 0.3 | 28 | | | |
| SS | 1.5 | 1.5 | 14-7-10 | | | |
| SS | 2.0 | 2.0 | 4-4-4 6 | | | |
| SS | 2.0 | 1.8 | 4-5-6 6 | | | |

ELEV. 418.6 | DEPTH | GRAPHICS | SAMPLE

418.2
417.9 — 0.0 - 0.4 Ft. CONRETE.

0.4 - 0.7 Ft. Sandy GRAVEL (GP).

0.7 - 7.6 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of slag, carbonaceous material, gravel, sand, concrete, brick, pebbles and wood.

5

411.0 — 7.6 - 10.5 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to dark greenish gray (5GY4/1). Moist, soft to medium-stiff consistency, moderately plastic. Trace of very fine-grained sand. Trace of organic material as blebs, including partially decayed wood.

10

408.1

Bottom of boring at 10.5 Ft.
Boring grouted to bottom of concrete with bentonite cement grout on 4/14/88.

NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.

0-10.5 Ft. advanced with 6.5-inch O.D. hollow-stem auger.

Radiologically sampled and gamma-logged by TMA/Eberline.

Top of undisturbed material at 7.6 Ft.

Color descriptions from the GSA Rock Color Chart (1948).

Description and identification by visual examination of soils.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. B16C14

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C15 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Dwontown Site | N 1,616 E 1,557 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-12-88 | 4-12-88 | Layne-Western, Co. | CME-55 | 6.5" | 10.0 | | 10.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 5 | | 421.0 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 421.0 | | | | | |
| SS | 1.6 | 1.0 | 8-25-18 2/1" | | | | 420.6<br>420.2 | | | | 0.0 - 0.4 Ft. ASPHALT.<br>0.4 - 0.8 Ft. Sandy GRAVEL. | 0-10.0 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.4 | 14-15-12 8 | | | | | | | | 0.8 - 7.4 Ft. Silty CLAY (CL) and RUBBLE. Grayish brown (5YR3/2) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of slag, carbonaceous material, silty clay, and gravel. Fe staining. Patches of moderate yellowish brown (10YR5/4). | |
| SS | 1.7 | 1.3 | 1-9-25 50/3" | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. Top of undisturbed material at 7.4 Ft. |
| SS | 2.0 | 1.8 | 4-10-9 10 | | | | 413.6 | | | | | |
| SS | 2.0 | 1.5 | 1-3-5 5 | | | | 413.0 | | | | 7.4 - 8.0 Ft. Silty SAND (SM). Olive gray (5Y4/1). Low moisture content, medium stiff. Very fine-grained sand. | |
| | | | | | | | 411.0 | 10 | | | 8.0 - 10.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, soft to medium stiff, moderately plastic. Trace of organic material as blebs. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | Bottom of boring at 10.0 Ft.<br>Boring grouted to bottom of asphalt with bentonite cement grout on 4/14/88. | Description and identification by visual examination of soils. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Dwontown Site

HOLE NO.: B16C15

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C16 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Dwontown Site | N 1,550 E 1,573 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-14-88 | 4-14-88 | Layne-Western, Co. | CME-55 | 6.5" | 10.5 | | 10.5 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 5 | | 420.6 | ▽ 4.3/416.3 4/28/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 420.6 | | | | | |
| SS | 1.6 | 1.2 | 14-22-20 3/1" | | | | 420.3 | | | | 0.0 - 0.3 Ft. ASPHALT. | 0-10.5 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| SS | 1.8 | 1.7 | 10-9-8 50/4" | | | | | | | | 0.3 - 8.1 Ft. Silty CLAY (CL) and RUBBLE. Dark yellowish brown (10YR4/2) to grayish black (N2). Low moisture content, loose-stiff. Rubble consists of brick, gravel, carbonaceous material, sand and wood. | |
| SS | 1.5 | 0.5 | 23-3-1 | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. VOA sammple collected 6.5-8.5 Ft. |
| SS | 2.0 | 0.8 | 4-4-4 4 | | | | 412.5 | | | | | |
| SS | 2.0 | 1.5 | 2-2-4 4 | | | | | | | | 8.1 - 10.5 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moderate moisture content, soft, moderately plastic. Trace of very fine-grained sand. Trace of organic material as blebs. | Top of undisturbed material at 8.1 Ft. |
| | | | | | | | 410.1 | 10 | | | Bottom of boring at 10.5 Ft. Boring grouted to bottom of asphalt with bentonite cement grout on 4/28/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and identification by visual examination of soils. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Dwontown Site

HOLE NO.: B16C16

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 2 | B16C17 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,832 E 2,267 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-19-88 | 4-19-88 | Layne-Western Co. | Mobile Drill B53 | 8 1/4" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 421.6 | ▽ / 4/19/88 ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | C.A. Clark |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.5 | 5-31-11 6 | | | | 421.6 | | | | | 0-20 Ft. advanced using 8 1/4" Hollow-stem augers. |
| SS | 2.0 | 1.5 | 3-2-3-3 | | | | 421.3 | | | | 0.0 - 0.3 Ft. Sandy LOAM. Grayish brown (5YR3/3). Dry. Grass, roots, etc. Largely undecomposed. Well-graded sand; fine- to coarse-grained; subangulars. Some coarse-grained gravel-sized cemented particles. Loose, dense. | |
| SS | 2.0 | 1.3 | 2-2-2-3 | | | | 420.9 | | | | 0.3 - 0.7 Ft. CONCRETE. With light brown rounded chert aggregate. Breaks with hammer into coarse-grained gravel. | Radiologically sampled and gamma-logged by TMA/Eberline, to 19.5 Ft. Top of undisturbed material at 13.2 Ft.? |
| SS | 2.0 | 1.3 | 2-3-4-3 | | | | 419.4 | 5 | | | 0.7 - 2.2 Ft. Silty SAND (SM). Brownish black (5YR2/1). Dry. Moderately loose, dense, well graded, fine- to coarse-grained subangular sand. Silt is some biotite-mafic flakes. 1.3 Ft. Abundant rubble as coal slag. Decreased cohesion; increased permeability. | |
| SS | 2.0 | 1.0 | 1-0-2-4 | | | | | | | | | |
| SS | 2.0 | 1.8 | 1-1-2-2 | | | | | 10 | | | 2.2 - 13.2 Ft. FILL. 2.2-3.8 Ft. SILT with SAND (ML). Mostly brownish black (5YR2/1). Slightly moist, little cohesion, low moisture content, slightly plastic. Dense. Sand is <15% fine- and medium-grained. Moderate resistance to deformation. 2.9 Ft. Brick with white powder. 3.1-3.8 Ft. Clayey SILT (ML). Moderate yellowish brown (10YR5/4). Slightly moist, slightly plastic, medium-stiff consistency. Weak thread, little resistance to deformation, dense. Homogeneous structure. | |
| SS | 2.0 | 1.9 | 1-1-1-1 | | | | 408.4 | | | | | |
| SS | 2.0 | 1.9 | 1-3-6-6 | | | | 408.0 | 15 | | | | |
| SS | 2.0 | 2.0 | 1-3-7-4 | | | | | | | | | |
| SS | 2.0 | 2.0 | 1-2-2-2 | | | | | | | | | |
| | | | | | | | 401.6 | 20 | | | 3.8-13.2 Ft. Sandy SILT (SM). Brownish black (5YR3/4). Slightly moist, moderately cohesive, soft. Abundant organics, some saturated. Most (80%) decomposed, soft, permeable, fibrous. Sand is fine-grained subangulars, stiff, resistant to deformation, breaks sharply. 6.8 Ft. Becoming saturated. Zones with random organics have highest moisture content. A 1-2" clay layer at saturated zone contact. 8.0-12.0 Ft. Abundant rubble; oxidized slag, coal fragments, brick, concrete, glass. Adhesion increases in zones of increased organics. | Description & classification of soils by visual examination of split-spoon samples. |
| | | | | | | | | | | | 13.2-13.6 ft. CLAY (CL). Dusky yellowish brown (10YR2/2). Moist, cohesive, dense, non-sticky, low plasticity. Thread is weak. Moderate resistance to deformation and rupture. Very stiff. trace organic blebs. | |
| | | | | | | | | | | | 13.6 - 20.0 Ft. Interbedded Clayey SILT, SILT and SILT with silty SAND (SM-ML). Olive gray (5Y4/1). Moist, becoming saturated at 16.4 Ft. Random alternation of layers 2 - 8" thick. Silt layers show inclined laminae of 3-5 degrees (inclined to sampler axis), mostly as dark | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C17

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 2 OF 2 | B16C17 |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | mafic/biotite flakes. Clayey silt layers show higher plasticity; moderate thread, ruptures easily. Silty sand layers show well-sorted fine-grained quarts sand. Layer shows higher moisture and dilatancy; increase in permeability. | |
| | | | | | | | | | | | Bottom of boring at 20.0 Ft.<br>Borehole backfilled with bentonite cement, 4-28-88. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. B16C17

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C18 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,830 E 2,395 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-17-88 | 3-17-88 | Layne-Western, Co. | CME-55 | 6.5" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 422.8 | ▽ 7.8/415.0 3/18/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.8 | | | | | |
| SS | 2.0 | 1.6 | 3-6-6 9 | | | | 422.5 | | | | 0.0 - 0.3 Ft. Silty CLAY (CL). Moderate yellowish brown (10YR5/4). Low moisture content, medium stiff. | 0-16.0 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.8 | 5-7-11 16 | | | | | | | | 0.3 - 12.5 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of slag, brick and coarse sand. Fe staining, patches of moderate yellowish brown (10YR5/4) and olive gray (5Y4/1) silty clay. | |
| SS | 2.0 | 1.7 | 5-6-6 4 | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.3 | 3-3-4 2 | | | | | | | | | |
| SS | 2.0 | 1.7 | 3-2-2 2 | | | | | | | | | VOA sample collected 6.0-8.0 Ft. |
| SS | 2.0 | 1.1 | 5-8-5 2 | | | | | 10 | | | | Top of undisturbed material at 12.5 Ft. |
| SS | 2.0 | 1.3 | 2-2-2 3 | | | | 410.3 | | | | 12.5 - 16.0 Ft. Silty CLAY (CL). Olive gray (5Y3/2). Moist, medium stiff, moderately plastic. Minor amounts of organic material as blebs. | |
| SS | 2.0 | 1.3 | 1-2-3 3 | | | | | 15 | | | | |
| | | | | | | | 406.8 | | | | Bottom of boring at 16.0 Ft. Boring grouted to surface with bentonite cement grout on 3/21/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and identification by visual examination of soils. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. B16C18

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C19 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,831 E 2,493 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-17-88 | 3-17-88 | Layne-Western, Co. | CME-55 | 6.5" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 422.6 | ▽ 7.3/415.3 3/18/88 ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. p.s.i. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.6 | | | | | |
| SS | 2.0 | 1.5 | 9-6-6 6 | | | | | | | | 0.0 - 13.5 Ft. Silty CLAY (CL) and RUBBLE. | 0-16.0 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.3 | 5-2-4 3 | | | | | | | | 0.0-0.5 Ft. Moderate yellowish brown (10YR5/4), low moisture content, medium stiff, some gravel. | |
| SS | 2.0 | 1.4 | 3-2-2 2 | | | | | 5 | | | 0.5-13.5 Ft. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of slag, carbonaceous material, coarse sand, pebbles and glass. Patches of moderate yellowish brown (10YR5/4) silty clay, and Fe staining. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.5 | 1-1-1 5 | | | | | | | | | |
| SS | 2.0 | 1.1 | 4-3-1 1 | | | | | | | | | |
| SS | 2.0 | 0.3 | 1-1-2 4 | | | | | 10 | | | | Top of undisturbed material at 13.5 Ft. |
| SS | 2.0 | 1.0 | 3-1-1 2 | | | | 409.1 | | | | | |
| SS | 2.0 | 1.2 | 1-2-28 3 | | | | | 15 | | | 13.5 - 16.0 Ft. Silty CLAY (CL). Olive gray (5Y3/2). Moist, soft to medium stiff, moderately plastic. Minor amounts of organic material as blebs. Large 1/2-in. pieces of partially decayed wood. | |
| | | | | | | | 406.6 | | | | | |
| | | | | | | | | | | | Bottom of boring at 16.0 Ft. Boring grouted to surface with bentonite cement grout on 3/21/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and identification by visual examination of soils. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. B16C19

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C20 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,831 E 2,720 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-16-88 | 3-16-88 | Layne-Western, Co. | CME-55 | 6.5" | 14.0 | | 14.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 421.4 | ▽ 8.3/413.1 3/18/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 421.4 | | | | | |
| SS | 1.8 | 1.8 | 9-9-5 4/4" | | | | 421.2 | | | | 0.0 - 0.2 Ft. CONCRETE. | 0-14.0 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| | | | | | | | 420.9 | | | | 0.2 - 0.5 Ft. Silty CLAY (CL). Dusky brown (5YR2/2). Moderate moisture content. Medium stiff. | |
| SS | 2.0 | 0.8 | 3-5-10 8 | | | | 420.4 | | | | 0.5 - 1.0 Ft. Sandy GRAVEL (GP). | |
| SS | 2.0 | 1.7 | 5-7-3 3 | | | | 416.4 | 5 | | | 1.0 - 5.0 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Moderate moisture content, loose. Rubble consists of brick, carbonaceous material, sand and gravel. Patches of moderate yellowish brown (10YR5/4) silty clay, and Fe staining. | |
| SS | 2.0 | 1.8 | 3-3-3 3 | | | | 415.2 | | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 2.0 | 3-2-12 12 | | | | | | | | 5.0 - 6.2 Ft. Silty CLAY (CL). Light olive gray (5Y5/2). Moderate moisture content, soft. Fe staining. | |
| SS | 2.0 | 1.7 | 2-8-3 4 | | | | | 10 | | | 6.2 - 11.5 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Moderate moisture content to moist, loose. Rubble consists of slag, brick, sand and glass. | Top of undisturbed material at 11.5 Ft. |
| SS | 2.0 | 1.4 | 2-3-3 4 | | | | 409.9 | | | | | |
| | | | | | | | 407.4 | | | | 11.5 - 14.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, medium stiff, moderately plastic. Minor amounts of organics as blebs and rootlets. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | Bottom of boring at 14.0 Ft. Boring grouted to surface with bentonite cement grout on 3/18/88. | |
| | | | | | | | | | | | | Description and identification by visual examination of soils. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C20

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C21 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,829 E 2,809 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-16-88 | 3-16-88 | Layne-Western, Co. | CME-55 | 6.5" | 16.5 | | 16.5 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 420.3 | ▽ 8.8/411.5 3/18/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 420.3 | | | | | |
| SS | 1.9 | 1.2 | 5-2-3 3/5" | | | | 420.1 | | | | 0.0 - 0.1 Ft. GRAVEL. | 0-16.5 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| | | | | | | | 419.9 | | | | 0.1 - 0.3 Ft. Sandy GRAVEL (GP). | |
| SS | 2.0 | 1.6 | 2-2-5 5 | | | | | | | | 0.3 - 11.5 Ft. Silty CLAY (CL) and RUBBLE. | |
| SS | 2.0 | 1.3 | 2-2-4 4 | | | | | 5 | | | 0.3-2.5 Ft. Moderate yellowish brown (10YR5/4) to brownish black (5YR2/1). Low moisture content, soft. Rubble consists of brick, carbonaceous material and pebbles. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.3 | 2-2-2 3 | | | | | | | | 2.5-7.2 Ft. Moderate yellowish brown (10YR5/4) to light olive gray (5Y6/1). Low moisture content, soft to medium stiff. Minor amounts of rubble consisting of brick, carbonaceous material and sand. | VOA sample collected 6.0-8.0 Ft. |
| SS | 2.0 | 1.6 | 2-4-11 4 | | | | | 10 | | | 7.2-11.5 Ft. Brownish black (5YR2/1) to grayish black (N2). Moderate moisture content to moist. Loose. Rubble consists of angular fragments (1/8-1/4-in.) of brick intermixed with fine- to medium-grained sand. Patches of dark yellowish brown (10YR4/2) silty clay. Fe staining. | Top of undisturbed material at 11.5 Ft. |
| SS | 2.0 | 1.7 | 9-3-1 2 | | | | 408.8 | | | | | |
| SS | 2.0 | 1.2 | 4-11-14 5 | | | | | | | | 11.5 - 16.5 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to dark greenish gray (5GY4/1). Moist, soft to medium stiff, moderately plastic. Trace of very fine-grained sand. Large 1/2-in. pieces of partially decayed wood. | |
| SS | 2.0 | 0.8 | 5-5-5 6 | | | | | 15 | | | | |
| | | | | | | | 403.8 | | | | Bottom of boring at 16.5 Ft. Boring grouted to surface with bentonite cement grout on 3/18/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and identification by visual examination of soils. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C21

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C22 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,841 E 2,877 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-16-88 | 3-16-88 | Layne-Western, Co. | CME-55 | 6.5" | 13.0 | | 13.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 6 | | 420.0 | ▽ 9.7/410.3 3/18/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE |
|---|---|---|---|---|---|---|---|---|---|---|
| SS | 1.9 | 1.2 | 2-1-3 3/5" | | | | 420.0 | | | |
| SS | 2.0 | 1.3 | 2-3-5 4 | | | | | | | |
| SS | 2.0 | 1.8 | 2-3-4 5 | | | | | 5 | | |
| SS | 2.0 | 1.3 | 2-3-4 3 | | | | | | | |
| SS | 2.0 | 1.4 | 2-2-3 2 | | | | | | | |
| SS | 2.0 | 0.8 | 2-2-2 2 | | | | 410.3 ▽ | 10 | | |
| | | | | | | | 407.0 | | | |

**DESCRIPTION AND CLASSIFICATION**

0.0 - 9.7 Ft. Silty CLAY (CL) and RUBBLE.

0.0-0.9 Ft. Grayish black (N2). Dry, loose. Rubble consists of slag and carbonaceous material.

0.9-6.5 Ft. Moderate yellowish brown (10YR5/4) to grayish black (N2). Low moisture content, soft. Minor amounts of rubble consisting of slag, brick and carbonaceous material. Fe staining. Patches of light olive gray (5Y6/1) silty clay.

6.5-9.7 Ft. Dusky yellow green (5GY5/2) to greenish gray (5GY6/1). Low moisture content to moist, soft. Minor amounts of grayish black (N2) rubble consisting of slag, brick fragments, pebbles and medium-grained sand.

9.7 - 13.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to dark greenish gray (5GY4/1). Moist, medium stiff, moderately plastic. Minor amounts of organic material as blebs.

Bottom of boring at 13.0 Ft.
Boring grouted to surface with bentonite cement grout on 3/18/88.

**NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.**

0-13.0 Ft. advanced with 6.5-inch O.D. hollow-stem auger.

Radiologically sampled and gamma-logged by TMA/Eberline.

Top of undisturbed material at 9.7 Ft.

Color descriptions from the GSA Rock Color Chart (1948).

Description and identification by visual examination of soils.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C22

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C23 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,700 E 2,244 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-24-88 | 3-24-88 | Layne-Western, Co. | CME-55 | 6.5" | 14.5 | | 14.5 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 422.4 | ▽ 9.6/412.8 3/31/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.4 | | | | | |
| SS | 1.4 | 1.0 | 3-13 4/5" | | | | 421.8 | | | | 0.0 - 0.6 Ft. ASPHALT. | 0-14.5 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.7 | 3-3-4 3 | | | | | | | | 0.6 - 10.5 Ft. Silty CLAY (CL) and RUBBLE.<br>0.6-1.2 Ft. Moderate yellowish brown (10YR5/4). Low moisture content, medium stiff. Trace of gravel. | |
| SS | 2.0 | 1.0 | 1-2-2 3 | | | | | 5 | | | 1.2-10.5 Ft. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of slag, carbonaceous material, brick, gravel, glass and wood. Patches of light olive gray (5Y6/1) to moderate yellowish brown (10YR5/4) silty clay. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 0.7 | 1-4-5 3 | | | | | | | | | |
| SS | 2.0 | 1.2 | 3-2-3 5 | | | | | | | | | |
| SS | 2.0 | 1.8 | 1-2-2 4 | | | | 411.9 | 10 | | | 10.5 - 12.8 Ft. Silty CLAY (CL). Light olive gray (5Y5/2). Moist, soft, moderately plastic. Trace organic material as blebs. | Top of undisturbed material at 10.5 Ft. |
| SS | 2.0 | 2.0 | 1-2-4 7 | | | | 409.6 | | | | 12.8 - 14.5 Ft. Clayey SILT (ML). Olive gray (5Y4/1). Moist, medium stiff, slightly plastic. Trace very fine-grained sand. Minor amounts of organics as blebs. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | 407.9 | | | | Bottom of boring at 14.5 Ft.<br>Boring grouted to bottom of asphalt with bentonite cement grout on 3/31/88. | Description and identification by visual examination of soils. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C23

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C24 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,799 E 2,448 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-15-88 | 3-15-88 | Layne-Western Co. | Mobile B-40 | 6 3/4" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 424.6 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.6 | | | | | |
| | | | | | | | 424.2 | | | | 0.0 - 0.4 Ft. **CONCRETE**. | 0-20.0 Ft. advanced with 6-3/4 in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.5 | 10-11-10 4 | | | | | | | | 0.4 - 2.5 Ft. **GRAVEL FILL**. | |
| | | | | | | | 422.1 | | | | 2.5 - 17.7 Ft. **FILL**. Dusky brown (5YR 2/2) clayey silt, gravel and brick. Dry and loose. | Radiologically sampled and gamma-logged by TMA-Eberline. |
| SS | 2.0 | 1.1 | 2-3-6 15 | | | | | | | | | |
| | | | | | | | | 5 | | | | |
| SS | 2.0 | 1.9 | 8-14-14 12 | | | | | | | | 5.0 Ft. Becoming moist with depth. | |
| SS | 1.7 | 0.3 | 6-2-2 1 | | | | | | | | | |
| SS | 2.0 | 1.6 | 1-1-6 2 | | | | | | | | | Top of undisturbed material at 17.7 Ft. |
| | | | | | | | | 10 | | | 9.0-13.0 Ft. Grayish brown (5YR3/2) to dusky brown (5YR2/2) silty clay. Crushed brick, and pieces of glass. Moist and crumbly. | |
| SS | 2.0 | 0.9 | 3-2-4 6 | | | | | | | | | |
| SS | 2.0 | 1.9 | 3-3-3 4 | | | | | | | | 13.0-14.1 Ft. Clay. Greenish gray (5GY6/1) to greenish gray (5G6/1). Moist, very stiff consistency. | |
| | | | | | | | | 15 | | | 14.1-14.5 Ft. Very light gray (N8). Sandy silt, wet. | |
| SS | 2.0 | 1.9 | 3-1/1'-3 | | | | | | | | | Color descriptions from the GSA Rock Color Chart (1948). |
| SS | 2.0 | 1.8 | 1-2-3 3 | | | | 406.9 | | | | 14.5-16.1 Ft. Grayish black (N2) to olive gray (5Y4/1). Silty sand, gravel, coal, and slag. Becomes saturated near 15 Ft. | |
| | | | | | | | | | | | 16.1-17.7 Ft. Grayish black (N2) clayey silt. Wet to moist. | |
| | | | | | | | 404.6 | 20 | | | 17.7 - 20.0 Ft. **CLAY** (CL). Medium dark gray (N4). Stiff consistency, moist, slightly plastic. | Description and identification by visual examination of soils. |
| | | | | | | | | | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 3/15/88. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C24

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C25 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,761 E 2,540 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-5-88 | 4-6-88 | Layne-Western Co. | Mobile B-40 | 6 3/4" | 18.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 424.6 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.6 | | | | | |
| | | | | | | | 424.1 | | | | 0.0 - 0.5 Ft. CONCRETE. | 0-18.0 Ft. advanced with 6-3/4 in. O.D. hollow-stem auger. |
| | | | | | | | 423.6 | | | | 0.5 - 1.0 Ft. GRAVEL FILL. | |
| | | | | | | | | | | | 1.0 - 2.7 Ft. CONCRETE. | |
| | | | | | | | 421.9 | | | | | Radiologically sampled and gamma-logged by TMA-Eberline. |
| SS | 2.0 | 1.6 | 7-15-15 13 | | | | | | | | 2.7 - 15.9 Ft. FILL. | |
| SS | 2.0 | 1.8 | 3-4-4 7 | | | | | 5 | | | 2.7-6.8 Ft. Brownish black (5YR2/1) to grayish brown (5YR3/2) silty sand. Crushed brick, decomposed wood, charcoal. Dry and stiff consistency. | Top of undisturbed material at 15.9 Ft. |
| SS | 2.0 | 1.8 | 6-14-3 4 | | | | | | | | 6.2 Ft. Silty clay lense. Moderate yellowish brown (10YR5/4). Stiff consistency, slightly plastic. | |
| SS | 2.0 | 1.5 | 2-3-1 4 | | | | | 10 | | | 6.8-13.2 Ft. Dusky yellowish brown (10YR2/2) to grayish brown (5YR3/2). Clayey silt and charred wood. Dry. Low dry strength. | VOA samples collected 9-11 Ft. |
| SS | 2.0 | 0.8 | 4-4-3 2 | | | | | | | | | |
| SS | 2.0 | 1.4 | 2-4-2 3 | | | | | | | | 13.0 Ft. Fill becomes saturated. | |
| SS | 2.0 | 1.8 | 1-2-3 5 | | | | | 15 | | | 13.2-13.8 Ft. White (N9) silty sand. Saturated. | |
| | | | | | | | 408.7 | | | | 13.8-15.0 Ft. Clay. Dark greenish gray (5GY4/1). Stiff consistency, moist, moderately plastic. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | 406.6 | | | | 15.0-15.9 Ft. Silty sand. Saturated. Very fine-grained. Small concrete pieces. | |
| | | | | | | | | | | | 15.9 - 18.0 Ft. CLAY (CL). Olive gray (5Y4/1). Medium-stiff thread, moist, moderately plastic, very stiff consistency. | Description and identification by visual examination of soils. |
| | | | | | | | | | | | Bottom of borehole at 18.0 Ft. Borehole backfilled with bentonite cement, 4/6/88. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. B16C25

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C27 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,610 E 2,442 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-18-88 | 3-18-88 | Layne-Western Co. | Mobile B-40 | 6 3/4" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 424.6 | ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.6 | | | | | |
| | | | | | | | 424.1 | | | | 0.0 - 0.5 Ft. CONCRETE. | 0-20.0 Ft. advanced with 6-3/4 in. O.D. hollow-stem auger. |
| SS | 1.5 | 1.0 | 6-10-4 10/0" | | | | 423.1 | | | | 0.5 - 1.5 Ft. GRAVEL FILL. | |
| | | | | | | | 421.8 | | | | 1.5 - 2.8 Ft. FILL. | Radiologically sampled and gamma-logged by TMA-Eberline. |
| | | | | | | | 420.7 | | | | 2.8 - 3.9 Ft. CONCRETE. | |
| SS | 2.0 | 2.0 | 4-12-23 24 | | | | | 5 | | | 3.9 - 16.2 Ft. FILL. | |
| SS | 0.0 | 0.0 | 30/0" | | | | | | | | | |
| SS | 2.0 | 1.0 | 4-5-3 5 | | | | | 10 | | | | Top of undisturbed material at 16.2 Ft. |
| SS | 2.0 | 1.5 | 2-9-6 5 | | | | | | | | | |
| SS | 2.0 | 0.0 | 2-2-4 5 | | | | | 15 | | | | |
| SS | 2.0 | 2.0 | 3-3-6 3 | | | | | | | | | |
| SS | 2.0 | 2.0 | 4-6-7 20 | | | | 408.4 | | | | 16.2 - 20.0 Ft. Clayey SILT (ML-CL). Greenish black (5GY2/1) to olive gray (5Y4/1). Moist, stiff consistency, crumbles when threaded. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | 404.6 | 20 | | | Bottom of borehole at 20.0 Ft. Borehole backfolled with bentonite cement, 31/8/88. | Description and identification by visual examination of soils. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C27

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C28 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,613 E 2,540 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-6-88 | 4-6-88 | Layne-Western Co. | Mobile B-40 | 6 3/4" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 424.6 | ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.6 | | | | | |
| | | | | | | | 424.2 | | | | 0.0 - 0.4 Ft. CONCRETE. | 0-20.0 Ft. advanced with 6-3/4 in. O.D. hollow-stem auger. |
| | | | | | | | 423.1 | | | | 0.4 - 1.5 Ft. GRAVEL FILL. | |
| | | | | | | | 422.6 | | | | 1.5 - 2.0 Ft. CONCRETE. | |
| SS | 2.0 | 1.5 | 6-6-5 5 | | | | | | | | 2.0 - 16.2 Ft. FILL. Moderate yellowish brown (10YR5/4) to dark yellowish brown (10YR4/2) clayey silt, crushed brick, and coal. Dry, compacted, and firm. | Radiologically sampled and gamma-logged by TMA-Eberline. |
| SS | 2.0 | 1.6 | 3-3-5 5 | | | | | 5 | | | | |
| SS | 2.0 | 1.8 | 3-3-6 8 | | | | | | | | | |
| SS | 2.0 | 1.6 | 3-4-3 3 | | | | | | | | 8.0 Ft. Fill becomes moist. | |
| SS | 2.0 | 2.0 | 2-2-3 3 | | | | | 10 | | | 10.0-16.0 Ft. Silty CLAY. Olive gray (5Y4/1) to greenish gray (5GY6/1). Moist and crumbly. | VOA samples collected 8-10 Ft. |
| SS | 2.0 | 1.8 | 7-2-3 4 | | | | | | | | | Top of undisturbed material at 16.2 Ft. |
| SS | 2.0 | 1.9 | 2-2-4 4 | | | | | 15 | | | | |
| SS | 2.0 | 1.2 | 8-8-6 5 | | | | 408.4 | | | | 15.2-15.7 Ft. Silt. Very pale orange (10YR8/2). Moist. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | 16.2 - 20.0 Ft. Silty CLAY (CL-ML). Olive gray (5Y4/1). Dry, crumbly, low dry strength. | |
| | | | | | | | 404.6 | 20 | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 4/6/88. | Description and identification by visual examination of soils. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C28

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C29 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,609 E 2,606 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-4-88 | 4-5-88 | Layne-Western Co. | Mobile B-40 | 6 3/4" | 17.0 | | 17.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 424.6 | ▼ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.6 | | | | | |
| | | | | | | | 424.1 | | | | 0.0 - 0.5 Ft. CONCRETE. | 0-17.0 Ft. advanced with 6-3/4 in. O.D. hollow-stem augers. |
| | | | | | | | 423.6 | | | | 0.5 - 1.0 Ft. GRAVEL FILL. | |
| | | | | | | | | | | | 1.0 - 3.8 Ft. CONCRETE. | Radiologically sampled and gamma-logged by TMA-Eberline. |
| | | | | | | | 420.8 | | | | | |
| SS | 1.3 | 0.6 | 5-9-4 | | | | | | | | 3.8 - 15.6 Ft. FILL. Dusky yellowish brown (10YR2/2) to dusky brown (5YR2/2). Clay, silt, crushed brick and fill gravel. Soft consistency and dry. | |
| SS | 2.0 | 1.3 | 2-3-4 4 | | | | | 5 | | | | |
| SS | 2.0 | 1.7 | 4-3-9 13 | | | | | | | | | |
| SS | 2.0 | 1.7 | 2-4-2 4 | | | | | 10 | | | | Top of undisturbed material at 15.6 Ft. |
| SS | 2.0 | 1.1 | 2-5-3 3 | | | | | | | | | |
| SS | 2.0 | 1.3 | 2-4-4 3 | | | | | | | | 13.0-15.6 Ft. Clayey SILT. Brownish black (5YR2/1) to grayish brown (5YR3/2). Glass, and coal. Becomes moist at 13.9 Ft. and saturated at 15.0 Ft. | |
| SS | 2.0 | 2.0 | 3-4-4 7 | | | | | 15 | | | | |
| | | | | | | | 409.0 | | | | 15.6 - 17.0 Ft. Silty CLAY. Greenish gray (5GY6/1). Stiff consistency, moist, moderately plastic, medium-stiff thread. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | 407.6 | | | | Bottom of borehole at 17.0 Ft. Borehole backfilled with bentonite cement, 4/4/88. | |
| | | | | | | | | | | | | Description and identification by visual examination of soils. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C29

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C30 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,791 E 2,749 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-14-88 | 3-14-88 | Layne-Western, Co. | CME-55 | 6.5" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 420.9 | ▽ 9.0/411.9 3/14/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 In. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 420.9 | | | | | |
| SS | 1.2 | 0.8 | 4-3-1/2" | | | | 420.2 | | | | 0.0 - 0.7 Ft. CONCRETE. | 0-16.0 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.8 | 7-4-4 3 | | | | 419.4 | | | | 0.7 - 1.5 Ft. Sandy GRAVEL. | |
| SS | 2.0 | 1.1 | 3-2-3 2 | | | | | 5 | | | 1.5 - 12.5 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of brick, slag, ash, wood, gravel and loose sand. Prominent Fe staining. Patches of moderate yellowish brown (10YR5/4) to greenish gray (5G6/1) silty clay. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.2 | 1-3-5 2 | | | | | | | | | |
| SS | 2.0 | 1.4 | 2-2-2 3 | | | | | | | | | VOA sample collected 8.0-10.0 Ft. |
| SS | 2.0 | 1.1 | 2-1-2 2 | | | | | 10 | | | | |
| SS | 2.0 | 1.3 | 1-2-2 2 | | | | 408.4 | | | | 12.5 - 16.0 Ft. Silty CLAY (CL). Olive gray (5Y3/2). Moist, medium stiff, moderately plastic. Trace of very fine-grained sand. Minor amounts of organic material as blebs. | Top of undisturbed material at 12.5 Ft. |
| SS | 2.0 | 1.3 | 3-3-4 5 | | | | | 15 | | | | |
| | | | | | | | 404.9 | | | | Bottom of boring at 16.0 Ft. Boring grouted to bottom of concrete with bentonite cement on 3/15/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and identification by visual examination of soils. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C30

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 2 OF 2 | B16C31 |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | moisture. Parallel laminations are 2-6" thick. Generally low permeability; capable of high capillary pressure.<br><br>21.1-25.0 ft. **SANDY SILT** (SM). Olive gray (5Y4/1) and olive black (5Y2/1). W/ interbedded clayey silt (ML). Moist wuth saturated zones. Introduce trace % v. fine and fine grain silica sand. Moderate cohesion, soft consistency, slightly plastic; organic silt(?). Abundant black silt flakes.<br>22.4 ft. Clean, undecomposed wood chips (very pale orange - 10YR8/2); wet.<br>23.5-23.9 ft. **PEAT**. severely decomposed organics. Loose compaction, fibrous, very porous. Organic odor. Hair? Very dirty.<br><br>**CLAYEY SILT** layers show slight increase in plasticity, resistance to to deformation. Little resistance to advancing sampler.<br>Some mottled dark organic blebs.<br><br>Bottom of borehole at 25.0 ft.<br>Borehole backfilled with bentonite cement, 4/28/88. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. B16C31

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 2 | B16C31 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1793.00; E 2900.00 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-15-88 | 4-26-88 | Layne-Western Co. | Mobile Drill B53 | 8 1/4" | 18.0 | | 25.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 422.50 | ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | C.A. Clark |

| SAMP. TYPE AND DIA. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.5 | | | | | |
| SS | 2.0 | 1.3 | 2-2-2-2 | | | | 422.1 | | | | 0.0-0.4 ft. GRAVEL (GM). Lt. olive gray (5Y6/1). Dry. No cohesion. Flat, elongate, angular, coarse limestone gravel. Loose compaction. Good drainage. | 0-18 ft. advanced using 8 1/4" hollow stem auger. |
| SS | 2.0 | 1.5 | 6-4-5-4 | | | | 419.2 | | | | 0.4-3.3 ft. SILTY SAND (SM). Moderate yellowish brown (10YR3/4) to dark yellowish brown (10YR4/2). Dry, therefore little cohesion. Moderate compaction, good permeability. Abundant rubble as slag, coal, bricks, and concrete. | 18-25 ft. advanced using 7 1/4" hollow stem auger. |
| SS | 2.0 | 1.3 | 2-2-3-4 | | | | | 5 | | | | |
| SS | 2.0 | 1.3 | 2-3-2-3 | | | | 416.4 | | | | 3.3-6.1 ft. CLAYEY SILT (ML). Dark yellowish brown (10YR4/2). Slightly moist, moderate cohesion. Medium stiff consistency, moderate compaction, slight plasticity. Weak thread. Moderate resistance to rupture and deformation. 4.6 ft. Abundant rubble as oxidized slag. | Sampled and gamma logged to 25 ft. by TMA/Eberline. |
| SS | 2.0 | 1.0 | 1-2-2-3 | | | | 414.3 | | | | | |
| SS | 2.0 | 1.4 | 2-4-4-2 | | | | | 10 | | | 6.1-8.2 ft. CLAY, CLAYEY SILT, and SILT (CL, ML, SM). Random alternations of variable thicknesses. 6.1-6.9 ft. CLAY (CL). Dark greenish gray (5GY4/1). Slightly moist, medium stiff, dense compaction. Some fibrous organic stringers-decomposed. 6.9-7.2 ft. CLAYEY SILT (ML). Olive gray (5Y4/1). Slightly moist, medium stiff consistency, weak thread. Ruptures easily with slight finger pressure. 7.2-7.6 ft. SANDY SILT (SM). Grayish black (N2). Moist, mod. cohesion, slightly sticky. Inclusions of decomposed fibrous organics, higher moisture content with greater dilatancy. Sand is well sorted, fine grain, round qtz. 7.6-8.2 ft. CLAYEY SILT (ML). Dark greenish gray (5GY4/1) with abundant rubble. Medium stif consistancy, dense compaction. Probable low permeability. | 0-18 ft. 8" PVC conductor casing installed. |
| SS | 2.0 | 1.8 | 1-1-1-1 | | | | 410.0 | | | | | Top of undisturbed material at 12.5 (?) ft. |
| SS | 2.0 | 1.7 | 2-2-5-6 | | | | | 15 | | | | |
| SS | 2.0 | 1.7 | 3-3-3-3 | | | | | | | | | |
| | | | | | | | | 20 | | | | |
| | | | | | | | 401.4 | | | | 8.2-12.5 ft. SANDY SILT (ML). Mostly olive black (5Y2/1). Moist, slight cohesion, dense consistency. Sand is fine and medium grain. Higher moisture content, dilatancy and shine. Abundant rubble; coarse sand sized brick fragments. 10.8 ft. A 1/4 " layer of coarse, rounded qtz. sand. 11.6-12.1 ft. Abundant organics as bark and roots; largely decomposed. Saturated, loose compaction, fibrous, good to excellent permeability. | |
| | | | | | | | 397.5 | 25 | | | 12.5-21.1 ft. SILTY CLAY interbedded with CLAY (CL). OLive black (5Y2/1). Moist with saturated zones. 12.7-13.0 ft. a moderately decomposed layer of light gray (N7) mush. Coarse gravel size angular fragments. Soft, cheesy structure. Particles are clay coated. Crumbles with slight finger pressure. Silty clay layers show dilatancy, medium stiff consistency, stiff mold. with moderate resistance to deformation and rupture. Organic(?) silt. CLay layers show no dilatancy, medium stiff consistency, slight plasticity. Thread is weak, but increases with additional | Description & classification of soils by visual examination of cuttings. |

SS = SPLIT SPOON; CA = CALIFORNIA; D = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| St. Louis Downtown Site | B16C31 |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C32 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,698 E 2,760 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-14-88 | 3-14-88 | Layne-Western, Co. | CME-55 | 6.5" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 421.7 | ▽ 10.0/411.7 3/14/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 421.7 | | | | | |
| | | | | | | | 420.9 | | | | 0.0 - 0.8 Ft. CONCRETE. | 0-16.0 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| SS | 1.0 | 0.9 | 3-7 | | | | | | | | 0.8 - 12.5 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of brick, slag, ash, gravel, coarse sand and gravel. Prominent Fe staining. Patches of dark yellowish brown (10YR4/2) to greenish gray (5G6/1) silty clay. | |
| SS | 2.0 | 1.5 | 4-5-3 3 | | | | | | | | | |
| SS | 2.0 | 1.4 | 2-7-4 3 | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.5 | 3-4-4 3 | | | | | | | | | |
| SS | 2.0 | 1.8 | 2-2-1 2 | | | | | | | | | |
| SS | 2.0 | 0.9 | 3-2-2 3 | | | | | ▽ 10 | | | | Top of undisturbed material at 12.5 Ft. |
| SS | 2.0 | 1.2 | 2-2-2 4 | | | | 409.2 | | | | 12.5 - 15.5 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, medium stiff, moderately plastic. Minor amounts of organic material as blebs. | |
| SS | 2.0 | 1.5 | 2-6-10 9 | | | | | 15 | | | | |
| | | | | | | | 406.2 | | | | | |
| | | | | | | | 405.7 | | | | 15.5 - 16.0 Ft. Silty SAND (SM). Olive gray (5Y4/1). Moist, medium stiff, slightly plastic. Very fine-grained sand. Trace of organic material as laminae. | Color descriptions from the GSA Rock Color hart (1948). |
| | | | | | | | | | | | Bottom of borhole at 16.0 Ft.<br>Borehole grouted to bottom of concrete with bentonite cement on 3/18/88. | |
| | | | | | | | | | | | | Description and identification by visual examination of soils. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C32

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 2 | B16C33 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,651 E 2,900 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-15-88 | 4-15-88 | Layne-Western Co. | Mobile Drill B53 | 8 1/4" | 18.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 422.5 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | C.A. Clark |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.5 | | | | | |
| SS | 2.0 | | 2-14-16 7 | | | | 422.0 | | | | 0.0 - 0.3 Ft. GRAVEL (GM). Light olive gray (5Y6/1). Dry. Poorly graded, coarse-grained angular, elongated fragments. Silt coats particles. Noncohesive, no compaction. | 0-18 Ft. advanced using 8 1/4 in. hollow-stem auger. |
| SS | 2.0 | | 4-4-10 15 | | | | 420.4 | | | | 0.3 - 2.2 Ft. Silty SAND (SM). Dark yellowish brown (10YR4/2). Slightly moist. Soft to medium-stiff consistency. Moderate cohesion. Good compaction. Sand is 40% fine- and medium-grained subangular silica and feldspar. Trace of clay. Top 4 to 5 inches is interbedded gravels. Rubble as brick and concrete. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | | 10-10-9- | | | | 417.1 | 5 | | | | |
| SS | 2.0 | | 1-1-1-1 | | | | 416.3 | | | | | |
| SS | 2.0 | | 1-1-1-2 | | | | | | | | 2.2 - 5.4 Ft. Sandy SILT (SM). Brownish black (5YR2/1). Slightly moist. Slight cohesion, lean, lower limit on plasticity chart. Sand is 20% fine- and medium-grained silica and feldspar. Slightly cemented, low dry strength. Breaks easily in fingers. | VOA sample collected 6-8 Ft. |
| SS | 2.0 | | 1-2-1-2 | | | | | 10 | | | 2.7 Ft. A 2" layer of pulverized brick (?) fragments. Grayish red purple (5RP4/2). Abundant rubble. | |
| SS | 2.0 | | 2-4-5-2 | | | | 409.8 | | | | | |
| | | | | | | | 408.9 | | | | 5.4 - 6.2 Ft. SILT (ML). Moderate yellowish brown (10YR5/4) mottled with black (N1). Slightly moist, soft consistency, no thread. Dense compaction. Stringers of dark olive black silt. Trace fibrous organics - fine roots. Trace of inclusions of rounded coarse-grained sand. | Top of undisturbed material at 13.7 Ft. |
| SS | 2.0 | | 1-1-2-3 | | | | | 15 | | | | |
| SS | 2.0 | | 4-5-7-5 | | | | 404.5 | | | | 6.2 - 12.7 Ft. Sandy SILT (SM-ML). Moderate yellowish brown (10YR5/4) and light brown (5YR5/6). Moist, soft consistency, slightly cohesive, moderately compacted. Sand is 20% fine-grained silica and feldspars. Lower range of plasticity chart. Flakey platey texture. 9.3-10.1 Ft. Layer of medium-grained sand-sized pulverized brick fragments (as 2.7 Ft.). 10.1 Ft. Silt becomes brownish black (5YR2/1). Trace of clay. Increase moisture content. Abundant rubble as coal, slag, and broken glass. | Description and classification of soils by visual examination of cuttings. |
| | | | | | | | | | | | 12.7 - 13.6 Ft. GRAVEL with SILT (GM). Brownish black (5YR2/1). Saturated. Coarse, elongate, subangular gravel. Unconsolidated, loose compaction. Viscous hydrocarbon(?) material coats gravel fragments. Oily film shines on particles. | |
| | | | | | | | | | | | 13.6 - 18.0 Ft. Clayey SILT (ML). Olive black (5Y2/1). Moist, medium-stiff consistency, slightly plastic. Weak thread, ruptures easily. Moderate resistance to penetration with finger and deformation. Dense. Slow dilatancy. 13.6-14.1 Ft. Coated with viscous black material. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C33

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C54 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,265 E 2,693 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 2-24-88 | 2-24-88 | Layne-Western, Co. | CME-55 | 6 3/4" | 17.8 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 421.8 | ▽ / N/A ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 In. | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 421.8 | | | | | |
| SS | 2.0 | 1.6 | 5-8-5 5 | | | | | | | | 0.0 - 10.5 Ft. Silty CLAY (CL) and RUBBLE. Moist, firm. Pieces of brick, and slag products throughout. | 0-18.0 Ft. advanced with 6-3/4 in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.7 | 4-7-11 11 | | | | | | | | 0.3-0.9 Ft. Silty CLAY. Moderate yellowish brown (10YR5/4) grading into dark yellowish brown (10YR4/2). Slightly plastic. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.8 | 3-2-3 3 | | | | | 5 | | | 2.0-3.5 Ft. Silty CLAY (CL). Moderate yellowish orange (10YR7/6). Dry. Slightly cohesive. | |
| SS | 2.0 | 1.1 | 1-2-1 3 | | | | | | | | 3.5-3.7 Ft. Sandy CLAY (CL). Dark yellowish brown (10YR4/2). Medium-grained particles distributed throughout a firm, slightly plastic, moist clay. | |
| SS | 2.0 | 1.5 | 1-1-1 3 | | | | | | | | 4.0-6.0 Ft. Silty CLAY (CL). Moderate brown (5YR4/4). Moist, soft, slightly plastic. Lenses of grayish black (N2) clay. | |
| SS | 2.0 | 1.1 | 4-2-1 2 | | | | 411.3 | 10 | | | 6.0-10.5 Ft. SILT (ML). Dusky red (5R3/4) grading into moderate yellowish orange (10YR7/6). Dry from 6.0-7.1 Ft., then becomes moist. Loosely bound, nonplastic. | Top of undisturbed material at 10.5 Ft. |
| SS | 2.0 | 1.8 | 3-3-4 5 | | | | | | | | | |
| SS | 2.0 | 1.2 | 2-3-6 4 | | | | | 15 | | | 10.5 - 18.0 Ft. CLAY (CH). Medium light gray (N6). Medium-stiff thread, highly plastic, soft consistency, homogeneous, moist. Colors vary from medium dark gray (N6) to dark gray (N3). | |
| SS | 2.0 | 1.9 | 1-2-2 2 | | | | 403.8 | | | | | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | Bottom of borehole at 18.0 Ft. Borehole backfilled with bentonite cement, 2/24/88. | |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. B16C54

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C55 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,243 E 3,024 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-11-88 | 3-11-88 | Layne-Western, Co. | CME-55 | 6.5" | 14.0 | | 14.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 422.0 | ▽ 11.5/410.5 3/11/88 ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.0 | | | | | |
| | | | | | | | 421.5 | | | | 0.0 - 0.5 Ft. GRAVEL. | 0-18.0 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| SS | 1.5 | 1.2 | 2-2-2 | | | | | | | | 0.5 - 11.0 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5Y2/1) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of slag, carbonaceous material, gravel, brick, glass and sand. Patches of moderate yellowish brown (10YR5/4) to dark yellowish brown (10YR4/2) silty clay. | |
| SS | 2.0 | 0.9 | 3-1-2 1 | | | | | | | | | |
| SS | 2.0 | 1.0 | 1-2-2 1 | | | | | 5 | | | 4.0-4.3 Ft. SAND. Coarse-grained quartzose sand. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.2 | 1-1-2 2 | | | | | | | | | |
| SS | 2.0 | 0.9 | 2-5-3 5 | | | | | | | | | |
| SS | 2.0 | 1.6 | 3-2-2 3 | | | | | 10 | | | | Top of undisturbed material at 11.0 Ft. |
| | | | | | | | 411.0 ▽ | | | | 11.0 - 14.0 Ft. Sandy SILT (ML). Dark yellowish brown (10YR4/2). Moist, soft, very fine-grained sand. Trace of organic material as blebs. Light brown (5YR5/6) Fe staining. Thinly bedded clay laminae of 1/4"; slightly plastic. | |
| SS | 2.0 | 1.6 | 5-3-2 6 | | | | 408.0 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 14.0 Ft. Boring grouted to surface with bentonite cement, 3/15/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C55

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C56A |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,332 E 3,058 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 2-25-88 | 2-25-88 | Layne-Western, Co. | Mobile B-53 | 8 1/4" | 4.0 | | 4.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 2 | | 423.0 | ▽ / N/A<br>▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G.Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 423.0 | | | | | |
| SS | 0.5 | 0.5 | 8-32/0" | | | | 422.7 | | | | 0.0 - 0.3 Ft. GRAVEL (GP). | 0-4.0 Ft. advanced with 8 1/4-inch O.D. hollow-stem auger. |
| SS | 1.1 | 1.1 | 11-18 30/1" | | | | | | | | 0.3 - 4.0 Ft. Silty CLAY (CL) and RUBBLE.<br>0.3-0.8 Ft. Dark yellowish brown (10YR4/2). Dry, medium stiff. Trace rubble consisting of loose sand and gravel with minor amounts of slag. | |
| | | | | | | | 419.0 | | | | 0.8-2.0 Ft. RUBBLE. | Radiologically sampled by TMA/Eberline. No gamma-log. |
| | | | | | | | | | | | 2.0-3.1 Ft. Dark yellowish brown (10YR4/2). Dry, stiff. Rubble consists of brownish black (5YR2/1) brick, slag and gravel.<br>3.1-4.0 Ft. RUBBLE. | Auger refusal at 4.0 Ft. |
| | | | | | | | | | | | Bottom of borehole at 4.0 Ft.<br>Boring grouted to surface with bentonite cement, 2/27/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C56A

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C56B |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,337 E 3,058 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 2-25-88 | 2-25-88 | Layne-Western, Co. | Mobile B-53 | 8 1/4" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 6 | | 423.1 | ▽ 11.3/411.8 2/26/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G.Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 423.1 | | | | | |
| | | | | | | | 422.8 | | | | 0.0 - 0.3 Ft. GRAVEL. | 0-16.0 Ft. advanced with 8 1/4-inch O.D. hollow-stem auger. |
| | | | | | | | | | | | 0.3-13.0 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of brick, slag, wood, glass, coarse-grained sand and gravel. | |
| SS | 2.0 | 1.2 | 5-4-1 4 | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.0 | 4-4-5 4 | | | | | | | | | |
| SS | 2.0 | 0.9 | 3-3-2 3 | | | | | | | | | VOA sample collected 8.0-10.0 Ft. |
| SS | 2.0 | 0.8 | 1-1-1 1 | | | | | 10 | | | | Top of undisturbed material at 13.0 Ft. |
| SS | 2.0 | 1.2 | 2-2-4 6 | | | | 410.1 | | | | 13.0 - 16.0 Ft. Sandy SILT (ML). Olive gray (5Y4/1) to greenish gray (5GY4/1). Moist, soft, slightly plastic. Very fine-grained sand. Trace of organic material as blebs. | |
| SS | 2.0 | 0.7 | 2-2-3 4 | | | | | 15 | | | | |
| | | | | | | | 407.1 | | | | Bottom of borehole at 16.0 Ft. Boring grouted to surface with bentonite cement, 2/27/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C56B

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C57 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,260 E 1,330 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-30-88 | 3-30-88 | Layne-Western, Co. | CME-55 | 6.5" | 10.0 | | 10.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 5 | | 424.8 | ▽ 3.4/421.4 3/31/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.5 | 3-1-4 S | | | | 424.8 | | | | 0.0 - 6.3 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of carbonaceous material, brick, slag and wood. Several patches of light olive gray (5Y6/1) silty clay. | 0-10.0 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.7 | 2-2-2 1 | | | | | | | | | |
| SS | 2.0 | 1.8 | 1-1-1 S | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.7 | 1-1-1 2 | | | | 418.5 | | | | 6.3 - 10.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, soft, moderately plastic. Trace of very fine- to medium-grained sand. Trace of organic material as blebs. | |
| SS | 2.0 | 1.3 | 1-2-3 3 | | | | 414.8 | 10 | | | Bottom of borehole at 10.0 Ft. Boring grouted to surface with bentonite cement, 3/31/88. | Top of undisturbed material at 6.3 Ft. |

Color descriptions from the GSA Rock Color Chart (1948).

Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C57

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C58 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,180 E 1,179 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-28-88 | 3-28-88 | Layne-Western, Co. | CME-55 | 6.5" | 8.0 | | 8.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 4 | | 428.5 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 428.5 | | | | | |
| | | | | | | | 428.2 | | | | 0.0 - 0.3 Ft. ASPHALT. | 0-8.0 Ft. advanced with 6.5-inch hollow-stem auger. |
| SS | 1.2 | 0.7 | 3-3-3/3" | | | | 427.7 | | | | 0.3 - 0.8 Ft. GRAVEL. | |
| SS | 2.0 | 1.6 | 2-3-5 6 | | | | | | | | 0.8 - 4.2 Ft. Silty CLAY (CL) and RUBBLE. | |
| SS | 2.0 | 1.8 | 2-4-5 6 | | | | 424.3 | 5 | | | 0.8-3.7 Ft. Dark yellowish brown (10YR4/2) to grayish brown (5YR3/2). Low moisture content, soft. Some gravel. Light brown (5YR4/6) Fe staining. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.8 | 3-5-6 8 | | | | | | | | 3.7-4.2 Ft. Grayish black (N2). Low moisture content, medium stiff. Rubble consists of carbonaceous material and slag. | |
| | | | | | | | 420.5 | | | | 4.2 - 8.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to light olive gray (5Y5/2). Low moisture content, medium stiff. Trace of very fine-grained sand. Trace of organic material as blebs. Light brown (5YR5/6) Fe staining. | Top of undisturbed material at 4.2 Ft. |
| | | | | | | | | | | | Bottom of borehole at 8.0 Ft. Boring grouted to bottom of asphalt with bentonite cement, 3/31/88. | |

Color descriptions from the GSA Rock Color Chart (1948).

Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C58

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C59 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,135 E 1,337 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-30-88 | 3-30-88 | Layne-Western, Co. | CME-55 | 6.5" | 10.0 | | 10.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 5 | | 424.8 | ▽ / / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.1 | 1-3-4 3 | | | | 424.8 | | | | 0.0 - 3.8 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Moist, loose. Rubble consists of carbonaceous material, brick and slag. | 0-10.0 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.7 | 2-5-4 5 | | | | 421.0 | | | | | |
| SS | 2.0 | 1.8 | 1-1-1 3 | | | | | 5 | | | 3.8 - 10.0 Ft. Silty CLAY (CL). 3.8-9.4 Ft. Moderate yellowish brown (10YR5/4). Moist, soft, moderately plastic. Trace of organic material as blebs. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.8 | 2-2-2 3 | | | | | | | | | |
| SS | 2.0 | 1.8 | 1-2-4 4 | | | | | | | | | VOA sample collected 2.0-4.0 Ft. |
| | | | | | | | 414.8 | 10 | | | 9.4-10.0 Ft. Olive gray (5Y4/1. Moist, medium stiff, slightly plastic. Trace of very fine-grained sand. Trace of organic material as blebs. | |
| | | | | | | | | | | | Bottom of borehole at 10.0 Ft. Boring grouted to surface with bentonite cement, 4/8/88. | Top of undisturbed material at 3.8 Ft. |

Color descriptions from the GSA Rock Color Chart (1948).

Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. B16C59

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16C60 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,080 E 1,223 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-28-88 | 3-28-88 | Layne-Western, Co. | CME-55 | 6.5" | 12.0 | | 12.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 6 | | 427.0 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 427.0 | | | | | |
| | | | | | | | 426.5 | | | | 0.0 - 0.5 Ft. CONCRETE. | |
| SS | 1.5 | 1.2 | 4-3-4 | | | | | | | | 0.5 - 7.2 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture content, soft, loose. Rubble consists of carbonaceous material, slag, brick, sand and gravel. Patches of dark yellowish brown (10YR4/2) to moderate yellowish brown (10YR5/4) silty clay. | 0-12.0 Ft. advanced with 6.5-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.8 | 1-2-3 2 | | | | | | | | | |
| SS | 2.0 | 1.0 | 1-1-2 1 | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.5 | 2-2-2 3 | | | | 419.8 | | | | | |
| SS | 2.0 | 1.7 | 2-3-4 6 | | | | | | | | 7.2 - 12.0 Ft. Silty CLAY (CL). Dark yellowish brown (10YR4/2). Moderate moisture content, soft to medium stiff, moderately plastic. Light brown (5YR5/6) Fe staining. Trace of organic material as blebs. | |
| SS | 2.0 | 2.0 | 2-2-4 4 | | | | | 10 | | | | Top of undisturbed material at 7.2 Ft. |
| | | | | | | | 415.0 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 12.0 Ft. Boring grouted to bottom of concrete with bentonite cement, 3/31/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16C60

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R01 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 2,137 E 1,470 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-4-88 | 4-12-88 | Layne-Western, Co. | CME-55 | 6.5" | 8.0 | | 8.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 4 | | 420.0 | ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./30 in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 420.0 | | | | | |
| SS | 1.6 | 0.6 | 5-5-3 1/1" | | | | 419.6<br>419.2 | | | | 0.0 - 0.4 Ft. CONRETE. | |
| | | | | | | | | | | | 0.4 - 0.8 Ft. Sandy GRAVEL (GP). | Borehole advanced 0-8 Ft. with 6.5-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.2 | 2-2-3 2 | | | | | | | | 0.8 - 3.7 Ft. Silty CLAY (CL). Moderate yellowish brown (10YR5/4). Low moisture content, soft. Some gravel, pebbles and carbonaceous material. Patches of olive gray (5Y4/1) silty clay. | Top of undisturbed material at 3.7 Ft. |
| | | | | | | | 416.3 | | | | | |
| SS | 2.0 | 1.9 | 1-2-3 5 | | | | | 5 | | | 3.7 - 8.0 Ft. Silty CLAY (CL). Pale yellowish brown (10YR6/2) to moderate yellowish brown (10YR5/4). Moderate moisture content, soft. Trace of organic material as blebs. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 2.0 | 2-3-4 5 | | | | | | | | | |
| | | | | | | | 412.0 | | | | Bottom of borehole at 8.0 Ft.<br>Boring grouted to bottom of concrete with bentonite cement, 4/12/88. | |
| | | | | | | | | | | | | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; O = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. B16R01

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R02 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,710 E 1,573 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-20-88 | 3-20-88 | Layne-Western Co. | Mobile B-40 | 6 3/4" | 11.0 | | 11.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 5 | | 419.5 | ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 419.5 | | | |
| SS | 1.5 | 1.6 | 6-25-19 | | | | 419.0 | | | |
| SS | 2.0 | 1.4 | 2-3-2 3 | | | | 417.2 | | | |
| SS | 2.0 | 1.4 | 1/1.0' 1-2 | | | | | 5 | | |
| SS | 2.0 | 2.0 | 1-3-6 5 | | | | | | | |
| SS | 2.0 | 2.0 | 1-2-3 4 | | | | 411.3 | | | |
| | | | | | | | | 10 | | |
| | | | | | | | 408.5 | | | |

**DESCRIPTION AND CLASSIFICATION**

0.0 - 0.5 Ft. CONCRETE.

0.5 - 2.3 Ft. FILL. Brownish black (5YR2/1) clayey silt. Moist to wet, loose. Patches of moderate yellowish brown (10YR 5/4) clayey silt. Slag.

2.3 - 8.2 Ft. Silty CLAY (CL).

2.3-6.7 ft. Moderate yellowish brown (10YR5/4). Firm consistency, becoming softer with depth. Moist, slightly plastic. Small pieces of fill material.

6.7-8.2 Ft. Dark gray (N3). Stiff consistency, slightly plastic, crumbles, moist. Very small pieces of crushed brick.

8.0 Ft. Small patch of dusky yellow green (5GY5/2).

8.2 - 11.0 Ft. Silty CLAY (CL). Dark gray (N3). Stiff consistency, slightly plastic, moist.

Bottom of borehole at 11.0 Ft.
Borehole backfilled with bentonite cement, 3/20/88.

**NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.**

Borehole advanced 0-11 Ft. with 6-3/4 in. O.D. hollow-stem auger. Radiologically sampled and gamma-logged by TMA/Eberline, Inc.

Top of undisturbed material at 8.2 Ft.

Color descriptions from the GSA Rock Color Chart (1948).

Description and classification of soils by visual examination.

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R02

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R03 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 2,047 E 1,490 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-4-88 | 4-12-88 | Layne-Western, Co. | CME-55 | 6.5" | 10.0 | | 10.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 5 | | 421.0 | ▽ 5.0/416.0 4/4/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140lbs./30-in. | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 421.0 | | | | | |
| SS | 1.5 | 1.2 | 9-6-6 | | | | | | | | 0.0 - 7.5 Ft. FILL. | Borehole advanced 0-10 Ft. with 6.5-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.0 | 4-3-1 2 | | | | | | | | 0.0-0.1 Ft. Asphalt. | |
| SS | 2.0 | 0.6 | 1-1-1 1 | | | | | 5 | | | 0.1-0.7 Ft. Brick. | |
| SS | 2.0 | 1.8 | 8-2-1 1 | | | | | | | | 0.7-1.0 Ft. Sandy GRAVEL (GM). | Top of undisturbed material at 7.5 Ft. |
| SS | 2.0 | 1.8 | 1-3-3 5 | | | | 413.5 | | | | 1.0-7.5 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of slag, carbonaceous material and gravel. Fe staining. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| | | | | | | | 411.0 | 10 | | | 7.5 - 10.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, soft, moderately plastic. Trace of organic material as blebs. | |
| | | | | | | | | | | | Bottom of borehole at 10.0 Ft. Boring grouted to bottom of asphalt with bentonite cement, 4/12/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| St. Louis Downtown Site | B16R03 |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R04 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| | N 2,048 E 1,434 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-21-88 | 4-21-88 | Layne-Western, Co. | Jackhammer | | | | 8.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | | | 422.7 | ▽ 7.5/415.2 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| | | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS / % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.7 | | | | | |
| SS | 1.5 | 1.1 | | | | | 422.2 | | | | 0.0 - 0.5 Ft. CONRETE.<br>0.5 - 8.0 Ft. Silty CLAY (CL) and RUBBLE. | 2-in. split spoon advanced 0-8 Ft. using an electric jackhammer. |
| SS | 2.0 | 0.9 | | | | | | | | | 0.5-5.0 Ft. Light olive gray (5Y6/1) to grayish black (N2). Low moisture content, loose to soft. Rubble consists of carbonaceous material, slag and brick. | Top of undisturbed material at 5.0 Ft. |
| SS | 2.0 | 2.0 | | | | | | 5 | | | | Borehole reamed with 4-inch split spoon. |
| SS | 2.0 | 2.0 | | | | | | | | | 5.0-8.0 Ft. Silty CLAY. Moderate yellowish brown (10YR5/4) to light olive gray (5Y6/1). Moist, soft, moderately plastic. Trace of very fine-grained sand. Trace of organic material as blebs. | |
| | | | | | | | 414.7 | | | | Bottom of borehole at 8.0 Ft.<br>Boring grouted to bottom of concrete with bentonite cement, 4/28/88. | Radiologically sampled and gamma-logged by TMA/Eberline.<br>Color descriptions from the GSA Rock Color Chart (1948).<br>Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE

HOLE NO. B16R04

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R05 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,817 E 1,548 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-13-88 | 4-13-88 | Layne-Western, Co. | CME-55 | 6.5" | 12.0 | | 12.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 6 | | 420.5 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 420.5 | | | | | |
| | | | | | | | 419.9 | | | | 0.0 - 0.6 Ft. ASPHALT. | Borehole advanced 0-12 Ft. with 6.5-inch O.D. hollow-stem auger. |
| SS | 1.3 | 1.0 | 13-12-6 | | | | | | | | 0.6 - 8.5 Ft. Silty CLAY (CL). | |
| SS | 2.0 | 1.7 | 4-6-9 9 | | | | | | | | 0.6-4.3 Ft. Moderate yellowish brown (10YR5/4). Low moisture content, medium stiff. Some gravel, sand and slag. | |
| SS | 2.0 | 1.6 | 2-3-3 10 | | | | | 5 | | | 4.3-8.5 Ft. Light olive gray (5Y6/1). Moderate moisture content, soft to medium stiff. Patches of grayish black (N2) and greenish gray (5G6/1). | Radiologically sampled and gamma-logged by TMA/Eberline. Top of undisturbed material at 8.5 Ft. |
| SS | 2.0 | 1.8 | 3-8-8 8 | | | | | | | | | |
| SS | 2.0 | 1.9 | 2-4-8 8 | | | | 412.0 | | | | 8.5 - 12.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to dark greenish gray (5GY4/1). Low moisture content, medium stiff, moderately plastic. Trace of very fine-grained sand. trace of organic material as blebs. | |
| SS | 2.0 | 1.0 | 2-4-6 6 | | | | | 10 | | | | |
| | | | | | | | 408.5 | | | | Bottom of borehole at 12.0 Ft. Borehole backfilled to top of concrete with bentonite cement, 4/13/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; O = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R05

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R06 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,750 E 1,661 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-6-88 | 4-8-88 | Layne-Western, Co. | CME-55 | 6.5" | 14.0 | | 14.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 420.4 | ▽ / 4/6/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 420.4 | | | | | |
| | | | | | | | 419.9 | | | | 0.0 - 0.5 Ft. CONCRETE. | Borehole advanced 0-14 Ft. with 6.5-inch O.D. hollow-stem auger. |
| SS | 0.6 | 0.6 | 15-50/2" | | | | | | | | 0.5 - 10.0 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose to medium stiff. Rubble consists of slag, carbonaceous material, brick, pebble and sand. Patches of moderate yellowish brown (10YR5/4) to dark yellowish brown (10YR4/2) silty clay. | |
| ~~SS~~ | ~~0.3~~ | ~~0.3~~ | ~~50/4"~~ | | | | | | | | | |
| SS | 1.7 | 1.4 | 4-25-30 50/4" | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.7 | 17-9-6 6 | | | | | | | | | |
| SS | 2.0 | 0.8 | 3-3-1 2 | | | | | | | | | |
| | | | | | | | 410.4 | 10 | | | | |
| SS | 2.0 | 0.6 | 1-3-2 2 | | | | | | | | 10.0 - 14.0 Ft. Silty SAND (SM). Olive gray (5Y4/1). Moist, soft, minor amounts of highly plastic clay. Very fine-grained sand. | Top of undisturbed material at 10.0 Ft. |
| SS | 2.0 | 1.7 | 1-1-2 3 | | | | | | | | | |
| | | | | | | | 406.4 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 14.0 Ft. Boring grouted to bottom of concrete with bentonite cement, 4/8/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; O = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R06

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R08 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,634 E 1,683 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-20-88 | 3-21-88 | Layne-Western Co. | Mobile B-40 | 6 3/4" | 23.0 | | 23.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 419.6 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | BARREL REC. CORE REC. | SAMPLE BLOWS "N" / % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE # | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 419.6 | | | | | |
| SS | 1.5 | 0.7 | 2-3 10/0" | | | | 419.1 | | | | 0.0 - 0.5 Ft. CONCRETE<br>0.5 - 4.7 Ft. FILL. Predominantly dusky yellowish brown (10YR 2/2) clayey silt with coal and pieces of rubble. Wet and loose. | Borehole advanced 0-23 Ft. with 6-3/4 in. O.D. hollow-stem auger. Radiologically sampled and gamma-logged by TMA/Eberline, Inc. |
| SS | 2.0 | 1.5 | 21-5-1 1 | | | | 414.9 | 5 | | | 4.0-4.7 Ft. Olive gray (5Y3/2) silt, sand, and gravel mixture. Wet and loose. | |
| SS | 2.0 | 2.0 | 6-4-3 3 | | | | | | | | 4.7 - 7.0 Ft. Silty SAND (SM). Dark gray (N3). Wet, very fine-grained, well graded. Some clay throughout. Pieces of fill material. Becomes saturated after 6.0 Ft. | |
| SS | 2.0 | 0.9 | 2-2-3 3 | | | | | | | | 7.0-10.0 Ft. FILL. Black (N1). Mixture of clay, silt, sand, and gravel along with coal and slag. Saturated. | |
| SS | 2.0 | 1.7 | 1-3-2 4 | | | | 409.6 | 10 | | | 10.0 - 11.7 Ft. CLAY (CL). Light olive gray (5Y5/2). Moist, slightly plastic, stiff consistency. | Top of undisturbed material at 10.0 Ft. |
| SS | 2.0 | 1.9 | 1-1-1 1 | | | | 407.9 | | | | 11.7 - 13.9 Ft. Silty CLAY (CL). Olive gray (5Y3/2). Wet, moderately plastic, soft consistency. Ruptures when broken. | |
| SS | 2.0 | 1.9 | 1-1-1 3 | | | | 405.7 | 15 | | | 13.9 - 17.0 Ft. CLAY (CL). Light olive gray (5Y5/2). Moist, slightly plastic, stiff consistency. Black specks throughout sample; decomposed twigs and organic matter. | |
| SS | 2.0 | 0.4 | 1-2-1 2 | | | | 402.6 | | | | 17.0 - 21.0 Ft. Clayey SILT (ML). Olive gray (5Y3/2). Moderately plastic, soft consistency. Black specks throughout sample. Ruptures when broken. | Color descriptions from the GSA Rock Color Chart (1948). |
| SS | 2.0 | 0.0 | 2-3-4 5 | | | | | 20 | | | | |
| SS | 2.0 | 1.8 | 3-4-5 6 | | | | 398.6 | | | | 21.0 - 23.0 Ft. SILT (ML). Olive gray (5Y3/2). Slightly plastic. Minor amounts of black streaks arranged horizontally. | |
| | | | | | | | 396.6 | | | | Bottom of borehole at 23.0 Ft.<br>Borehole backfilled with bentonite cement, 3/21/88. | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R08

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R09 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,628 E 1,815 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-11-88 | 4-14-88 | Layne-Western, Co. | CME-55 | 6.5" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 418.3 | 6.0/412.3 4/12/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 418.3 | | | | | |
| SS | 1.5 | 0.7 | 3-3-2 | | | | 418.1 | | | | 0.0 - 0.2 Ft. ASPHALT. | Borehole advanced 0-16 Ft. with 6.5-inch O.D. hollow-stem auger. |
| | | | | | | | 417.8 | | | | 0.2 - 0.5 Ft. CONCRETE. | |
| SS | 0.7 | 0.5 | 6-50/3" | | | | 417.1 | | | | 0.5 - 1.2 Ft. Sandy GRAVEL. | |
| | | | | | | | | | | | 1.2 - 11.8 Ft. Silty CLAY (CL) and RUBBLE. | |
| SS | 2.0 | 1.8 | 5-8-5 7 | | | | | 5 | | | 1.2-8.5 Ft. Dark yellowish brown (10YR4/2) to grayish black (N2). Low moisture content to moist, loose to medium stiff. Rubble consists of carbonaceous material, gravel, pebbles and sand. | |
| SS | 2.0 | 1.5 | 3-6-6 5 | | | | | | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.8 | 1-4-7 7 | | | | | | | | | |
| SS | 2.0 | 1.8 | 2-7-9 8 | | | | | 10 | | | 8.5-11.0 Ft. Olive gray (5Y4/1) to dark greenish gray (5GY4/1). Moist, soft to medium stiff. Minor amounts of very fine-grained sand. Some carbonaceous material, brick fragments and pebbles. | Top of undisturbed material at 11.8 Ft. |
| | | | | | | | 406.5 | | | | | |
| SS | 2.0 | 1.8 | 3-5-7 6 | | | | | | | | 11.0-11.8 Ft. Grayish black (N2). Moist, soft to medium stiff. Some gravel, brick and pebbles. | |
| | | | | | | | 404.6 | | | | | |
| SS | 2.0 | 1.7 | 2-2-4 4 | | | | | 15 | | | 11.8 - 13.7 Ft. Silty SAND (SM). Olive gray (5Y4/1). Moist, medium stiff, slightly plastic. Very fine- to fine-grained sand. Trace amounts of clay. | |
| | | | | | | | 402.3 | | | | 13.7 - 16.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, soft, moderately plastic. Trace of organic material as blebe. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | Bottom of borehole at 16.0 Ft. Boring grouted to bottom of concrete with bentonite cement, 4/14/88. | |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R09

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R10A |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,545 E 1,660 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-13-88 | 4-14-88 | Layne-Western, Co. | CME-55 | 6.5" | 4.0 | | 4.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 2 | | 420.2 | ▽ / / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 420.2 | | | | | |
| SS | 1.7 | 1.0 | 23-28-27 14/3" | | | | 420.0 | | | | 0.0 - 0.2 Ft. ASPHALT. | Borehole advanced 0-2.2 Ft. with 6.5-in. O.D. hollow-stem auger. Auger refusal 2.2 Ft. |
| | | | | | | | 418.5 | | | | 0.2 - 1.8 Ft. Sandy GRAVEL (GM). | |
| SS | 2.0 | 1.4 | 20-36-50 33 | | | | | | | | 1.8 - 4.0 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture content, loose. Rubble consists of gravel, brick, slag, carbonaceous material and particle board. | Sampled 2.0-4.0 Ft. but unable to auger to 4.0 FT. |
| | | | | | | | 416.2 | | | | Bottom of borehole at 4.0 Ft. Boring grouted to bottom of asphalt with bentonite cement, 4/14/88. | Radiologically sampled by TMA/Eberline. |
| | | | | | | | | | | | | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; O = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R10A

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R10B |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,545 E 1,657 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-13-88 | 4-14-88 | Layne-Western, Co. | CME-55 | 6.5" | 14.0 | | 14.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 4 | | 420.2 | ▽ 7.0/413.2 4/13/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 420.2 | | | | |
| | | | | | | | 420.0 | | | 0.0 - 0.2 Ft. ASPHALT. | Borehole advanced 0-14 Ft. with 6.5-inch O.D. hollow-stem auger. |
| | | | | | | | 418.4 | | | 0.2 - 1.8 Ft. Sandy GRAVEL. | |
| SS | 2.0 | 1.3 | 9-38-15 24 | | | | | 5 | | 1.8 - 11.3 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of gravel, brick, carbonaceous material, slag, sand and particle board. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 0.9 | 0.5 | 24-55/5" | | | | | | | | |
| SS | 2.0 | 1.9 | 3-2-5 4 | | | | | 10 | | | Top of undisturbed material at 11.3 Ft. |
| | | | | | | | 408.9 | | | 11.3 - 14.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, soft, moderately plastic. Trace of very fine-grained sand. Trace of organic material as blebs. | |
| SS | 2.0 | 1.8 | 2-3-3 5 | | | | 406.2 | | | | |
| | | | | | | | | | | Bottom of borehole at 14.0 Ft. Boring grouted to bottom of asphalt with bentonite cement, 4/14/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R10B

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R11 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,585 E 1,760 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-12-88 | 4-14-88 | Layne-Western, Co. | CME-55 | 6.5" | 14.0 | | 14.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 418.7 | ▽ 3.5/415.2 4/12/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS / % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 418.7 | | | | | |
| | | | | | | | 418.5 | | | | 0.0 - 0.1 Ft. **ASPHALT**. | Borehole advanced 0-14 Ft. with 6.5-inch O.D. hollow-stem auger. |
| SS | 1.2 | 1.1 | 4-7-2/3" | | | | 417.9 | | | | 0.1 - 0.8 Ft. **CONCRETE**. | |
| SS | 2.0 | 1.3 | 4-8-4 5 | | | | | | | | 0.8 - 11.6 Ft. **Silty CLAY (CL) and RUBBLE**. | |
| SS | 2.0 | 0.3 | 2-1-1 1 | | | | | | | | 0.8-8.7 Ft. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of slag, carbonaceous material, gravel, sand and pebbles. Fe staining. | |
| | | | | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.1 | 1-5-10 3 | | | | | | | | | |
| SS | 2.0 | 1.5 | 2-1-1 1 | | | | | | | | 8.7-11.6 Ft. Moderate brown (5YR4/4). Moist, soft. Trace of organic material as blebs. Some carbonaceous material. | |
| | | | | | | | | 10 | | | | Top of undisturbed material at 11.6 Ft. |
| SS | 2.0 | 1.6 | 1-1-2 3 | | | | 407.1 | | | | | |
| SS | 2.0 | 1.4 | 2-2-4 5 | | | | | | | | 11.6 - 14.0 Ft. **Silty CLAY** (CL). Olive gray (5Y4/1). Moist, soft, moderately plastic. Minor amounts of very fine-grained sand. Trace of organic material as blebs. | |
| | | | | | | | 404.7 | | | | Bottom of borehole at 14.0 Ft. Boring grouted to bottom of concrete with bentonite cement, 4/14/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R11

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R12 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,827 E 2,178 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-19-88 | 4-29-88 | Layne-Western Co. | Mobile Drill B53 | 8 1/4" | 20.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 420.4 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | C.A. Clark |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 420.4 | | | | | |
| SS | 2.0 | 0.3 | 7-8-8-13 | | | | 420.1 | | | | 0.0 - 0.3 Ft. ASPHALT. | Borehole advanced 0-18 Ft. with 8 1/4" O.D. hollow-stem auger. Radiologically sampled and gamma-logged by TMA/Eberline. Top of undisturbed material at 9.5 Ft. |
| | | | | | | | | | | | 0.3 - 9.5 Ft. FILL. | |
| SS | 2.0 | 1.0 | 18-14-13 10 | | | | | | | | 0.3-4.2 Ft. Sandy LOAM. Brownish black (5YR2/1). Dry to slightly moist at 4 Ft. Moderately cohesive, slight to moderate compaction. Cohesion increases with increase of moisture content with depth. Dependant upon sand percent. Sand is medium- to coarse-grained subangular particles. Slightly cemented, low dry strength. Abundant organics, largely undecayed twigs, roots, and bark. Abundant rubble. | |
| SS | 2.0 | 0.8 | 4-6-6-8 | | | | | 5 | | | | |
| SS | 2.0 | 1.5 | 3-6-4-3 | | | | | | | | | |
| SS | 2.0 | 1.1 | 1-1-2-2 | | | | | | | | 4.2-9.5 Ft. Sandy SILT (SM). Brownish black (5YR2/1). Moist, moderately cohesive, slightly plastic. Weak thread. Ruptures easily. Moderate resistance to deformation. Low moisture content, flakey. Moderate compaction, low permeability, dense, slow dilatancy. Slightly cemented, breaks in fingers. Sand is 15% fines. Medium-grained. Abundant silt as dark mafic/biotite flakes. Abundant rubble. | |
| | | | | | | | 410.9 | | | | | |
| SS | 2.0 | 0.5 | 2-3-1-1 | | | | 410.3 | 10 | | | | |
| | | | | | | | 408.6 | | | | | |
| SS | 2.0 | 1.5 | 2-1-3-4 | | | | | | | | | |
| | | | | | | | 406.2 | | | | 9.5 - 10.1 Ft. Clayey SILT (ML). Dark greenish gray (5GY4/1), mottled with olive gray (5Y4/1). Dry to very slightly moist; distinct loss of moisture. Slow to no dilatancy, slightly plastic, weak thread. Ruptures easily. Some resistance to deformation. | Description and classification of soils by visual examination of split-spoon samples. |
| SS | 2.0 | 1.8 | 6-7-6-7 | | | | | 15 | | | | |
| SS | 2.0 | 1.0 | 2-3-2-3 | | | | | | | | | |
| | | | | | | | 402.4 | | | | 10.1 - 11.8 Ft. Sandy SILT (SM). Olive black (5Y2/1). Moist, gap-graded sand. Mostly fine with some coarse-grained subangular particles. Moderate cohesion, dense, very slightly sticky, low moisture content, rapid dilatancy, slightly plastic. Deforms with moderate finger pressure. Weak mold, ruptures easily. | |
| | | | | | | | | | | | 11.8 - 14.2 Ft. CLAY (CL). Olive black (5Y2/1). Slightly moist, moderate cohesion, dense. trace of silt as biotite flakes. Stiff clay, slight deformation with moderate finger pressure. Crumbles when rolled. Mottled dark olive spots. May be organic(?); trace of root fibers with increased silt %. | |
| | | | | | | | | | | | 14.2 - 18.0 Ft. Silty SAND (SM-ML) with interbedded silts. Olive black (5Y2/1). Moist, moderately cohesive, slightly plastic, medium-stiff consistency, dense compaction. sand is fine- and medium-grained subangular particles. Silt is abundant dark flakes. Silt layers are random in alternation and thickness (2-4"). No deviation in color or structure. Trace very fine-grained sand. Slightly sticky. Dilatancy increases. | |
| | | | | | | | | | | | Bottom of borehole at 18.0 Ft. Borehole backfilled with bentonite cement, 4/29/88. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R12

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R13 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,831 E 2,607 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-17-88 | 3-18-88 | Layne-Western, Co. | CME-55 | 6.5" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 422.2 | ▽ 8.2/414.0 3/18/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS / % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.2 | | | | | |
| SS | 2.0 | 1.3 | 7-5-7 6 | | | | | | | | 0.0 - 0.3 Ft. Silty CLAY (CL). Dark yellowish brown (10YR4/2). Low moisture content, medium stiff. Some gravel. 0.3 - 12.5 Ft. Silty CLAY (CL) and RUBBLE. 0.3-2.0 Ft. Brownish black (5YR2/1) to grayish black (N2). Low moisture content, loose. Rubble consists of slag, carbonaceous material, sand and brick fragments. 2.0-5.5 Ft. Moderate yellowish brown (10YR5/4) to light olive gray (5Y6/1). Low moisture content, soft. Fe staining. 5.5-12.5 Ft. Brownish black (5YR2/1) to grayish black (N2). Moderate moisture content to moist, loose to stiff. Rubble consists of slag, brick, carbonaceous material and sand. | Borehole advanced 0-13 Ft. with 6.5-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.4 | 3-2-3 4 | | | | | | | | | |
| SS | 2.0 | 1.7 | 1-2-3 3 | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.8 | 14-30-24 11 | | | | | | | | | |
| SS | 2.0 | 1.5 | 1-2-4 11 | | | | | | | | | |
| SS | 2.0 | 1.3 | 12-11-14 28 | | | | | 10 | | | | Top of undisturbed material at 12.5 Ft. |
| SS | 2.0 | 1.5 | 3-2-2 3 | | | | 409.7 | | | | 12.5 - 16.0 Ft. Silty CLAY (CL). Olive gray (5Y3/2). Moist, medium stiff, moderately plastic. Minor amounts of organic material as blebs. | |
| SS | 2.0 | 1.5 | 2-2-3 4 | | | | | 15 | | | | |
| | | | | | | | 406.2 | | | | Bottom of borehole at 16.0 Ft. Boring grouted to surface with bentonite cement, 3/18/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| St. Louis Downtown Site | B16R13 |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R14 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,737 E 2,190 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-19-88 | 4-29-88 | Layne-Western, Co. | CME-55 | 6.5" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 421.9 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| Pushed w/augerhead | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS / % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.2 | | | | | 421.9 | | | | 0.0 - 11.1 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose to soft. Rubble consists of gravel, slag, carbonaceous material, sand, pebbles and lime. Patches of olive gray (5Y4/1) to dark yellowish brown (10YR4/2) silty clay. | 0-16 Ft. with 6.5-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.7 | | | | | | | | | | |
| SS | 2.0 | 0.1 | | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 0.8 | | | | | | | | | | |
| SS | 2.0 | 0.0 | | | | | | | | | | |
| SS | 2.0 | 1.5 | | | | | | 10 | | | | 4-6 and 8-10 Ft. samples grabbed from drilling spoils due to poor recovery. |
| SS | 2.0 | 1.8 | | | | | 410.8 | | | | 11.1 - 13.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, medium stiff, moderately plastic. trace of organic material as blebs. | |
| | | | | | | | 408.9 | | | | 13.0 - 16.0 Ft. Silty SAND (SM). Olive gray (5Y4/1) to dark yellowish brown (10YR4/2). Moist, soft. Very fine-grained sand. Fe staining (laminae). | |
| | | | | | | | | 15 | | | | |
| | | | | | | | 405.9 | | | | Bottom of borehole at 16.0 Ft. Boring grouted to surface with bentonite cement, 4/29/88. | Color descriptions from the GSA Rock Color Chart (1948) |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; O = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R14

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R15A |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,750 E 2,370 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-23-88 | 3-24-88 | Layne-Western, Co. | CME-55 | 6.5" | 6.0 | | 6.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 3 | | 422.5 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS / % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.5 | | | | | |
| | | | | | | | 421.9 | | | | 0.0 - 0.6 Ft. ASPHALT. | Borehole advanced 0-6 Ft. with 6.5-inch O.D. hollow-stem auger. |
| SS | 1.4 | 1.4 | 9-11 6/5" | | | | 421.0 | | | | 0.6 - 1.6 Ft. Sandy GRAVEL (GM). | |
| SS | 2.0 | 1.8 | 10-5-5 6 | | | | | | | | 1.6 - 4.7 Ft. Silty CLAY (CL). Moderate yellowish brown (10YR5/4) to dark yellowish brown (10YR4/2). Dry to low moisture content, medium stiff. Minor amounts of rubble consisting of brick and slag. | |
| SS | 0.7 | 0.7 | 6-50/3" | | | | | 5 | | | | |
| | | | | | | | 416.5 | | | | 4.7-6.0 Ft. RUBBLE. | Sampled by TMA/Eberline. |
| | | | | | | | | | | | Bottom of borehole at 6.0 Ft. Boring grouted to bottom of asphalt with bentonite cement, 3/24/88. | Auger refusal 6.0 Ft. |
| | | | | | | | | | | | | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R15A

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R15B |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,758 E 2,368 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-23-88 | 3-24-88 | Layne-Western, Co. | CME-55 | 6.5" | 18.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 422.5 | ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.5 | | | | | |
| | | | | | | | 421.9 | | | | 0.0 - 0.6 Ft. ASPHALT. | Borehole advanced 0-18 Ft. with 6.5-inch O.D. hollow-stem auger. |
| | | | | | | | | | | | 0.6 - 13.0 Ft. Silty CLAY (CL) and RUBBLE. | |
| | | | | | | | | | | | 0.6-4.6 Ft. Moderate yellowish brown (10YR5/4) to dark yellowish brown (10YR4/2). Dry to low moisture content, medium stiff. Minor amounts of rubble and slag. | |
| SS | 2.0 | 1.9 | 3-6-9 10 | | | | | 5 | | | | |
| | | | | | | | | | | | 4.6-6.4 Ft. Brownish black (5YR2/1) to grayish black (N2). Low moisture content, loose. Rubble consists of slag, carbonaceous material and brick. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.9 | 3-4-3 5 | | | | | | | | | Sampling began at 4.0 Ft. Samples from 0-4 Ft. collected in 15A. |
| | | | | | | | | | | | 6.4-13.0 Ft. Dark yellowish brown (10YR4/2). Low moisture content to moist, soft to medium stiff. Minor amounts of rubble consisting of carbonaceous material, brick, sand and wood. | |
| SS | 2.0 | 0.8 | 2-3-4 4 | | | | | 10 | | | | |
| SS | 2.0 | 0.5 | 6-50-57 41 | | | | | | | | | Top of undisturbed material at 13.0 Ft. |
| SS | 2.0 | 0.3 | 2-5-3 2 | | | | 409.5 | | | | | |
| | | | | | | | | | | | 13.0 - 18.0 Ft. Silty SAND (SM). Olive gray (5Y4/1). Moist, soft to medium stiff. Very fine-grained sand with trace amounts of medium-grained sand. Trace amounts of clay. | |
| SS | 2.0 | 1.4 | 4-4-12 12 | | | | | 15 | | | | |
| SS | 2.0 | 1.5 | 7-9-6 7 | | | | | | | | | |
| | | | | | | | 404.5 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 18.0 Ft. Boring grouted to bottom of asphalt with bentonite cement, 3/24/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R15B

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R16A |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,776 E 2,670 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-15-88 | 3-18-88 | Layne-Western, Co. | CME-55 | 6.5" | 4.2 | | 4.2 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 2 | | 422.7 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.7 | | | | | |
| SS | 0.8 | 0.7 | 6-20/2" | | | | 422.3 | | | | 0.0 - 0.4 Ft. CONCRETE. | Borehole advanced 0-4.2 Ft. with 6.5-inch O.D. hollow-stem auger. |
| | | | | | | | | | | | 0.4 - 4.2 Ft. Silty CLAY (CL) and RUBBLE. | |
| SS | 2.0 | 1.1 | 24-30-55 S1 | | | | | | | | 0.4-1.1 Ft. Brownish black (5YR2/1) to grayish black (N2). Low moisture content, loose. Rubble consists of gravel, brick and sand, patches of dark yellowish brown (10YR4/2) silty clay. | |
| | | | | | | | 418.5 | | | | 1.1-2.0 Ft. Rubble. | Auger refusal at 4.2 Ft. |
| | | | | | | | | | | | 2.0-4.0 Ft. Brownish black (5YR2/1). Low moisture content, loose. Rubble consists of brick, sand and gravel. | |
| | | | | | | | | | | | 4.0-4.2 Ft. Concrete. | |
| | | | | | | | | | | | Bottom of borehole at 4.2 Ft. Boring grouted to bottom of concrete with bentonite cement, 3/18/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R16A

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R16B |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,767 E 2,670 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-15-88 | 3-18-88 | Layne-Western, Co. | CME-55 | 6.5" | 1.8 | | 1.8 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 0 | | 422.8 | ▽ / ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.8 | | | | | |
| | | | | | | | 422.4 | | | | 0.0 - 0.4 Ft. CONCRETE. | Borehole advanced 0-1.8 Ft. with 6.5-in. O.D. hollow-stem auger. |
| | | | | | | | 421.0 | | | | 0.4 - 1.8 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture content, loose. Rubble consists of gravel, brick and sand. Patches of dark yellowish brown (10YR4/2) silty clay. | |
| | | | | | | | | | | | Bottom of boring at 1.8 Ft. Boring grouted to bottom of concrete with bentonite cement, 3/18/88. | Attempted to advance auger to 4.0 Ft. and continue sampling, but cutter blades broke upon contact with 3/4" rebar. |
| | | | | | | | | | | | | Auger refusal at 1.8 Ft. |
| | | | | | | | | | | | | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R16B

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R16C |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,771 E 2,666 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-14-88 | 4-14-88 | Layne-Western, Co. | CME-55 | 6.5" | 6.5 | | 6.5 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 0 | | 422.5 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.5 | | | | |
| SS | 0.7 | 0.6 | S6-50/2" | | | | 422.0 | | | 0.0 - 0.5 Ft. CONCRETE. | Borehole advanced 0-6 Ft. with 6.5-inch O.D. hollow-stem auger. |
| | | | | | | | | | | 0.5 - 6.5 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1). Low moisture content, stiff. Some gravel and sand. | |
| | | | | | | | | | | 1.2-6.5 Ft. Concrete and rubble. | |
| | | | | | | | | 5 | | | Attempted to core through rubble and conrete with 6.5-inch core barrel. Cored to 6.5 Ft. but unable to core through rebar. |
| | | | | | | | 416.0 | | | 6.2 Ft. 2 sections of 1/4-in. rebar. | |
| | | | | | | | | | | Bottom of boring at 6.5 Ft. Borehole backfilled with bentonite grout, 4/14/88. | |
| | | | | | | | | | | | Auger refusal at 6.0 Ft. |
| | | | | | | | | | | | No samples taken. |
| | | | | | | | | | | | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R16C

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R16D |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,782 E 2,064 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-25-88 | 4-28-88 | Layne-Western, Co. | CME-55 | 6.5" | 8.7 | | 8.7 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 2 | | 422.5 | ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.5 | | | | | |
| SS | 1.4 | 1.4 | 3-9-34 43 | | | | 422.0 | | | | 0.0 - 0.5 Ft. CONCRETE. | Borehole advanced 0-8.7 Ft. with 6.5-in. O.D. hollow-stem auger. |
| | | | | | | | | | | | 0.5 - 8.7 Ft. Silty CLAY (CL) and RUBBLE. | |
| | | | | | | | | | | | 0.5-2.0 Ft. Brownish black (5YR2/1) to olive gray (5Y4/1). Low moisture content, loose. Rubble consists of brick, sand and gravel. | Used 6.75-inch diameter milling tool to drill through rebar. |
| SS | 1.4 | 1.0 | 10-15 34/4.5" | | | | | 5 | | | 2.0-4.0 Ft. Concrete and gravel. | |
| | | | | | | | | | | | 4.0-5.4 Ft. SAND. Medium-to coarse-grained sand. Some 1-2 in. pieces of angular limestone gravel. | Water introduced into hole to cool bit on milling tool. |
| | | | | | | | | | | | 5.3 Ft. Wood. | |
| | | | | | | | 413.8 | | | | 5.4-8.7 Ft. Concrete and rebar (?). | |
| | | | | | | | | | | | 5.5 Ft. Rebar. | Radiologically sampled and gamma-logged by TMA/Eberline. Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | 8.6 Ft. Rebar. | |
| | | | | | | | | | | | Bottom of borehole at 8.7 Ft. Boring grouted to bottom of concrete with bentonite cement, 4/28/88. | |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R16D

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R17 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,640 E 2,173 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-15-88 | 4-15-88 | Layne-Western, Co. | CME-55 | 6.5" | 14.0 | | 14.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 422.0 | ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.0 | | | | | |
| SS | 2.0 | 1.4 | 4-13-10 10 | | | | | | | | 0.0 - 11.0 Ft. FILL. | Borehole advanced 0-14 Ft. with 6.5-inch O.D. hollow-stem auger. |
| | | | | | | | | | | | 0.0-0.8 Ft. Silty CLAY (CL). Dark yellowish brown (10YR4/2). Dry, soft. Some gravel. | |
| SS | 2.0 | 1.8 | 10-24-15 11 | | | | | | | | 0.8-1.2 Ft. Sandy GRAVEL (GM). | |
| | | | | | | | | | | | 1.2-11.0 Ft. Silty CLAY (CL) and RUBBLE. Grayish black (N2). Low moisture content, loose. Rubble consists of carbonaceous material, slag, gravel, lime and particle board. | |
| SS | 2.0 | 1.3 | | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.3 | | | | | | | | | | |
| SS | 2.0 | 2.0 | | | | | | | | | | |
| | | | | | | | | 10 | | | | |
| SS | 2.0 | 1.8 | | | | | 411.0 | | | | | Top of undisturbed material at 11.0 Ft. |
| | | | | | | | | | | | 11.0 - 13.7 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Low moisture content, soft to medium stiff, moderately plastic. Trace of very fine-grained sand and organic material as blebs. | |
| SS | 2.0 | 1.2 | | | | | 408.3 | | | | | |
| | | | | | | | 408.0 | | | | 13.7 - 14.0 Ft. Silty SAND (SM). Low moisture content, soft. Fine laminae of black (N1) organics. | Samples from 4-14 Ft. obtained by advancing sampler with the augerhead. No blow counts taken. |
| | | | | | | | | | | | Bottom of borehole at 14.0 Ft. Borehole backfilled with bentonite cement, 4/15/88. | |
| | | | | | | | | | | | | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R17

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R18 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,658 E 2,386 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-22-88 | 3-24-88 | Layne-Western, Co. | CME-55 | 6.5" | 18.5 | | 18.5 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 424.0 | ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.0 | | | | | |
| | | | | | | | 423.4 | | | | 0.0 - 0.6 Ft. ASPHALT. | Borehole advanced 0-18.5 Ft. with 6.5-in. O.D. hollow-stem auger. |
| SS | 1.3 | 1.0 | 7-6-5/4" | | | | | | | | 0.6 - 16.5 Ft. Silty CLAY and RUBBLE. | |
| SS | 2.0 | 1.8 | 4-5-9 13 | | | | | | | | 0.6-8.8 Ft. Silty CLAY (CL). Dark yellowish brown (10YR4/2). Dry to low moisture content, medium stiff. Minor amounts of rubble consisting of brick, gravel and pebbles. Moderate yellowish brown (10YR5/4) Fe staining. | |
| SS | 2.0 | 1.6 | 4-7-10 10 | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.5 | 4-6-6 6 | | | | | | | | | |
| SS | 2.0 | 1.6 | 3-5-4 4 | | | | | | | | | |
| SS | 2.0 | 2.0 | 6-4-4 3 | | | | | 10 | | | 8.8-15.3 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of slag, carbonaceous material, brick, sand and pebbles. Patches of olive gray (5Y4/1) silt and dark yellowish brown (10YR4/2) silty clay. Light brown (5YR5/6) Fe staining. | Top of undisturbed material at 15.3 Ft. |
| SS | 2.0 | 2.0 | 3-3-3 5 | | | | | | | | | |
| SS | 2.0 | 1.8 | 2-2-6 7 | | | | 408.7 | 15 | | | 14.5-15.0 Ft. Lime; moist, gritty. | |
| SS | 2.0 | 1.4 | 5-16-13 10 | | | | 407.5 | | | | 15.3 - 16.5 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to dark greenish gray (5GY4/1). Moist, medium stiff, moderately plastic. Trace of organic material as blebs, including several rootlets. Dessication cracks. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | 405.5 | | | | 16.5 - 18.5 Ft. Silty SAND (SM). Olive gray (5Y4/1). Low moisture content, stiff, slightly plastic. Very fine-grained sand. | |
| | | | | | | | | | | | Bottom of borehole at 18.5 Ft. Borehole grouted to bottom of asphalt bentonite cement, 3/24/88. | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R18

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R19 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,694 E 2,439 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-7-88 | 4-7-88 | Layne-Western Co. | Mobile B-40 | 6 3/4" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 424.6 | ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS / % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.6 | | | | | |
| | | | | | | | 424.1 | | | | 0.0 - 0.5 Ft. CONCRETE. | Borehole advanced 0-20 Ft. with 6-3/4 in. O.D. hollow-stem auger. Radiologically sampled and gamma-logged by TMA/Eberline, Inc. |
| | | | | | | | 423.5 | | | | 0.5 - 1.1 Ft. Gravel FILL. | |
| | | | | | | | 422.7 | | | | 1.1 - 1.9 Ft. CONCRETE. | |
| SS | 2.0 | 2.0 | 6-19-19 16 | | | | | | | | 1.9 - 16.2 Ft. FILL. Dusky yellowish brown (10YR 2/2) to brownish black (5YR 2/1) clayey silt and silty sand, crushed brick and gravel, and pieces of coal. Dry and loose. Lenses of dark yellowish orange (10YR 6/6) clay throughout interval. Moist, slightly plastic, and crumbly. | |
| SS | 2.0 | 0.9 | 6-16-18 8 | | | | | 5 | | | | |
| SS | 2.0 | 1.9 | 4-7-7 5 | | | | | | | | | |
| SS | 2.0 | 1.7 | 3-2-7 6 | | | | | 10 | | | | |
| SS | 2.0 | 1.7 | 3-2-2 5 | | | | | | | | | |
| SS | 2.0 | 1.9 | 1-4-3 4 | | | | | 15 | | | | |
| SS | 2.0 | 1.8 | 1-1-2 4 | | | | | | | | | |
| SS | 2.0 | 2.0 | 9-7-3 7 | | | | 408.4 | | | | 16.2 - 20.0 Ft. Silty SAND (SM). Light olive gray (5Y5/2). Moderately plastic. Moisture varies from wet to moist with depth. Loose and crumbly. Organics present. | Top of undisturbed material at 16.2 Ft. |
| | | | | | | | 404.6 | 20 | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 4/7/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R19

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R20 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,680 E 2,545 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-6-88 | 4-6-88 | Layne-Western Co. | Mobile B-40 | 6 3/4" | 18.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 424.6 | ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.6 | | | | | |
| | | | | | | | 424.2 | | | | 0.0 - 0.4 Ft. CONCRETE. | Borehole advanced 0-18 Ft. with 6-3/4 in. O.D. hollow-stem auger. Radiologically sampled and gamma-logged by TMA/Eberline, Inc. |
| SS | 2.0 | 1.1 | 4-8 10/0" | | | | | | | | 0.4 - 2.1 Ft. Gravel FILL. | |
| | | | | | | | 422.5 | | | | 2.1 - 3.3 Ft. CONCRETE. | |
| | | | | | | | 421.3 | | | | | |
| SS | 2.0 | 0.2 | 5-5-4 3 | | | | | 5 | | | 3.3 - 14.6 Ft. FILL. Crushed concrete, gravel, brick, and slag. Clayey silt varying from dusky yellowish brown (10YR2/2) to dark yellowish brown (10YR4/2). Dry and loose. | |
| SS | 2.0 | 1.4 | 2-1-2 5 | | | | | | | | | |
| SS | 2.0 | 1.0 | 2-1-1 1 | | | | | | | | 7.0-7.4 Ft. Sandy SILT (ML). Sand is white to clear. Very fine-grained and subrounded. | |
| SS | 2.0 | 1.2 | 3-4-3 3 | | | | | 10 | | | | Top of undisturbed material at 14.6 Ft. |
| SS | 2.0 | 1.7 | 7-4-2 5 | | | | | | | | 11.1-14.6 FT. Silty CLAY (CL) grading to silty SAND (SM). Silt is light olive gray (5Y5/2), silty CLAY is dark yellowish brown (10YR4/2) to light brown (5YR5/6). Moist. Clay is moderately plastic. Sand is poorly graded. | |
| SS | 2.0 | 1.9 | 5-3-4 5 | | | | 410.0 | 15 | | | 14.6 - 18.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moderately plastic, stiff consistency, moist, medium-stiff thread. Possible reworking? | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | 406.6 | | | | Bottom of borehole at 18.0 Ft. Borehole backfilled with bentonite cement, 4/6/88. | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| St. Louis Downtown Site | B16R20 |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R21 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,704 E 2,613 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-1-88 | 4-1-88 | Layne-Western Co. | Mobile B-40 | 6 3/4" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 424.6 | ▽ / ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.6 | | | | | |
| | | | | | | | 424.0 | | | | 0.0 - 0.6 Ft. CONCRETE. | Borehole advanced 0-20 Ft. with 6-3/4 in. O.D. hollow-stem auger. Radiologically sampled and gamma-logged by TMA/Eberline, Inc. |
| SS | 2.0 | 1.6 | 14-31-20 13 | | | | | | | | 0.6 - 16.2 Ft. FILL. | |
| SS | 2.0 | 1.7 | 4-5-8 14 | | | | | | | | 0.6-1.0 Ft. Gravel fill material. | |
| SS | 2.0 | 1.8 | 9-4-7 5 | | | | | 5 | | | 1.0-2.6 Ft. Crushed gravel, clayey silt. Moderate yellowish brown (10YR5/4) to dusky brown (5YR2/2). Dry and loose. | |
| SS | 2.0 | 1.5 | 3-3-2 2 | | | | | | | | 2.6-16.2 Ft. Clayey silt to silty gravel fill. Dusky yellow green (5GY5/2) silt coating on sample surface. Clayey silt is dusky yellowish brown (10YR2/2), dry and firm consistency. | |
| SS | 2.0 | 1.7 | 4-3-3 12 | | | | | 10 | | | | Top of undisturbed material at 16.2 Ft. |
| SS | 2.0 | 1.6 | 4-4-5 4 | | | | | | | | | |
| SS | 2.0 | 2.0 | 1-1-2 2 | | | | | 15 | | | | |
| SS | 2.0 | 2.0 | 1-2-2 3 | | | | 408.4 | | | | 16.2 - 20.0 Ft. Silty CLAY (CL). Dark greenish gray (5G4/1). Moist, stiff consistency, slightly plastic. Breaks up when rolled. Small pieces of decomposed twigs. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | 404.6 | 20 | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 4/1/88. | |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R21

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R22A |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,640 E 2,670 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-15-88 | 3-15-88 | Layne-Western, Co. | CME-55 | 6.5" | 0.6 | | 0.6 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 0 | | 423.9 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 423.9 | | | | |
| | | | | | | | 423.3 | | | 0.0 - 0.6 Ft. CONCRETE. | Borehole advanced 0-0.6 Ft. with 6.5-in. O.D. hollow-stem auger. |
| | | | | | | | | | | Bottom of boring at 0.6 Ft.<br>Borehole patched with concrete, 3/15/88. | Auger refusal at 0.6 Ft. (subsurface 3/4" rebar broke a U-joint on the rig). |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R22A

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R22B |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,702 E 2,083 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-27-88 | 4-27-88 | Layne-Western, Co. | CME-55 | 6.5" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 423.9 | ▽ 12.5/411.4 4/27/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 423.9 | | | | | |
| | | | | | | | 423.2 | | | | 0.0 - 0.7 Ft. CONCRETE. | Borehole advanced 0-16 Ft. with 6.5-inch O.D. hollow-stem auger. |
| SS | 1.2 | 0.8 | 5-7-3/3" | | | | | | | | 0.7 - 13.5 Ft. Silty CLAY (CL) and RUBBLE. | |
| SS | 2.0 | 1.5 | 7-22-18 15 | | | | | | | | 0.7-2.4 Ft. Pale yellowish brown (10YR6/2) to moderate yellowish brown (10YR5/4). Dry to low moisture content, medium stiff. Rubble consists of brick, carbonaceous material and sand. | |
| SS | 2.0 | 1.3 | 4-2-1 2 | | | | | 5 | | | | |
| SS | 2.0 | 1.2 | 2-4-2 3 | | | | | | | | 2.4-13.5 Ft. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of carbonaceous material, slag, sand, gravel, brick and wood. Patches of dark yellowish brown (10YR4/2) silty clay and moderate olive brown (5Y4/4) silty sand. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.6 | 2-3-2 2 | | | | | | | | | |
| SS | 2.0 | 1.8 | 1-1-2 3 | | | | | 10 | | | | Top of undisturbed material at 13.5 Ft. |
| SS | 2.0 | 1.5 | 1-1-2 2 | | | | | | | | | |
| | | | | | | | 410.4 | | | | 13.5 - 16.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, soft to medium stiff, slightly plastic. Minor amounts of very fine-grained sand. Fine laminae of black (N1) organics. | |
| SS | 2.0 | 1.2 | 2-2-4 6 | | | | | 15 | | | | |
| | | | | | | | 407.9 | | | | Bottom of borehole at 16.0 Ft. Borehole backfilled with bentonite cement, 4/27/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R22B

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R23 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,506 E 2,216 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-28-88 | 3-28-88 | Layne-Western, Co. | CME-55 | 6.5" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 421.1 | ▽ 10.8/410.3 3/28/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 421.1 | | | | |
| | | | | | | | 420.5 | | | 0.0 - 0.6 Ft. CONCRETE. | Borehole advanced 0-16 Ft. with 6.5-inch hollow-stem auger. |
| SS | 1.2 | 0.5 | 2-7-7/3" | | | | | | | 0.6 - 12.7 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of carbonaceous material, slag, gravel, brick and sand. Light brown (5YR5/6) Fe staining. | |
| SS | 2.0 | 2.0 | 12-13-9 5 | | | | | | | | |
| SS | 2.0 | 0.8 | 3-4-7 4 | | | | | 5 | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 0.5 | 2-2-2 3 | | | | | | | | |
| SS | 2.0 | 1.6 | 2-2-3 2 | | | | | | | | |
| SS | 2.0 | 1.4 | 1-2-2 3 | | | | | 10 | | | Top of undisturbed material at 12.7 Ft. |
| SS | 2.0 | 1.1 | 3-2-3 8 | | | | 408.4 | | | 12.7 - 16.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moderate moisture content, medium stiff, moderately plastic. Trace of organic material as blebs including several rootlets. | |
| SS | 2.0 | 0.8 | 4-9-9 6 | | | | | 15 | | | |
| | | | | | | | 405.1 | | | Bottom of borehole at 16.0 Ft. Boring grouted to bottom of concrete with bentonite cement, 3/28/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; O = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| St. Louis Downtown Site | B16R23 |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R24 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,560 E 2,291 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-23-88 | 3-25-88 | Layne-Western, Co. | CME-55 | 6.5" | 21.0 | | 21.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 423.6 | ▽ 7.5/416.1 3/23/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 In | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 423.6 | | | | | |
| | | | | | | | 423.0 | | | | 0.0 - 0.6 Ft. ASPHALT. | Borehole advanced 0-21 Ft. with 6.5-inch O.D. hollow-stem auger. |
| SS | 1.4 | 1.3 | 6-7-8/5" | | | | 422.5 | | | | 0.6 - 1.1 Ft. Sandy GRAVEL. | |
| | | | | | | | | | | | 1.1 - 15.0 Ft. Silty CLAY (CL) and RUBBLE. | |
| SS | 2.0 | 1.5 | 5-7-8 9 | | | | | | | | 1.1-4.6 Ft. Moderate yellowish brown (10YR5/4) to dark yellowish brown (10YR4/2). Low moisture content, medium stiff. Minor amounts of carbonaceous material, pebbles and sand. Patches of olive gray (5Y4/1) silt. | |
| SS | 2.0 | 1.8 | 4-10-11 31 | | | | | 5 | | | | Radiologically sampled and gamma-logged to 18 Ft. by TMA/Eberline, Inc. |
| SS | 2.0 | 1.3 | 10-3-5 15 | | | | | | | | 4.6-15.0 Ft. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose. Rubble consists slag, carbonaceous material, gravel and brick. Patches of light olive gray (5Y6/1) to greenish gray (5GY6/1) silty clay. Light brown (5YR5/6) Fe staining. | |
| SS | 2.0 | 1.6 | 2-4-7 8 | | | | | | | | | |
| SS | 2.0 | 1.7 | 2-3-5 5 | | | | | 10 | | | | Advanced 18-21 Ft. on 3/25/88 with no samples taken. |
| SS | 2.0 | 0.8 | 2-5-7 5 | | | | | | | | | |
| SS | 2.0 | 2.0 | 2-4-4 7 | | | | 408.6 | 15 | | | 15.0 - 17.2 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to dark greenish gray (5GY4/1). Moist, medium stiff, moderately plastic. Minor amounts of organic material as blebs including small slivers of partially decayed wood. | |
| SS | 2.0 | 1.7 | 6-10-14 15 | | | | 406.4 | | | | | Top of undisturbed material at 15.0 Ft. |
| | | | | | | | | | | | 17.2 - 21.0 Ft. Silty SAND (SM). Olive gray (5Y4/1). Moist, medium stiff. Very fine-grained sand. Top 4 inches silt with dessication cracks. Stringers of moderate reddish brown (10R4/6) Fe staining between cracks. | |
| | | | | | | | | 20 | | | | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | 402.6 | | | | Bottom of borehole at 21.0 Ft. Boring grouted to bottom of asphalt with bentonite cement, 3/25/88. | |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R24

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R26 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,515 E 2,351 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-22-88 | 3-24-88 | Layne-Western, Co. | CME-55 | 6.5" | 16.5 | | 16.5 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 422.0 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.0 | | | | | |
| | | | | | | | 421.4 | | | | 0.0 - 0.6 Ft. ASPHALT. | Borehole advanced 0-16.5 Ft. with 6.5-in. O.D. hollow-stem auger. |
| SS | 1.0 | 0.9 | 8-13 | | | | | | | | 0.6 - 13.0 Ft. Silty CLAY (CL) and RUBBLE. | |
| SS | 2.0 | 1.5 | 9-9-14 5 | | | | | | | | 0.6-6.9 Ft. Dark yellowish brown (10YR4/2). Dry to low moisture content, medium stiff. Minor amounts of rubble consisting of slag, brick, gravel, sand and glass. Light brown (5YR5/6) Fe staining. | |
| SS | 2.0 | 1.7 | 5-6-6 9 | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.7 | 4-2-4 3 | | | | | | | | 6.9-13.0 Ft. Brownish black (5YR2/1) to grayish black (N2). Low moisture content, loose. Rubble consists of slag, carbonaceous material, brick and gravel. Patches of dark yellowish brown (10YR4/2) to light olive gray (5Y6/1) silty clay. Light brown (5Y5/6) Fe staining. | |
| SS | 2.0 | 1.7 | 4-4-4 4 | | | | | | | | | |
| SS | 2.0 | 1.7 | 2-4-4 5 | | | | | 10 | | | | Top of undisturbed material at 13.0 Ft. |
| SS | 2.0 | 1.8 | 3-3-5 5 | | | | 409.0 | | | | | |
| SS | 2.0 | 1.0 | 2-4-5 10 | | | | | | | | 13.0 - 16.5 Ft. Silty SAND (SM). Olive gray (5Y4/1). Low moisture content, soft to medium stiff, slightly plastic. Very fine-grained sand. | |
| | | | | | | | | 15 | | | | |
| | | | | | | | 405.5 | | | | Bottom of borehole at 16.5 Ft. Borehole grouted to bottom of asphalt with bentonite cement, 3/24/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R26

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R27 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,447 E 2,365 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 2-22-88 | 3-10-88 | Layne-Western, Co. | Mobile B-53 | 8 1/4" | 18.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 422.9 | ▽ 13.2/409.7 3/7/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.9 | | | | | |
| SS | 2.0 | 1.2 | 4-5-7 13 | | | | 422.7 | | | | 0.0 - 0.2 Ft. Sandy GRAVEL. | Borehole advanced 0-18 Ft. with 8 1/4-in. O.D. hollow-stem auger. |
| SS | 2.0 | 0.8 | 4-7-13 13 | | | | | | | | 0.2 - 13.7 Ft. Silty CLAY (CL) and RUBBLE. | |
| SS | 2.0 | 1.2 | 3-1-1 2 | | | | | 5 | | | 0.2-3.0 Ft. Moderate yellowish brown (10YR5/4) to dark yellowish brown (10YR4/2). Dry, stiff. Trace amounts of rubble consisting of brick, slag and coarse sand. Fe staining. | |
| SS | 2.0 | 0.8 | 3-4-5 6 | | | | | | | | 3.0-13.7 Ft. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of brick, slag, gravel, glass, particle board, concrete and coarse-grained sand. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.2 | 3-2-1 9 | | | | | | | | 5.0-5.6 Ft. Clear glass. | |
| SS | 2.0 | 1.2 | 4-2-1 1 | | | | | 10 | | | | Top of undisturbed material at 13.7 Ft. |
| SS | 2.0 | 1.2 | 3-4-3 4 | | | | | | | | | |
| | | | | | | | 409.2 ▽ | | | | | |
| SS | 2.0 | 0.0 | 4-4-5 8 | | | | | 15 | | | 13.7 - 18.0 Ft. Clayey SILT (ML). Dark greenish gray (5GY4/1). Moist, soft to medium stiff, slightly plastic. Trace amounts of medium-grained sand. Trace amounts of organic material as blebs and stringers. | |
| SS | 2.0 | 1.5 | 3-6-8 11 | | | | 404.9 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 18.0 Ft. Boring grouted to surface with bentonite cement, 3/10/88. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R27

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R28 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,444 E 2,511 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 2-23-88 | 2-23-88 | Layne-Western, Co. | CME-55 | 6 3/4" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 423.9 | ▽ 10.7/413.2 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 In | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.5 | 5-6-10 15 | | | | 423.9 | | | | 0.0 - 14.0 Ft. Fill. | Borehole advanced 0-16 Ft. with 6-3/4 in. O.D. hollow-stem auger. Radiologically sampled and gamma-logged by TMA/Eberline, Inc. |
| SS | 2.0 | 1.4 | 6-12-12 9 | | | | | | | | 0.5-8.0 Ft. CLAY (CL). Moist, firm consistency. Pieces of brick, coal and slag products dispersed throughout. Color mottled throughout entire sample. | |
| SS | 2.0 | 0.6 | 7-6-9 8 | | | | | 5 | | | 0.5-1.0 Ft. Moderate yellowish brown (10YR5/4). | |
| SS | 2.0 | 1.5 | 4-7-4 4 | | | | | | | | 1.0-2.0 Ft. Dusky yellowish brown (10YR2/2). | |
| SS | 2.0 | 1.3 | 2-3-9 6 | | | | | | | | 2.0-2.4 Ft. Mottled with pale olive (10Y6/2). | |
| SS | 2.0 | 1.5 | 3-2-4 5 | | | | | | | | 2.4-6.0 Ft. Dusky yellowish brown (10YR2/2). Dry, held loosely together. | |
| SS | 2.0 | 1.5 | 3-2-5 3 | | | | | 10 | | | 6.0-8.0 Ft. Pale olive (10Y6/2). Soft to firm consistency, moderately plastic, moist. | Top of undisturbed material at 14.0 Ft. |
| SS | 2.0 | 1.5 | 2-3-7 14 | | | | | | | | 8.0-14.0 Ft. Silty CLAY (CL). Pale olive (10Y6/2) to grayish olive (10Y4/2). Moist, moderately plastic. Small pieces of brick and limestone fill material distributed throughout. | |
| | | | | | | | 409.9 | | | | | |
| | | | | | | | | 15 | | | 11.0 Ft. Clay becomes saturated. | |
| | | | | | | | 407.9 | | | | 12.0-14.0 Ft. Siltier. Stains black. Fine coal particles present. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | 14.0 - 16.0 Ft. CLAY (CL-CH). Olive gray (5Y4/1). Firm consistency, moist, highly plastic, somewhat 'fatty'. Small amounts of mica minerals present. | |
| | | | | | | | | | | | Bottom of borehole at 16.0 Ft. Borehole backfilled with bentonite cement, 2/23/88. | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. B16R28

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R29 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,441 E 2,768 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 2-19-88 | 2-19-88 | Layne-Western, Co. | CME-55 | 6 3/4" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 423.0 | ▽ 11.5/411.5 3/2/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 1.5 | 1.3 | 6-5-4 | | | | 423.0 | | | | 0.0 - 8.0 Ft. Silty CLAY (CL) and RUBBLE. | Borehole advanced 0-16 Ft. with 6-3/4 in. O.D. hollow-stem auger. Radiologically sampled and gamma-logged by TMA/Eberline, Inc. |
| SS | 2.0 | 1.5 | 7-4-4 6 | | | | | | | | 0.0-5.4 Ft. CLAY (CL). Dark yellowish orange (10YR6/6). Moist, crumbly. Occasional pieces of brick, crushed limestone fill material, and slag products. | |
| SS | 2.0 | 1.4 | 2-3-3 4 | | | | | 5 | | | | |
| SS | 2.0 | 1.4 | 2-9-7 9 | | | | | | | | 5.4-7.5 Ft. Silty CLAY (CL). Dark yellowish orange (10YR6/6). Moist, soft crumbly consistency. Trace of very fine-grained sand. | |
| SS | 2.0 | 0.9 | 2-3-2 4 | | | | 415.0 414.1 | | | | 7.5-8.0 Ft. LIMESTONE. Light bluish gray (5B7/1). Broken up pieces, approximately 1/2-1 inches in diameter. | |
| SS | 2.0 | 1.1 | 1-3-2 4 | | | | | 10 | | | 8.0 - 8.9 Ft. SAND (SM). Dark gray (N4). Predominantly fine- to medium-grained, well sorted, wet, nonstratified. | Top of undisturbed material at 14.0 Ft. |
| SS | 2.0 | 1.3 | 2-1-3 2 | | | | | | | | 8.9 - 14.0 Ft. Silty CLAY (CL). Grayish black (N2). | |
| SS | 2.0 | 1.3 | 6-7-8 8 | | | | 409.0 | | | | 8.9-12.0 Ft. Slighty moist, soft and crumbly. Some bands of fine-grained sands throughout. | |
| | | | | | | | | 15 | | | | |
| | | | | | | | 407.0 | | | | 12.0-14.0 Ft. Saturated. Slightly plastic. Contains small pieces of particle board and slag products. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | 14.0 - 16.0 Ft. Clayey SILT (ML-MH). Dark gray (N3). Wet, moderately plastic. Firm consistency. Medium-stiff thread. | |
| | | | | | | | | | | | Bottom of borehole at 16.0 Ft. Borehole backfilled with bentonite cement, 2/19/88. | |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R29

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R30 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,432 E 2,870 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 2-19-88 | 3-9-88 | Layne-Western, Co. | Mobile B-53 | 8 1/4" | 18.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 422.2 | ▽ 10.9/411.4 3/7/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE # | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.2 | | | | | |
| SS | 1.3 | 1.0 | 13-9-8/4 | | | | 421.5 | | | | 0.0 - 0.7 Ft. CONCRETE. | 0-18.0 FT advanced with 8 1/4" O.D. hollow stem auger. |
| SS | 2.0 | 1.5 | 16-15-8 7 | | | | | | | | 0.7 - 15.5 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Dry to moist, loose. Rubble consists of bricks, coal, gravel, glass, coarse-grained sand and slag. | |
| SS | 2.0 | 1.2 | 3-3-3 2 | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 1.1 | 4-5-3 4 | | | | | | | | | |
| SS | 2.0 | 1.2 | 5-4-3 3 | | | | | 10 | | | | |
| SS | 2.0 | 0.7 | 6-2-3 4 | | | | | ▽ | | | | Top of undisturbed material at 15.5 ft. |
| SS | 2.0 | 1.2 | 4-2-2 3 | | | | | | | | | |
| SS | 2.0 | 1.0 | 0-0-2-2 | | | | | 15 | | | 14-15 Ft., and 16-17.5 Ft. Sampler advances upon seating of hammer and rods. | |
| | | | | | | | 406.7 | | | | 15.5 - 18.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to dark greenish gray (5GY4/1). Moist, soft, moderately plastic. Organic fragments and blebs including a 1/2 in. piece of driftwood. | |
| SS | 2.0 | 1.3 | 0-0-0-2 | | | | 404.2 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 18.0 Ft. Boring grouted to bottom of concrete with bentonite, 3/9/88. | Color descriptions from the GSA Rock Color Chart (1948). |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R30

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R31 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,418 E 2,980 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 2-29-88 | 3-2-88 | Layne-Western, Co. | Mobile B-53 | 8 1/4" | 18.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 422.9 | 11.2/411.8 3/2/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G.Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.9 | | | | 0.0 - 0.8 Ft. CONCRETE. | |
| SS | 1.2 | 0.8 | 8-10-2/2 | | | | 422.1 | | | | 0.8 - 14.5 Ft. Silty CLAY (CL) and RUBBLE. | 0-18.0 FT advanced with 8 1/4" O.D. hollow stem auger. |
| SS | 2.0 | 0.0 | 3-3-2 1 | | | | | | | | 0.8-3.0 Ft. Moderate yellowish brown (10YR5/4). Dry, stiff. Minor amounts of rubble consisting of brick, loose sand and pebbles. | |
| SS | 2.0 | 0.9 | 2-2-2 3 | | | | | 5 | | | 3.0-14.5 Ft. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of brick, slag, gravel and coarse-grained sand. | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 0.7 | 1-2-3 4 | | | | | | | | | |
| SS | 2.0 | 1.0 | 2-2-1 1 | | | | | 10 | | | | |
| SS | 2.0 | 0.4 | 2-1-0-0 | | | | | | | | 9.7-10.0 Ft. 4-in. layer of greenish gray (5GY6/1) silty clay with low moisture content; stiff. | Top of undisturbed material at 14.5 ft. |
| SS | 2.0 | 1.0 | 2-1-3 1 | | | | | | | | 11.0-12.0 Ft. Sampler advances upon seating of hammer and rods. | |
| SS | 2.0 | 1.6 | 1-4-3 3 | | | | 408.4 | 15 | | | 14.5 - 18.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to olive black (5Y2/1). Moist, soft, moderately plastic. Trace of organic material as blebs. | |
| SS | 2.0 | 1.7 | 1-1-4 5 | | | | 404.9 | | | | Bottom of borehole at 18.0 Ft. Boring grouted to bottom of concrete with bentonite cement, 3/2/88. | Color descriptions from the GSA Rock Color Chart (1948). |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R31

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R32 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,411 E 2,560 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-30-88 | 3-30-88 | Layne-Western Co. | Mobile B-40 | 6 3/4" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 425.0 | ▽ / / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 425.0 | | | | |
| | | | | | | | 424.0 | | | 0.0 - 1.0 Ft. CONCRETE. | 0-20.0 ft. advanced with 6-3/4 in. O.D. hollow stem auger. |
| SS | 2.0 | 1.6 | 7-11-9 5 | | | | | | | 1.0 - 17.4 Ft. FILL. Brownish black (5YR2/1) to brownish gray (5YR4/1). Contains brick, gravel fill, coal, silt and clay. Dry and loose. | Sampled and gamma logged by TMA/Eberline, Inc. |
| SS | 2.0 | 1.9 | 3-10-14 5 | | | | | | | | |
| SS | 2.0 | 1.7 | 9-6-4 4 | | | | | 5 | | 4.6-4.9 Ft. CLAY. Light olive gray (5Y6/1). Stiff consistency, slightly plastic, moist. Crumbles when balled. Contains pieces of limestone gravel fill. | |
| SS | 2.0 | 1.1 | 3-4-4 5 | | | | | | | 5.0-8.1 Ft. CLAY and FILL. Color varies from grayish green (10GY5/2) to olive gray (5Y4/1). Stiff consistency, crumbles. Fill contains limestone gravel fill, brick, and coal mixture. Loose and dry. | |
| SS | 2.0 | 1.3 | 2-5-3 2 | | | | | 10 | | | |
| SS | 2.0 | 2.0 | 4-5-4 4 | | | | | | | 9.0-9.7 Ft. CLAY. Dark greenish gray (5G4/1) changing to light bluish gray (5B7/1) with depth. Plasticity increases with depth. | Top of undisturbed material at 17.4 ft. |
| SS | 2.0 | 1.9 | 2-3-5 7 | | | | | | | 10.0-17.4 Ft. CLAY to silty CLAY. Grayish green (10GY5/2) to grayish olive (10Y4/2). Silt content increases with depth. Moderately plastic, moist. | |
| SS | 2.0 | 0.6 | 4-10-8 5 | | | | | 15 | | | |
| SS | 2.0 | 2.0 | 2-3-4 5 | | | | 407.6 | | | 17.4-20.0 Ft. Silty CLAY (CL). Dark greenish gray (5GY4/1) to dark gray (N3). Stiff consistency, moderately plastic, stiff thread, moist. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | 405.0 | 20 | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 3/30/89. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R32

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R33 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,325 E 2,600 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-18-88 | 3-28-88 | Layne-Western Co. | Mobile B-40 | 6 3/4" | 21.0 | | 21.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 425.0 | ▽ / / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 425.0 | | | | 0.0 - 1.0 Ft. CONCRETE. | 0-21.0 ft. advanced with 6-3/4 in. O.D. hollow stem auger. |
| SS | 2.0 | 1.2 | 8-4-1 5 | | | | 424.0 | | | | 1.0 - 17.3 Ft. Silty CLAY (CL) and RUBBLE. | Sampled and gamma logged by TMA/Eberline, Inc. |
| SS | 2.0 | 1.2 | 3-3-2 3 | | | | | | | | 1.0-3.0 Ft. Limestone gravel and slag. Dry. | |
| SS | 2.0 | 1.8 | 1-5-5 17 | | | | | 5 | | | 1.5-2.2 Ft. Clayey SILT. Moderate yellowish brown (10YR5/4) to dusky yellowish brown (10YR2/2). Balls up, nonplastic, moist. | Top of undisturbed material at 17.3 ft. |
| SS | 2.0 | 1.4 | 3-3-4 7 | | | | | | | | 3.0-3.4 Ft. CLAY. Moderate yellowish brown (10YR5/4). Moist, moderately plastic, soft thread, homogeneous. | |
| SS | 2.0 | 0.8 | 3-4-5 5 | | | | | 10 | | | 3.4-5.0 Ft. FILL. Brick, limestone gravel, slag. Small amounts of clayey silt, dusky yellowish brown (10YR2/2). | |
| SS | 2.0 | 1.5 | 4-5-7 9 | | | | | | | | 5.0-6.5 Ft. CLAY. Moderate yellowish brown (10YR5/4) to dark yellowish brown (10YR4/2). Firm, slightly plastic, moist. Pieces of fill material throughout. | |
| SS | 2.0 | 0.2 | 8-7-4 5 | | | | | | | | 6.5-7.0 Ft. FILL. Dusky yellowish brown (10YR2/2). Slag, brick, and limestone gravel. Loose. | |
| SS | 2.0 | 0.5 | 2-3-3 3 | | | | | 15 | | | 7.0-11.8 Ft. CLAY. Moderate yellowish brown (10YR5/4) to dark greenish gray (5GY4/1). Slightly plastic, medium stiff thread, firm consistency, moist. Small amounts of fill. | ENMET alarm: LEL 20%, Toxic 5 bars. Vented hole to reduce potential hazards. Color descriptions from the GSA Rock Color Chart (1948). |
| SS | 2.0 | 1.5 | 1-1-2 4 | | | | 407.7 | | | | 11.8-12.5 Ft. FILL. Black (N1). Silty, coal, some clay particles. Moist. Small amounts of pieces of brick and limestone gravel. | |
| SS | 2.0 | 1.7 | 1-4-5 5 | | | | | 20 | | | 13.0-13.2 Ft. CLAY. Grayish black (N2). Thin thread, moderately plastic, moist. | |
| | | | | | | | 404.0 | | | | 15.0 Ft. Fill becomes saturated. Organics present, slightly plastic. | |
| | | | | | | | | | | | 17.3 - 21.0 Ft. CLAY (CL-CH). Greenish black (5GY2/1) to olive black (5Y2/1). Stiff thread, moderately plastic, moist, firm consistency. Organics. | |
| | | | | | | | | | | | Bottom of borehole at 21.0 Ft. Borehole backfilled with bentonite cement, 3/28/88. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R33

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R34 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,382 E 2,882 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-31-88 | 3-31-88 | Layne-Western Co. | Mobile B-40 | 4" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 422.5 | ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.5 | | | | 0.0 - 1.0 Ft. CONCRETE. | 0-20.0 ft. advanced with 3-1/2 in. O.D. split-spoon. |
| SS | 2.0 | 1.8 | | | | | 421.5 | | | | 1.0 - 17.9 Ft. Clayey SILT (CL) and RUBBLE. | Sampled and gamma logged by TMA/Eberline, Inc. |
| SS | 2.0 | 1.7 | | | | | | | | | 1.0-13.6 Ft. Fill varies from grayish brown (5YR3/2) to brownish black (5YR2/1). Contains coal, brick, slag, small amounts of porcelain and glass. Dry and loose. Varying amounts of silt and clay. | |
| SS | 2.0 | 0.5 | | | | | | 5 | | | 5.0-5.5 Ft. Clayey SILT. Light olive gray (5Y6/1). Dry. | |
| SS | 2.0 | 1.5 | | | | | | | | | | |
| SS | 2.0 | 1.8 | | | | | | 10 | | | | Top of undisturbed material at 17.9 ft. |
| SS | 2.0 | 0.7 | | | | | | | | | | |
| SS | 2.0 | 0.8 | | | | | | | | | 13.6-13.8 Ft. Silty CLAY, dark greenish gray (5GY4/1). Moderately plastic, soft consistency, wet. Organics present. | |
| SS | 2.0 | 0.2 | | | | | | 15 | | | 15.0-17.9 Ft. Fill is saturated. Contains sandy silt. Loosely bound. | Color descriptions from the GSA Rock Color Chart (1948). |
| SS | 2.0 | 1.5 | | | | | 404.6 | | | | 17.9 - 20.0 Ft. Silty CLAY. Dark greenish gray (5G4/1). Stiff consistency, moderately plastic, dense structure, moist. | |
| | | | | | | | 402.5 | 20 | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 3/31/88. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R34

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R35 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,307 E 2,921 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-8-88 | 3-9-88 | Layne-Western Co. | Mobile B-40 | 6 3/4" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 425.0 | ▽ 13.5/411.5 3/10/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 425.0 | | | | 0.0 - 0.8 Ft. CONCRETE.<br>0.8-1.0 Ft. VOID. | 0-20.0 ft. advanced with 6-3/4 in. O.D. hollow stem auger. |
| SS | 2.0 | 1.1 | 2-5-7<br>11 | | | | 424.0 | | | | 1.0 - 14.5 Ft. Silty CLAY (CL) and RUBBLE.<br>1.0-1.4 Ft. CLAY (CL). Olive gray (5Y4/1). Mottled pale yellowish brown (10YR6/2). Moist, slightly plastic, weak thread. Also very small pieces of fill material. | Sampled and gamma logged by TMA/Eberline, Inc. |
| SS | 2.0 | 0.2 | 9-6-4<br>4 | | | | | | | | | |
| SS | 2.0 | 0.0 | 4-4-4<br>6 | | | | | 5 | | | 1.4-4.8 Ft. FILL. Grayish black (N2). Dry and sooty. Mostly slag products. | Top of undisturbed material at 14.5(?) ft. |
| SS | 2.0 | 0.0 | 8-5-2<br>3 | | | | | | | | 4.7-5.1 Ft. CLAY. Moderate yellowish brown (10YR5/4). Mottled grayish black (N2). Dry, firm consistency, slightly plastic, unable to roll into thread. | |
| SS | 2.0 | 0.0 | 12-8-5<br>5 | | | | | 10 | | | 5.1-9.0 Ft. CLAY. Olive black (5Y2/1), mottled dark yellowish brown (10YR4/2). Moist, moderately plastic, soft consistency, soft thread. Small pieces of brick and limestone fill, approximately 2%. | TMA/Eberline, Inc. obtained auger samples for 5-11 ft. due to poor recovery. |
| SS | 2.0 | 0.3 | 2-2-1<br>1 | | | | | | | | | |
| SS | 1.0 | 0.3 | 3-2 | | | | | | | | 9.0-14.5 Ft. Clayey SILT (CL). Brownish black (5YR2/1). Dry, very fine-grained sand and very small pieces of rubble. Soft consistency, nonplastic, rapid dilatancy. | |
| SS | 2.0 | 1.5 | 2-1-2<br>1 | | | | 410.5 | 15 | | | 13.0 Ft. Becomes saturated. | |
| SS | 2.0 | 2.0 | 2-2-1<br>2 | | | | 408.6 | | | | 14.0-14.5 Ft. Clayey silt becomes saturated. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | 14.5 - 16.4 Ft. Silty SAND (SM-OL(?)). Dark gray (N3). Saturated. Soft consistency. Highly plastic. Organics. | |
| | | | | | | | 405.0 | 20 | | | 16.4 - 20.0 Ft. Silty CLAY (CH). Medium dark gray (N4). Highly plastic, stiff consistency, stiff thread, moist. | |
| | | | | | | | | | | | Bottom of borehole at 20.0 Ft.<br>Borehole backfilled with bentonite cement, 3/9/88. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R35

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R37 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,334 E 2,700 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 2-22-88 | 2-22-88 | Layne-Western, Co. | CME-55 | 6 3/4" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 423.0 | ▽ 10.1/412.9 2/23/88 ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | T.F. Mullen |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS / % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 423.0 | | | | | |
| | | | | | | | 422.2 | | | | 0.0 - 0.8 Ft. CONCRETE. | 0-16.0 ft. advanced with 6-3/4 in. O.D. hollow stem auger. |
| SS | 1.2 | 1.0 | 5-7 | | | | | | | | 0.8 - 14.0 Ft. CLAY (CH) and RUBBLE. | |
| SS | 2.0 | 1.5 | 4-4-5 4 | | | | | | | | 0.8-2.5 Ft. Grayish black (N2). Slag, brick fragments. Some clay adhesion to debris. Moist. Nonplastic. | Sampled and gamma logged by TMA/Eberline, Inc. |
| SS | 2.0 | 1.2 | 3-5-5 2 | | | | | 5 | | | 2.5-4.0 Ft. CLAY (CH). Dark yellowish brown (10YR4/2). Moist, highly plastic. | |
| SS | 2.0 | 0.8 | 1-1-1 2 | | | | | | | | 4.0-14.0 Ft. Black (N1). Moist, nonplastic, crumbles easily. Brick, coal and slag products. Stains black with gritty texture. Clay adheres to particles. Organic debris. | Top of undisturbed material at 14.0 t. |
| SS | 2.0 | 1.2 | 1-3-5 2 | | | | | | | | | Detected 20% LEL at 10-12 ft. interval. |
| SS | 2.0 | 1.3 | 9-4-4 2 | | | | | ▽ 10 | | | | Static Water Level measured at 10.13 ft. on 2/23/88. |
| SS | 2.0 | 0.4 | 3-4-2 3 | | | | | | | | | |
| SS | 2.0 | 1.8 | 2-2-2 5 | | | | 409.0 | | | | | |
| | | | | | | | | 15 | | | 14.0 - 16.0 Ft. CLAY (CH). Medium dark gray (N4.5). Moist, firm consistency, highly plastic. | |
| | | | | | | | 407.0 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 16.0 Ft. Borehole backfilled with bentonite cement, 2/22/88. | Color descriptions from the GSA Rock Color Chart (1948). |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R37

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R38 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,384 E 2,799 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 2-22-88 | 2-27-88 | Layne-Western, Co. | Mobile B-53 | 8 1/4" | 18.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 422.0 | ▽ 9.7/412.3 2/26/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.0 | | | | | |
| SS | 1.4 | 0.5 | 2-1-2/4" | | | | 421.4 | | | | 0.0 - 0.6 Ft. CONCRETE. | 0-18.0 FT advanced with 8 1/4-inch O.D. hollow stem auger. |
| SS | 2.0 | 0.7 | 3-3-2 2 | | | | | | | | 0.6 - 14.5 Ft. Silty CLAY (CL) and RUBBLE. Brownish gray (5YR2/1) to grayish black (N2). Dry to moist, loose. Rubble consists of brick, coal, slag, concrete, particle board, gravel and coarse-grained sand. | |
| SS | 2.0 | 1.0 | 2-2-2 1 | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 1.0 | 3-2-2 4 | | | | | | | | | |
| SS | 2.0 | 0.6 | 4-3-2 2 | | | | | | | | | |
| SS | 2.0 | 1.2 | 0-0-0-4 | | | | | 10 | | | 10.0 Ft. Sampler advanced 1.5 Ft. upon seating by weight of rods and hammer. | Top of undisturbed materials at 14.5 ft.(?) |
| SS | 2.0 | 1.2 | 5-4-4 2 | | | | | | | | | |
| SS | 2.0 | 0.9 | 2-2-2 3 | | | | 407.5 | 15 | | | 14.5 - 18.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to dark greenish gray (5GY4/1). Moist, soft, moderately plastic. Trace of organic material as blebs. | |
| SS | 2.0 | 0.6 | WH-2-2 3 | | | | 404.0 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 18.0 Ft. Borehole grouted to bottom of concrete with bentonite cement, 2/27/88. | Color descriptions from the GSA Rock Color Chart (1948). |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R38

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R39 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,354 E 3,010 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 2-23-88 | 3-2-88 | Layne-Western, Co. | Mobile B-53 | 8 1/4" | 30.0 | | 30.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 11 | | 422.9 | ▽ 11.1/411.8 3/2/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.9 | | | | | |
| SS | 1.8 | 1.6 | 6-5-7 7/4" | | | | 422.7 | | | | 0.0 - 0.2 Ft. GRAVEL. | 0-30.0 FT advanced with 8 1/4-inch O.D. hollow stem auger. |
| | | | | | | | 422.4 | | | | 0.2 - 0.5 Ft. Sandy GRAVEL (GP). | |
| SS | 2.0 | 1.6 | 2-5-11 9 | | | | | | | | 0.5 - 13.0 Ft. Silty CLAY (CL) and RUBBLE. | |
| SS | 2.0 | 1.2 | 4-5-4 5 | | | | | 5 | | | 0.5-3.2 Ft. Moderate yellowish brown (10YR5/4). Low moisture content, stiff. Fe staining. Trace of organic material as blebs. | |
| SS | 2.0 | 1.0 | 2-2-1 3 | | | | | | | | 3.2-13.0 Ft. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of brick, coal, slag, glass, coarse-grained sand, gravel and particle board. | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 1.2 | 3-3-2 2 | | | | | | | | | |
| SS | 2.0 | 1.5 | 4-2-2 4 | | | | | 10 | | | | Top of undisturbed material at 13.0 ft. |
| SS | 2.0 | 1.2 | 1-3-3 5 | | | | 409.9 | | | | | |
| SS | 2.0 | 1.5 | 1-3-4 6 | | | | | | | | 13.0 - 29.8 Ft. Sandy SILT (ML). Dark greenish gray (5GY4/1) to medium dark gray (N4). Moist, soft, slightly plastic. Very fine-grained sand. Blebs of organic material including rootlets. | |
| | | | | | | | | 15 | | | | |
| SS | 2.0 | 1.9 | 2-3-5 5 | | | | | | | | | |
| | | | | | | | | 20 | | | | |
| SS | 2.0 | 1.8 | 3-5-10 9 | | | | | | | | | |
| | | | | | | | | 25 | | | | |
| SS | 2.0 | 2.0 | 1-1-5 5 | | | | 393.1 | | | | | |
| | | | | | | | 392.9 | 30 | | | 29.8 - 30.0 Ft. Silty CLAY (CH). Olive gray (5Y4/1) to dark greenish gray (5GY4/1). Moist, soft to medium stiff, highly plastic. Blebs of organic material. | Color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | | | | Bottom of borehole at 30.0 Ft. Boring grouted to surface with bentonite cement, 3/2/88. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. B16R39

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R40 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,273 E 2,910 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 2-18-88 | 3-10-88 | Layne-Western, Co. | CME-55 | 6.5" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 422.0 | ▽ 9.6/412.4 3/7/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.0 | | | | | |
| SS | 2.0 | 1.2 | 12-14-13<br>9 | | | | 421.5<br>420.7 | | | | 0.0 - 0.5 Ft. ASPHALT.<br>0.5 - 1.3 Ft. Sandy GRAVEL (GP). Angular limestone. | 0-16.0 FT advanced with 6 5/8-inch O.D. hollow stem auger. |
| SS | 1.5 | 0.5 | 9-11-7 | | | | | | | | 1.3 - 13.0 Ft. Silty CLAY (CL) and RUBBLE. Blackish red (5R2/2). Low moisture content, loose. Rubble consisted of bricks, coal, slag, pieces of concrete, sand, gravel, glass and particle board. | |
| SS | 2.0 | 0.4 | 2-1-2<br>3 | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline, Inc. |
| SS | 2.0 | 1.3 | 2-2-2<br>3 | | | | | | | | | |
| SS | 2.0 | 1.0 | 2-3-3<br>3 | | | | | | | | | |
| SS | 2.0 | 0.8 | 2-0-0-0 | | | | | 10 | | | | Top of undisturbed materials at 13.0 ft. |
| SS | 2.0 | 0.9 | 2-1-2<br>1 | | | | | | | | 10.5-12.0 Ft. Sampler advances upon seating of hammer and rods. | |
| SS | 2.0 | 0.7 | 5-4-4<br>4 | | | | 409.0 | | | | 13.0 - 16.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to greenish gray (5GY4/1). Moist, medium stiff, moderately plastic. Trace of organic material as blebs. | |
| | | | | | | | | 15 | | | | |
| | | | | | | | 406.0 | | | | Bottom of borehole at 16.0 Ft.<br>Borehole grouted to bottom of asphalt with bentonite cement, 3/10/88. | Color descriptions from the GSA Rock Color Chart (1948). |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| St. Louis Downtown Site | B16R40 |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R42 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,313 E 1,234 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-4-88 | 4-12-88 | Layne-Western, Co. | CME-55 | 6.5" | 6.0 | | 6.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 3 | | 426.2 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" / % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 426.2 | | | | | |
| SS | 1.7 | 1.1 | 3-2-2 2/2" | | | | 425.9<br>425.8 | | | | 0.0 - 0.3 Ft. ASPHALT. | 0-6.0 FT advanced with 6.5-inch O.D. hollow stem auger. |
| | | | | | | | | | | | 0.3 - 0.6 Ft. Sandy GRAVEL (GP). | |
| | | | | | | | 424.2 | | | | | |
| SS | 2.0 | 1.2 | 2-3-4 5 | | | | | | | | 0.6 - 2.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to olive black (5Y2/1). Low moisture content, soft. Light brown (5YR5/6) Fe staining. | |
| SS | 2.0 | 1.7 | 2-3-4 6 | | | | | 5 | | | 2.0 - 6.0 Ft. Silty CLAY (CL). Light olive gray (5Y6/1) to olive gray (5Y4/1). Low moisture content, soft to medium stiff, slightly plastic. Trace of very fine-grained sand. Trace of organic material as blebs. | Sampled and gamma logged by TMA/Eberline, Inc. |
| | | | | | | | 420.2 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 6.0 Ft.<br>Borhole grouted to bottom of asphalt with bentonite cement, 4/12/88. | Top of undisturbed material at 2.0 ft. |
| | | | | | | | | | | | | Color descriptions from the GSA Rock Color Chart (1948). |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R42

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R41 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,495 E 1,327 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-30-88 | 4-8-88 | Layne-Western, Co. | CME-55 | 6.5" | 10.0 | | 10.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 5 | | 426.3 | ▽ / / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M. | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 426.3 | | | | | |
| | | | | | | | 425.3 | | | | 0.0 - 1.0 Ft. CONRETE. | 0-10.0 FT Advanced with 6.5-inch O.D. hollow stem auger. |
| SS | 1.0 | 0.4 | 1-2 | | | | | | | | 1.0 - 8.0 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture content, loose. Rubble consists of carbonaceous material, slag and brick. Patches of dark yellowish brown (10YR4/2) to olive gray (5Y6/1) silty clay. | |
| SS | 2.0 | 1.0 | 2-3-4 3 | | | | | | | | | |
| SS | 2.0 | 1.5 | 3-4-3 4 | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 0.9 | 3-3-4 3 | | | | | | | | | |
| SS | 2.0 | 1.9 | 1-1-1 2 | | | | 418.3 | | | | 8.0 - 10.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, soft, moderately to highly plastic. Trace of organic material as blebs. | |
| | | | | | | | 416.3 | 10 | | | Bottom of borehole at 10.0 Ft. Borehole grouted to bottom of concrete with bentonite cement, 4/8/88. | Top of undisturbed material at 8.0 ft. |
| | | | | | | | | | | | | Color descriptions from the GSA Rock Color Chart (1948). |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R41

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R43 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,238 E 1,218 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-30-88 | 3-31-88 | Layne-Western, Co. | CME-55 | 6.5" | 8.0 | | 8.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 4 | | 428.6 | ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 428.6 | | | | | |
| SS | 1.5 | 1.0 | 16-10-7 | | | | 428.4 | | | | 0.0 - 0.2 Ft. ASPHALT. | 0-8.0 FT advanced with 6.5-inch O.D. hollow stem auger. |
| | | | | | | | 427.4 | | | | 0.2 - 1.2 Ft. Sandy GRAVEL (GP). | |
| SS | 2.0 | 1.5 | 5-3-3 1 | | | | | | | | 1.2 - 3.7 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture content, loose. Rubble consists of slag, carbonaceous material, brick and sand. Fe staining. | |
| | | | | | | | 424.9 | | | | | |
| SS | 2.0 | 1.1 | 1-2-3 4 | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline, Inc. |
| SS | 2.0 | 1.5 | 2-3-3 4 | | | | | | | | 3.7 - 8.0 Ft. Silty CLAY (CL). Light olive gray (5Y6/1) to pale yellowish brown (10YR6/2). Low moisture content to moist, soft. Trace of very fine-grained sand. Trace of organic material as blebs. Light brown (5YR5/6) Fe staining. | |
| | | | | | | | 420.6 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 8.0 Ft. Borhole grouted to bottom of asphalt with bentonite cement, 3/31/88. | Top of undisturbed materials at 3.7 ft.(?) |
| | | | | | | | | | | | | Color descriptions from the GSA Rock Color Chart (1948). |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R43

B

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | B16R44 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,040 E 1,325 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-4-88 | 4-8-88 | Layne-Western, Co. | CME-55 | 6.5" | 14.0 | | 14.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 424.9 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | None | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.6 | 5-5-7 5 | | | | 424.9 | | | | 0.0 - 9.5 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture content to moist, soft to loose. Rubble consists of carbonaceous material, slag, brick, gravel and pebbles. Patches of dark gray (N3) silty clay. | 0-14.0 FT advanced with 6.5-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.6 | 3-6-7 8 | | | | | | | | | |
| SS | 2.0 | 1.6 | 5-3-2 3 | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline, Inc. |
| SS | 2.0 | 2.0 | 1-1-1 2 | | | | | | | | | |
| SS | 2.0 | 1.8 | 1-2-2 2 | | | | 415.4 | | | | | |
| SS | 2.0 | 1.3 | 1-3-4 5 | | | | | 10 | | | 9.5 - 13.7 Ft. Silty SAND (SM). Olive gray (5Y4/1). Moist, soft. Very fine-grained sand. Minor amounts of organics. | Top of undisturbed material at 9.5 ft. |
| SS | 2.0 | 1.4 | 1-3-4 5 | | | | 411.2 | | | | | |
| | | | | | | | 410.9 | | | | 13.7 - 14.0 Ft. Silty CLAY (CL). Medium stiff, moderately plastic. | |
| | | | | | | | | | | | Bottom of borehole at 14.0 Ft. Borehole grouted to surface with bentonite cement, 4/8/88. | Color descriptions from the GSA Rock Color Chart (1948). |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16R44

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C100A |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 2,197 E 1,400 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-5-88 | 12-8-88 | Layne-Western, Co. | CME-750 | 6" | 3.8 | | 3.8 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 2 | | 425.7 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 425.7 | | | | | |
| | | | | | | | 425.5 | | | | 0.0 - 0.3 Ft. **ASPHALT**. | |
| SS | 1.4 | 0.8 | 7-7-4/5" | | | | 425.1 | | | | 0.3 - 0.6 Ft. **GRAVEL**. | 0-3.8 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 1.8 | 1.7 | | | | | | | | | 0.6 - 3.8 Ft. **SILTY CLAY (CL) and RUBBLE**. Brownish black (5YR2/1). Low moisture content, loose. Rubble consists of brick, slag, and carbonaceous material. | |
| | | | | | | | 421.9 | | | | | Auger refusal 3.8 ft. |
| | | | | | | | | | | | Bottom of borehole at 3.8 Ft. Borehole backfilled with bentonite cement, 12/8/88. | |
| | | | | | | | | | | | | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 12/8/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| St. Louis Downtown Site | C100A |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C100B |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 2,192 E 1,399 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-5-88 | 12-8-88 | Layne-Western, Co. | CME-750 | 6" | 10.0 | | 10.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 3 | | 425.7 | 8.1/417.6 12/8/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS / X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 425.7 | | | | | |
| | | | | | | | 425.1 | | | | 0.0 - 0.3 Ft. ASPHALT. | |
| | | | | | | | 425.1 | | | | 0.3 - 0.6 Ft. GRAVEL. | |
| | | | | | | | | | | | 0.6 - 6.5 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1). Moist, loose. Rubble consists of brick, slag and carbonaceous material. | Borehole advanced 0-10 Ft. with 6-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.2 | 1-1-1 2 | | | | | 5 | | | | Sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.7 | 1-2-2 4 | | | | 419.2 | | | | 6.5 - 10.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to greenish gray (5GY4/1). Moist, soft, moderately plastic. Some black (N1) organics. | Top of undisturbed material at 6.5 Ft. |
| SS | 1.5 | 1.1 | 1-3-5 | | | | | | | | | |
| | | | | | | | 415.7 | 10 | | | Bottom of borehole at 10.0 Ft. Borehole backfilled with bentonite cement, 12/8/88. | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C100B

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C101 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 2,216 E 1,545 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-2-88 | 12-8-88 | Layne-Western, Co. | CME-750 | 6" | 18.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 424.6 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.6 | | | | | |
| SS | 1.1 | 0.9 | 13-16 | | | | 424.3 | | | | 0.0 - 0.3 Ft. ASPHALT. | |
| SS | 2.0 | 1.3 | 12-16-8 5 | | | | | | | | 0.3 - 10.2 Ft. FILL. | Borehole advanced 0-18.0 Ft. with 6-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.1 | 2-2-2 3 | | | | | | | | 0.3-2.0 Ft. Slag and brick. | |
| SS | 2.0 | 1.0 | 1-2-1 2 | | | | | 5 | | | 2.0-4.2 Ft. Angular limestone gravel. Angular limestone. | |
| SS | 2.0 | 1.6 | WH-1-1 1 | | | | | | | | 4.2-10.2 Ft. Silty clay (CL). Dark yellowish brown (10YR4/1) to light olive gray (5Y6/1). Moist, soft, some brick fragments and carbonaceous material, Fe staining. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.8 | 2-5-7 11 | | | | 414.4 | 10 | | | | |
| SS | 2.0 | 1.7 | 3-4-7 8 | | | | | | | | 10.2 - 13.5 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, medium-stiff, some wood and brick fragments, Fe staining. | Samples from 4-6 Ft. and 16-18 Ft. analysed for metals. |
| SS | 2.0 | 1.9 | 2-5-6 8 | | | | 411.1 | 15 | | | 13.5 - 18.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to greenish gray (5GY4/1). Moist, medium-stiff, moderately plastic, trace of black (N1) organics. | Top of undisturbed material at 13.5 Ft. |
| SS | 2.0 | 1.9 | 3-4-6 7 | | | | 406.6 | | | | Bottom of borehole at 18.0 Ft. Borehole backfilled with bentonite cement, 12/8/88. | Description and classification of soils by visual examination. |
| | | | | | | | | | | | | No groundwater observed, 12/8/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C101

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C102 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 2,130 E 1,420 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-22-88 | 12-1-88 | Layne-Western, Co. | CME-750 | 6" | 8.0 | | 8.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 4 | | 425.7 | ▽ 7.8/417.9 12/8/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS / X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 425.7 | | | | | |
| SS | 1.6 | 1.1 | 5-6-5 | | | | 425.5<br>425.1 | | | | 0.0 - 0.4 Ft. CONCRETE. | |
| | | | | | | | | | | | 0.4 - 0.6 Ft. SAND and GRAVEL. | Borehole advanced 0-8.0 Ft. with 6-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.5 | 2-3-4<br>4 | | | | | | | | 0.6 - 6.5 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to moderate yellowish brown (10YR5/4). Damp, medium-stiff, slightly plastic. Trace of black (N1) organics (disturbed). | |
| SS | 2.0 | 1.7 | 2-3-5<br>6 | | | | | 5 | | | | |
| SS | 1.5 | 1.5 | 2-3-4 | | | | 419.2 | | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| | | | | | | | 417.7▽ | | | | 6.5 - 8.0 Ft. Silty CLAY (CL). Light olive gray (5Y6/1). Low moisture content, medium-stiff, slightly plastic. Some dessication cracks and Fe staining. | Samples from 0-2 Ft., 4-6 Ft., and 6-7.5 Ft. analysed for metals. |
| | | | | | | | | | | | Bottom of borehole at 8.0 Ft. Borehole backfilled with bentonite cement, 12/1/88. | Top of undisturbed material at 6.5 Ft. |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; O = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C102

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C103 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 2,133 E 1,535 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 1-6-89 | 1-10-89 | Layne-Western, Co. | PC-1A | 6" | 10.0 | | 10.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 4 | | 425.9 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 425.9 | | | | | |
| | | | | | | | 425.7 | | | | 0.0 - 0.1 Ft. ASPHALT. | |
| | | | | | | | 425.3 | | | | 0.1 - 0.7 Ft. CONCRETE. | Borehole advanced 0.7-10.0 Ft. with 6-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.9 | | | | | | | | | 0.7 - 7.0 Ft. Silty CLAY (CL) and RUBBLE. Grayish black (N2) to olive gray (5Y4/1), low moisture content, soft to medium stiff. Rubble consists of slag, brick and gravel. Fe staining, patches of pale brown (5YR2/1) silty clay. | |
| SS | 2.0 | 1.1 | | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.6 | | | | | 418.9 | | | | | |
| SS | 2.0 | 1.3 | | | | | | | | | 7.0 - 10.0 Ft. Silty CLAY(CL). Olive gray (5Y4/1) to greenish gray (5GY6/1). Moist, soft, slightly plastic, some black (N1) organics. | Samples from 4-6 Ft. and 8-10 Ft. analysed for metals. |
| | | | | | | | 415.9 | 10 | | | Bottom of borehole at 10.0 Ft. Borehole backfilled with bentonite cement, 1/10/89. | Top of undisturbed material at 7.0 ft. |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |
| | | | | | | | | | | | | No groundwater observed, 1/10/89. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. C103

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C105 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 2,100 E 1,480 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 1-6-89 | 1-10-89 | Layne-Western, Co. | PC-1A | 6" | 10.0 | | 10.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 5 | | 425.5 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN g.P.M | WATER PRESSURE TESTS: PRESS. p.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 425.5 | | | | |
| SS | 1.5 | 1.3 | | | | | 425.2 | | | 0.0 - 0.3 Ft. CONCRETE. | |
| SS | 2.0 | 1.3 | | | | | | | | 0.3 - 3.8 Ft. Silty CLAY (CL). Dark yellowish brown (10YR4/2) to pale brown (5YR5/2). Low moisture content, soft, slightly plastic; some Fe staining. | Borehole advanced 0.5-10 Ft. with 6-inch O.D. hollow-stem auger. |
| | | | | | | | 421.7 | | | | |
| SS | 2.0 | 1.0 | | | | | | 5 | | 3.8 - 10.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, soft to medium-stiff, some black (N1) organics including rootlets. Trace of brick fragments and wood at 7-8 Ft. | Sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 2.0 | | | | | | | | | Samples from 2-4 Ft. and 6-8 Ft. analysed for metals. |
| SS | 2.0 | 2.0 | | | | | 415.5 | 10 | | | |
| | | | | | | | | | | Bottom of borehole at 10.0 Ft. Borehole backfilled with bentonite cement, 1/10/89. | Top of undisturbed material at 3.8 Ft. |
| | | | | | | | | | | | Description and classification of soils by visual examination. |
| | | | | | | | | | | | No groundwater observed, 1/10/89. |

S = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C105

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C106 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,955 E 1,495 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-3-88 | 12-8-88 | Layne-Western, Co. | CME-750 | 6" | 13.5 | | 13.5 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 422.0 | ▽ 9.8/412.2 12/8/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.0 | | | | | |
| | | | | | | | 421.2 | | | | 0.0 - 0.8 Ft. CONCRETE. 1/2-inch of asphalt on surface. | |
| SS | 1.1 | 0.8 | 5-5 1/1" | | | | | | | | 0.8 - 10.5 Ft. Silty CLAY (CL) and RUBBLE. Moderate yellowish brown (10YR5/4) to dark yellowish brown (10YR4/2). Dry to moist, soft. Rubble consists of slag, gravel, brick, and carbonaceous material. | Borehole advanced 0-13.5 Ft. with 6-inch O.D. hollow-stem auger. |
| SS | 2.0 | 0.9 | 2-5-2 3 | | | | | | | | | |
| SS | 2.0 | 1.3 | 1-1-1 1 | | | | | 5 | | | | Radiologically Sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 0.8 | 3-2-2 3 | | | | | | | | | |
| SS | 2.0 | 1.5 | 1-1-2 2 | | | | | | | | | Samples from 4-6 Ft. and 12.0-13.5 Ft. analysed for metals. |
| SS | 2.0 | 1.5 | 1-3-4 2 | | | | | 10 | | | | |
| SS | 1.5 | 1.1 | 1-4-3 | | | | 411.5 | | | | 10.5 - 13.5 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, soft, moderately plastic. Some black (N1) organics. | Top of undisturbed material at 10.5 Ft. |
| | | | | | | | 408.5 | | | | Bottom of borehole at 13.5 Ft. Borehole backfilled with bentonite cement, 12/8/88. | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| St. Louis Downtown Site | C106 |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C107 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,845 E 1,708 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-30-88 | 12-1-88 | Layne-Western, Co. | CME-550 | 6" | 12.0 | | 12.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 419.5 | ▽ 9.2/410.3 12/1/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADJ. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS / % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 419.5 | | | | 0.0 - 0.6 Ft. CONCRETE. | |
| SS | 1.4 | 1.3 | | | | | 418.9 | | | | 0.6 - 8.5 Ft. GRAVEL, RUBBLE, and SILTY CLAY (CL). Brownish gray (5YR4/1) to dark yellowish brown (10YR4/2). Moderate moisture content, moderately plastic. Trace of organics and coal. | Borehole advanced 0.6-12 Ft. with 6-inch O.D. hollow-stem auger. |
| SS | 1.0 | 0.8 | | | | | | | | | | |
| SS | 1.0 | 0.5 | | | | | | | | | | |
| SS | 2.0 | 1.5 | | | | | | 5 | | | | |
| SS | 2.0 | 1.3 | | | | | | | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.5 | | | | | 411.0 ▽ | | | | 8.5 - 12.0 Ft. Silty CLAY (CL). Olive gray (5G4/1). Moderate moisture content, moderately plastic, slightly sandy. Trace of organics and rootlets. | Top of undisturbed material at 8.5 Ft. |
| SS | 1.0 | 1.0 | | | | | | 10 | | | | |
| SS | 1.0 | 1.0 | | | | | 407.5 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 12.0 Ft. Borehole backfilled with bentonite cement, 12/1/88. | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; O = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C107

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C108 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,951 E 1,800 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-22-88 | 12-1-88 | Layne-Western, Co. | CME-550 | 6" | 12.0 | | 12.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 418.6 | ▽ 6.0/412.6 12/1/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 418.6 | | | | | |
| SS | 1.4 | 1.1 | | | | | 418.0 | | | | 0.0 - 0.6 Ft. CONCRETE. | |
| SS | 2.0 | 1.0 | | | | | | | | | 0.6 - 9.0 Ft. RUBBLE. Very dusky yellowish brown (10YR2/2) to grayish pink (5R8/2). Low to high moisture content, moderately plastic. Rubble consists of organics, chemical solids, coal. | Borehole advanced 0.7-12 Ft. with 6-inch O.D. hollow-stem auger. |
| SS | 2.0 | 0.8 | | | | | | 5 | | | | |
| SS | 2.0 | 1.3 | | | | | | | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.9 | | | | | 409.6 | | | | | |
| SS | 1.0 | 1.0 | | | | | | 10 | | | 9.0 - 12.0 Ft. Silty CLAY (CL). Olive gray (5G4/1). Moderate moisture content, moderately plastic. Trace of organics. | Top of undisturbed material at 9.2 Ft. |
| SS | 1.0 | 1.0 | | | | | 406.6 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 12.0 Ft. Borehole backfilled with bentonite cement, 12/1/88. | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| St. Louis Downtown Site | C108 |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C109 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,850 E 1,900 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-23-88 | 11-23-88 | Layne-Western, Co. | CME-550 | 6" | 12.0 | | 12.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 419.7 | ▼ 3.8/415.9 11/29/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pals |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 419.7 | | | | | |
| | | | | | | | 418.4 | | | | 0.0 - 1.3 Ft. CONCRETE and ASPHALT. | Borehole advanced 1.3-12 Ft. with 6-inch O.D. hollow-stem auger. |
| SS | 1.7 | 1.6 | | | | | | | | | 1.3 - 9.3 Ft. RUBBLE and Silty CLAY (CL). Dusky yellowish brown (10YR2/2). Moderate to high moisture content, moderately plastic. Rubble consists of organics, slag, coal, and chemical products. | |
| SS | 1.0 | 0.6 | | | | | | | | | | |
| SS | 2.0 | 1.4 | | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.4 | | | | | | | | | | |
| SS | 2.0 | 1.4 | | | | | 410.4 | | | | | |
| SS | 1.0 | 0.8 | | | | | | 10 | | | 9.3 - 12.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moderate moisture content, moderately plastic. Trace of organics, dessication cracks. | Top of undisturbed material at 9.3 Ft. |
| SS | 1.0 | 0.9 | | | | | 407.7 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 12 Ft. Borehole backfilled with bentonite cement, 11/23/88. | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| St. Louis Downtown Site | C109 |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C110 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,973 E 1,963 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-21-88 | 12-1-88 | Layne-Western, Co. | CME-550 | 6" | 12.0 | | 12.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 419.2 | ▽ 8.8/410.4 12/1/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M. | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SYMBOLS | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 419.3 | | | | | |
| | | | | | | | 418.7 | | | | 0.0 - 0.5 Ft. CONCRETE. | |
| SS | 2.0 | | | | | | | | | | 0.5 - 9.0 Ft. Silty CLAY (CL). | Borehole advanced 0.5-12 Ft. with 6-inch O.D. hollow-stem auger. |
| | | | | | | | | | | | 0.5-6.0 Ft. Brownish gray (5YR4/1). Moderate moisture content, moderately plastic. Coal, sandy, organics. | |
| | | | | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| | | | | | | | | | | | 6.0-9.0 Ft. Olive gray (5Y4/1) and brownish gray (5YR4/1). Moderate moisture content, slightly plastic, sandy in places. Trace of organics and coal. | |
| | | | | | | | 410.2 ▽ | | | | | |
| | | | | | | | | 10 | | | 9.0 - 12.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moderate moisture content, slightly to moderately plastic. Trace of organics. | Top of undisturbed material at 9.2 Ft. |
| | | | | | | | 407.2 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 12.0 Ft. Borehole backfilled with bentonite cement, 12/1/88. | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C110

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C111 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,910 E 2,020 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-21-88 | 11-29-88 | Layne-Western, Co. | CME-550 | 6" | 12.0 | | 12.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 6 | | 420.3 | ▽ 6.2/414.1 11/29/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pals |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE # | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 420.3 | | | | | |
| SS | 1.4 | 0.6 | | | | | 419.7 | | | | 0.0 - 0.6 Ft. CONCRETE. | |
| SS | 2.0 | 1.5 | | | | | | | | | 0.6 - 8.0 Ft. Silty CLAY (CL). Brownish gray (5YR4/1). Moderate moisture content, moderately plastic. Coal, sandy, organics. | Borehole advanced 0.6-12 Ft. with 6-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.6 | | | | | | 5 | | | | |
| SS | 2.0 | 1.9 | | | | | | | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 0.4 | | | | | 412.3 | | | | 8.0 - 12.0 Ft. Silty CLAY (CL). | |
| SS | 2.0 | 1.3 | | | | | | 10 | | | 8.0-9.0 Ft. Olive gray (5Y4/1) to brownish gray (5YR4/1). Moderate moisture content, slightly plastic. Trace of organics and coal; sandy in places. | Top of undisturbed material at 9.6 Ft. |
| | | | | | | | 408.3 | | | | 9.0-12.0 Ft. Olive gray (5Y4/1). Moderate moisture content, slightly to moderately plastic. Trace of organics. | Description and classification of soils by visual examination. |
| | | | | | | | | | | | Bottom of borehole at 12.0 Ft. Borehole backfilled with bentonite cement, 11/29/88. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| St. Louis Downtown Site | C111 |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C112 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,743 E 1,600 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-29-88 | 11-30-88 | Layne-Western, Co. | CME-550 | 6" | 30.0 | | 30.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 15 | | 429.5 | ▽ 5.9/423.6 12/1/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADJ. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS/FT. % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 429.5 | | | | | |
| SS | 2.0 | 1.8 | | | | | 429.0 | | | | 0.0 - 0.5 Ft. CONCRETE. | |
| SS | 1.5 | 1.1 | | | | | | | | | 0.5 - 8.5 Ft. RUBBLE and Silty CLAY (CL). Brownish gray (5YR4/1) to light brownish gray (5YR6/1). Moderate moisture content, slightly to moderately plastic. Organics, coal, trace of wood. | Borehole advanced 0.5-30 Ft. with 6-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.5 | | | | | | 5 | | | | |
| SS | 2.0 | 1.5 | | | | | | | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 2.0 | | | | | 421.0 | | | | 8.5 - 30.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). High moisture content, moderately to highly plastic. Trace of organics, liquefied. | Top of undisturbed material at 7.8 Ft. |
| SS | 2.0 | 2.0 | | | | | | 10 | | | | |
| SS | 2.0 | 1.8 | | | | | | | | | | |
| SS | 2.0 | 1.8 | | | | | | 15 | | | | |
| SS | 2.0 | 1.8 | | | | | | | | | | |
| SS | 2.0 | 2.0 | | | | | | | | | | |
| SS | 2.0 | 1.8 | | | | | | 20 | | | | |
| SS | 2.0 | 1.4 | | | | | | | | | | |
| SS | 2.0 | 2.0 | | | | | | | | | | |
| SS | 2.0 | 1.5 | | | | | | 25 | | | | |
| SS | 2.0 | 1.8 | | | | | | | | | | |
| | | | | | | | 399.5 | 30 | | | Bottom of borehole at 30.0 Ft. Borehole backfilled with bentonite cement, 12/1/88. | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| St. Louis Downtown Site | C112 |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C113 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,719 E 1,678 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-21-88 | 11-21-89 | Layne-Western, Co. | CME-750 | 6" | 11.5 | | 11.5 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 6 | | 419.6 | ▽ 6.1/413.5 11/28/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. AND DIAM. TYPE | SAMP. ADJ. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 419.6 | | | | | |
| SS | 1.4 | 1.0 | 4-9-2/5" | | | | 419.0 | | | | 0.0 - 0.6 Ft. CONCRETE. | |
| SS | 2.0 | 1.7 | 8-6-5 2S | | | | | | | | 0.6 - 8.5 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1). Moist, loose. Rubble consists of slag, gravel, and brick fragments; Fe staining. | Borehole advanced 0-11.5 Ft. with 6-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.7 | 24-19-30 19 | | | | | 5 | | | | |
| SS | 2.0 | 1.6 | 7-24-13 9 | | | | | | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.8 | 1-1-1 2 | | | | 411.1 | | | | 8.5 - 11.5 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, soft, slightly plastic. Some black (N1) organics, including rootlets. | Samples from 2-4 Ft. and 10-11.5 Ft. analyzed for metals. |
| SS | 1.5 | 0.9 | 1-2-2 | | | | | 10 | | | | Top of undisturbed material at 8.5 Ft. |
| | | | | | | | 408.1 | | | | Bottom of borehole at 11.5 Ft. Borehole backfilled with bentonite cement, 11/28/88. | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C113

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C114 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,675 E 1,675 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 1-4-89 | 1-10-89 | Layne-Western, Co. | PC-1A | 6" | 8.0 | | 8.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 4 | | 419.5 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS / % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 419.5 | | | | | |
| | | | | | | | 418.8 | | | | 0.0 - 0.7 Ft. CONCRETE. | |
| SS | 1.2 | 0.8 | | | | | | | | | 0.7 - 8.0 FT. Silty CLAY (CL) and RUBBLE. Dark yellowish brown (10YR4/2). Moist, loose. Rubble consists of slag, sand, and gravel. | Borehole advanced 0.7-8 Ft. with 6-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.1 | | | | | | | | | | |
| SS | 2.0 | 1.4 | | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. Sample from 4-6 Ft. analyzed for metals. |
| SS | 2.0 | 2.0 | | | | | | | | | | |
| | | | | | | | 411.5 | | | | | 4.0 Ft. OVA reading 30 ppm (in auger). |
| | | | | | | | | | | | Bottom of borehole at 8.0 Ft. Borehole backfilled with bentonite cement, 1/10/89. | 4-8 Ft. OVA reading >1000 ppm (in auger), Exotox LEL=43%. |
| | | | | | | | | | | | | Description and classification of soils by visual examination. |
| | | | | | | | | | | | | Hole abandoned because of high OVA readings 1/5/89. |
| | | | | | | | | | | | | No groundwater observed, 1/10/89. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C114

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C115 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,671 E 1,590 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 1-3-89 | 1-10-89 | Layne-Western, Co. | PC-1A | 6" | 14.0 | | 14.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 419.5 | ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADJ. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE # | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 419.5 | | | | | |
| SS | 1.6 | 1.0 | | | | | 419.1 | | | | 0.0 - 0.4 Ft. CONCRETE. | |
| | | | | | | | 418.8 | | | | | |
| | | | | | | | 418.2 | | | | 0.4 - 0.7 Ft. Silty CLAY (CL). Dark yellowish brown (10YR4/2). Dry, medium-stiff. | Borehole advanced 0.4-14 Ft. with 6-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.8 | | | | | | | | | 0.7 - 1.3 Ft. CONCRETE. | |
| SS | 2.0 | 1.7 | | | | | | 5 | | | 1.3 - 6.5 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to dark yellowish brown (10YR4/2). Low moisture content, soft to loose. Rubble consists of slag and gravel. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 2.0 | | | | | 413.0 | | | | 6.5 - 11.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, soft, moderately plastic. | Samples from 2-4, 8-10, and 12-14 Ft. analysed for metals. |
| SS | 2.0 | 2.0 | | | | | | 10 | | | | Top of undisturbed material at 6.5 Ft. |
| SS | 2.0 | 2.0 | | | | | 408.5 | | | | 11.0 - 14.0 Ft. CLAY (CH). Olive gray (5Y4/1). Moist, soft to medium-stiff, highly plastic. | |
| | | | | | | | 405.5 | | | | Bottom of borehole at 14.0 Ft. Borehole backfilled with bentonite cement, 1/10/89. | Description and classification of soils by visual examination. |
| | | | | | | | | | | | | No groundwater observed, 1/10/89. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| St. Louis Downtown Site | C115 |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C117 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,590 E 1,700 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-21-88 | 11-28-88 | Layne-Western, Co. | CME-750 | 6" | 14.0 | | 14.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 419.0 | ▽ 5.5/413.5 11/28/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE BARREL | REC. CORE REC. | SAMPLE "N" BLOWS / X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 419.0 | | | | | |
| SS | 1.5 | 1.1 | 6-13-8 | | | | 418.5 | | | | 0.0 - 0.5 Ft. CONCRETE. | |
| SS | 2.0 | 1.4 | 4-5-8 23 | | | | | | | | 0.5 - 11.0 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1). Moist, loose. Rubble consists of slag and brick fragments; Fe staining. | Borehole advanced 0-14.0 Ft. with 6-inch O.D. hollow-stem auger. |
| SS | 2.0 | 1.9 | 9-37-34 19 | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.3 | 8-6-4 6 | | | | | | | | | |
| SS | 2.0 | 1.3 | 3-9-5 2 | | | | | 10 | | | | Samples from 2-4 and 12-14 Ft. analysed for metals. |
| SS | 2.0 | 1.1 | 1-2-1 2 | | | | 408.0 | | | | 11.0 - 14.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, soft, moderately to highly plastic. Trace of very fine-grained sand. | Top of undisturbed material at 11.0 Ft. |
| SS | 2.0 | 1.3 | 1-1-1 1 | | | | 405.0 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 14.0 Ft. Borehole backfilled with bentonite cement, 11/28/88. | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C117

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C118 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,420 E 1,665 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-6-88 | 12-7-88 | Layne-Western, Co. | CME-750 | 6" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 423.3 | ▽ 6.4/416.9 12/7/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SYMBOL | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 423.3 | | | | | |
| SS | 1.4 | 0.9 | 1-3-1/5" | | | | 422.9 | | | | 0.0 - 0.4 Ft. CONCRETE. | |
| SS | 2.0 | 1.6 | 3-5-18<br>35 | | | | | | | | 0.4 - 12.5 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to light olive gray (5Y6/1). Low moisture content to moist. Loose. Rubble consists of gravel, brick, slag, and sand. | Borehole advanced 0-16.0 Ft. with 6-inch O.D. hollow-stem auger. |
| SS | 0.8 | 0.8 | 13-50/4" | | | | | | | | | |
| SS | 1.0 | 0.8 | 6-5 | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. Rough drilling from 4.8-5.0 Ft. |
| SS | 2.0 | 0.9 | 2-1/18" | | | | | | | | | |
| SS | 2.0 | 0.3 | WH/19" | | | | | | | | | |
| SS | 2.0 | 1.2 | 2-3-25<br>4 | | | | | 10 | | | | Samples from 4-6, 8-10, and 14-16 Ft. analysed for metals. |
| SS | 2.0 | 1.2 | 2-3-4<br>3 | | | | 410.8 | | | | 12.5 - 16.0 Ft. Sandy CLAY (SC). Olive gray (5Y4/1). Moist, soft to medium-stiff, slightly plastic. Sand is very fine- to fine-grained. Abundant black (N1) organics, trace of pebbles (1/8-inch). | Top of undisturbed material at 12.5 Ft. |
| SS | 2.0 | 1.6 | 3-3-3<br>4 | | | | | 15 | | | | |
| | | | | | | | 407.3 | | | | Bottom of borehole at 16.0 Ft. Borehole backfilled with bentonite cement, 12/7/88. | Description and classification of soils by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| St. Louis Downtown Site | C118 |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C119A |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,350 E 1,645 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-5-88 | 12-19-88 | Layne-Western, Co. | CME-550 | 6" | 10.5 | | 10.5 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 6 | | 424.3 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.3 | | | | | |
| | | | | | | | 423.5 | | | | 0.0 - 0.8 Ft. CONCRETE. | |
| SS | 2.2 | 1.1 | | | | | | | | | 0.8 - 10.5 Ft. FILL. Blackish red (5R2/2) to very dusky red (10R2/2). Moderate to very high moisture content. Wood chips, brick fragments, sludge, organics, coal, chemical fluids. | Borehole advanced 0.8-10.5 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 1.0 | 0.8 | | | | | | | | | | |
| SS | 2.0 | 1.5 | | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 0.9 | | | | | | | | | | |
| SS | 2.0 | 1.8 | | | | | | | | | | |
| SS | 0.5 | 0.4 | | | | | 413.8 | 10 | | | | Top of undisturbed material was not observed; abandoned hole. |
| | | | | | | | | | | | Bottom of borehole at 10.5 Ft. Borehole backfilled with bentonite cement, 12/19/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No groundwater observed, 12/19/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C119A

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C119B |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,350 E 1,640 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-7-88 | 12-19-88 | Layne-Western, Co. | CME-750 | 6" | 20.5 | | 20.5 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 11 | | 424.3 | ▼ 7.7/416.6 12/19/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.3 | | | | | |
| | | | | | | | 423.6 | | | | 0.0 - 0.7 Ft. CONCRETE. | |
| SS | 1.0 | 0.3 | 1/12" | | | | | | | | 0.7 - 18.0 Ft. Silty CLAY (CL) and RUBBLE. | Borehole advanced 0-20.5 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 0.5 | 3-1-5 2 | | | | | | | | 0.7-14.0 Ft. Grayish brown (5YR3/2) to grayish black (5YR2/1). Low moisture content to moist. Loose. Rubble consists of slag, gravel, brick, and carbonaceous material; Fe staining. Trace of black (N1) organics and patches of olive gray (5Y4/1) to greenish gray (5GY4/1) silty clay. | |
| SS | 2.0 | 1.6 | 13-22-30 12 | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.7 | 3-2-1 1 | | | | | | | | | |
| SS | 0.8 | 0.8 | 50/4" | | | | | | | | | Samples from 0-2, 4-6, and 18.5-20.5 ft. analysed for metals. |
| SS | 0.8 | 0.8 | 50/4" | | | | | 10 | | | | |
| SS | 0.2 | 0.2 | 50/2" | | | | | | | | | |
| SS | 2.0 | 1.7 | 12-10-7 5 | | | | | | | | | |
| SS | 2.0 | 1.2 | 2-3-7 9 | | | | | 15 | | | 14.0-18.0 Ft. Olive gray (5Y4/1) to greenish gray (5GY4/1). Moist, medium-stiff. Fragments of slag. Trace of very fine-grained sand and black (N1) organics. | 14.5 Ft. OVA reading 750ppm, Exotox LEL=80% (in auger). |
| SS | 2.0 | 1.3 | 2-3-3 3 | | | | | | | | | 16.5 Ft. OVA reading 400ppm (in auger). |
| | | | | | | | 406.3 | | | | | |
| SS | 2.0 | 1.8 | 1-2-2 1 | | | | | | | | 18.0 - 20.5 Ft. Sandy CLAY (SC). Olive gray (5Y4/1). Moist, soft, slightly to moderately plastic. Dense lenses of clay. Trace of black (N1) organics, including rootlets. | Top of undisturbed material at 18.0 ft. |
| | | | | | | | 403.8 | 20 | | | | |
| | | | | | | | | | | | Bottom of borehole at 20.5 Ft. Borehole backfilled with bentonite cement, 12/19/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C119B

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C120 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,605 E 2,155 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-18-88 | 11-23-88 | Layne-Western, Co. | CME-750 | 6" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 421.5 | ▽ 8.2/413.3 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M. | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 421.5 | | | | | |
| SS | 1.5 | 0.6 | 27-23-11 | | | | 421.2 | | | | 0.0 - 0.3 Ft. ASPHALT. | |
| SS | 2.0 | 1.0 | 6-6-4 3 | | | | | | | | 0.3 - 13.7 Ft. CLAY (CL) and RUBBLE. Brownish black (5YR3/1). Dry to low moisture content, soft to medium-stiff. Rubble consists of gravel, slag, and brick fragments; Fe staining. Patches of light olive gray (5Y6/1) to moderate yellowish brown (10YR5/4) clay. | Borehole advanced 0-16.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.4 | 3-2-3 4 | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.6 | 2-4-6 7 | | | | | | | | | |
| SS | 2.0 | 1.2 | 2-3-2 2 | | | | | | | | | |
| SS | 2.0 | 0.5 | 1-1-2 2 | | | | | 10 | | | | Samples from 4-6, 6-8, and 14-16 Ft. analysed for metals. |
| SS | 2.0 | 1.7 | 1-2-3 5 | | | | | | | | | |
| SS | 2.0 | 1.7 | 8-8-6 7 | | | | 407.8 | | | | | Top of undisturbed material at 14.0 Ft. |
| | | | | | | | | 15 | | | 13.7 - 16.0 Ft. Silty SAND (SM). Olive gray (5U4/1) to light olive brown (5Y5/6). Moist, medium-stiff, very fine- to fine-grained sand; Fe staining. Trace of black (N1) organics. | |
| | | | | | | | 405.5 | | | | | Description and classification of soils by visual examination. |
| | | | | | | | | | | | Bottom of borehole at 16.0 Ft. Borehole backfilled with bentonite cement, 11/23/88. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. C120

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C121 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,500 E 2,165 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-28-88 | 11-28-88 | Layne-Western, Co. | CME-550 | 6" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 421.1 | 8.8/412.3 11/28/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND NO. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.3 | | | | | 421.1 | | | | 0.0 - 8.0 Ft. RUBBLE. Moderate brown (5YR3/4) and dusky yellowish brown (10YR3/2). Low moisture content, slightly plastic. Bricks, organics, coal, slag. | Borehole advanced 0-16.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.6 | | | | | | | | | | |
| SS | 2.0 | 1.1 | | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.0 | | | | | | | | | | |
| SS | 2.0 | 1.3 | | | | | 413.1 | | | | 8.0 - 12.2 Ft. Sandy CLAY (SC). Grayish brown (5YR3/2). High moisture content. Trace of organics and coal. | |
| SS | 2.0 | 1.3 | | | | | | 10 | | | | |
| SS | 2.0 | 1.8 | | | | | 409.0 | | | | 12.2 - 16.0 Ft. Silty CLAY (CL). Olive gray (5G4/1). Moderate moisture content, moderately plastic. Trace of organics. | Top of undisturbed material at 12.2 Ft. |
| SS | 2.0 | 1.5 | | | | | | 15 | | | | |
| | | | | | | | 405.2 | | | | Bottom of borehole at 16.0 Ft. Borehole backfilled with bentonite cement, 11/28/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C121

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C124 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,548 E 2,390 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-16-88 | 11-28-88 | Layne-Western, Co. | CME-550 | 6" | 18.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 420.8 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SYMBOL | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 420.8 | | | | 0.0 - 1.0 Ft. ASPHALT and CONCRETE. | |
| SS | 1.5 | 1.3 | | | | | 419.8 | | | | 1.0 - 14.5 Ft. CLAY (CL) and RUBBLE. | Borehole advanced 1-18.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 1.5 | 1.5 | | | | | | | | | 1.0-8.0 Ft. Very dusky red (10R2/2) to dusky yellowish brown (10YR2/2). Low moisture content, slightly plastic. Coarse-grained brick fragments. | |
| SS | 2.0 | 1.6 | | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.6 | | | | | | | | | | |
| SS | 2.0 | 1.6 | | | | | | | | | 8.0-14.5 Ft. Silty and sandy clay (CL-SC). Pale brown (5YR5/2) to pale yellowish brown (10YR6/2) and medium red brown (10R4/8). Low moisture content, slightly plastic. Brick fragments, trace of organics. | |
| SS | 2.0 | 1.4 | | | | | | 10 | | | | |
| SS | 2.0 | 1.5 | | | | | | | | | | |
| SS | 2.0 | 1.9 | | | | | 406.3 | | | | | Top of undisturbed material at 14.5 Ft. |
| SS | 1.0 | 1.0 | | | | | | 15 | | | 14.5 - 18.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Low to moderate moisture content, moderately plastic, stiff in places. Trace of organics. | |
| SS | 1.0 | 1.0 | | | | | 402.8 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 18.0 Ft. Borehole backfilled with bentonite cement, 11/28/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No groundwater observed, 11/28/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C124

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C125 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,553 E 2,558 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-16-88 | 11-17-88 | Layne-Western, Co. | CME-750 | 6" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 424.3 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADJ. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.3 | | | | | |
| SS | 1.4 | 1.1 | 3-3-3/5" | | | | 423.8 | | | | 0.0 - 0.5 Ft. ASPHALT. | |
| SS | 2.0 | 1.0 | 13-19-14-5 | | | | | | | | 0.5 - 16.5 Ft. Silty CLAY (CL) and RUBBLE. | Borehole advanced 0-20.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.1 | 1-2-2-2 | | | | | 5 | | | 0.5-8.5 Ft. Dark yellowish brown. Moist, loose. Rubble consists of brick, sand, slag, carbonaceous material; Fe staining. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.3 | 2-2-7-7 | | | | | | | | | |
| SS | 2.0 | 1.7 | 3-2-2-2 | | | | | 10 | | | 8.5-16.5 Ft. Silty clay (CL). Olive gray (5Y4/1). Moderate moisture, soft, moderately plastic. Patches of greenish gray (5GY6/1) to light olive brown (5Y5/6) silty clay. Some brick fragments and slag. | Samples from 4-6 and 18-20 Ft. analyzed for metals. |
| SS | 2.0 | 1.6 | 3-2-2-4 | | | | | | | | | |
| SS | 2.0 | 0.7 | 2-4-9-4 | | | | | | | | | |
| SS | 2.0 | 1.7 | 2-2-4-4 | | | | | 15 | | | | |
| SS | 2.0 | 1.8 | 3-4-7-8 | | | | 407.8 | | | | 16.5 - 20.0 Ft. Silty SAND (SM). Olive gray (5Y4/1). Moist, medium-stiff, noncohesive, fine-grained sand, with some black (N1) organics. | Top of undisturbed material at 16.5 Ft. |
| SS | 2.0 | 1.9 | 6-8-9-7 | | | | | | | | | |
| | | | | | | | 404.3 | 20 | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 11/17/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No groundwater observed, 11/17/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C125

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C126B |

| SITE | COORDINATES | ANGLE FROM HORIZ. | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,595 E 2,702 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-18-88 | 11-23-88 | Layne-Western, Co. | CME-550 | 6" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 424.1 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.1 | | | | | |
| | | | | | | | 423.3 | | | | 0.0 - 0.8 Ft. CONCRETE. | |
| SS | 1.5 | 1.2 | | | | | | | | | 0.8 - 16.3 Ft. RUBBLE and silty CLAY (CL). Very dusky red (10R3/2) to dusky yellowish brown (10YR3/2), some grayish red (10R4/2). Low moisture content, slightly plastic. Loose. Trace of organics and coal. | Borehole advanced 0.8-20.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.5 | | | | | | | | | | |
| SS | 2.0 | 1.1 | | | | | | 5 | | | | |
| SS | 2.0 | 1.8 | | | | | | | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.3 | | | | | | | | | | |
| SS | 2.0 | 1.1 | | | | | | 10 | | | | |
| SS | 2.0 | 1.3 | | | | | | | | | | |
| SS | 2.0 | 0.9 | | | | | | 15 | | | | |
| SS | 2.0 | 2.0 | | | | | 407.8 | | | | 16.3 - 20.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Low to moderate moisture content, moderately plastic. Trace of coal and organics. | Top of undisturbed material at 16.3 Ft. |
| SS | 2.0 | 0.8 | | | | | | | | | | |
| | | | | | | | 404.1 | 20 | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 11/23/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No groundwater observed, 11/23/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| St. Louis Downtown Site | C126B |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C127 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,785 E 2,865 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-13-88 | 1-10-89 | Layne-Western, Co. | PC-1A | 6" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 423.0 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 423.0 | | | | 0.0 - 1.8 Ft. CONCRETE. | Borehole advanced 0-20.0 Ft. with 6-in. O.D. hollow-stem auger. |
| | | | | | | | 421.2 | | | | 1.8 - 16.8 Ft. FILL and CLAY (CL). | |
| SS | 2.0 | 1.4 | | | | | | | | | 1.8-6.0 Ft. Brownish black (5YR2/1). Low moisture content. Brick fragments, loose, organics. | |
| SS | 2.0 | 1.1 | | | | | | 5 | | | | |
| SS | 2.0 | 1.4 | | | | | | | | | 6.0-14.0 Ft. Dusky yellowish brown (10YR2/2). Low moisture content, crumbly to moderately plastic. Wood, brick fragments, slag, coal, organics. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.2 | | | | | | | | | | |
| SS | 2.0 | 1.3 | | | | | | 10 | | | | |
| SS | 2.0 | 1.3 | | | | | | | | | | |
| SS | 2.0 | 1.1 | | | | | | | | | | |
| SS | 2.0 | 1.3 | | | | | | 15 | | | 14.0-16.8 Ft. Moderate olive brown (5Y4/4), blackish brown (5YR2/2). Moderate moisture content. Slag, coal, and organics. | |
| SS | 2.0 | 1.4 | | | | | 406.2 | | | | 16.8 - 20.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moderate moisture content, moderately plastic. Trace of organics and wood. | Top of undisturbed material at 17.0 Ft. |
| | | | | | | | 403.0 | 20 | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 1/10/89. | Description and classification by visual examination. |
| | | | | | | | | | | | | No groundwater observed, 1/10/89. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C127

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C128 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,407 E 2,670 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 1-11-89 | 1-13-89 | Layne-Western, Co. | PC-1A | 6" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 422.0 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.0 | | | | | |
| | | | | | | | 421.4 | | | | 0.0 - 0.6 Ft. CONCRETE. | |
| SS | 1.3 | 1.0 | | | | | | | | | 0.6 - 18.0 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to dark yellowish brown (10YR4/2). Low moisture content to moist, medium-stiff. Loose. Rubble consists of slag, gravel, brick fragments, glass and wood; Fe staining. | Borehole advanced 0-20.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 0.7 | | | | | | | | | | |
| SS | 2.0 | 1.5 | | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.0 | | | | | | | | | | |
| SS | 2.0 | 0.6 | | | | | | | | | | |
| SS | 2.0 | 0.7 | | | | | | 10 | | | | 10.0 Ft. OVA reading >1000ppm (in auger), Exotox LEL=23%. |
| SS | 2.0 | 0.9 | | | | | | | | | | |
| SS | 2.0 | 1.4 | | | | | | | | | | Samples from 4-6, 8-10, and 18-20 Ft. analysed for metals. |
| SS | 2.0 | 0.5 | | | | | | 15 | | | | |
| SS | 2.0 | 1.8 | | | | | 404.0 | | | | 18.0 - 20.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, soft to medium-stiff, moderately plastic. Trace of very fine-grained sand and black (N1) organics. | Top of undisturbed material at 18.0 Ft. |
| | | | | | | | 402.0 | 20 | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 1/13/89. | Description and classification by visual examination. |
| | | | | | | | | | | | | No groundwater observed, 1/13/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C128

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C129 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,515 E 2,750 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-22-88 | 1-9-89 | Layne-Western, Co. | PC-1A. | 6" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 422.5 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pals |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.5 | | | | 0.0 - 1.0 Ft. CONCRETE. | |
| SS | 1.0 | 1.0 | | | | | 421.5 | | | | 1.0 - 16.5 Ft. FILL and silty CLAY (CL). Brownish black (5YR3/1) to light olive gray (5Y2/1). Some dark yellowish brown (10YR4/2). Low moisture content, stiff, slightly plastic. Slag, coal, organics, wood, sandy in places. | Borehole advanced 0-20.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.4 | | | | | | | | | | |
| SS | 2.0 | 0.8 | | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline |
| SS | 2.0 | 1.2 | | | | | | | | | | |
| SS | 2.0 | 0.6 | | | | | | 10 | | | | |
| SS | 2.0 | 1.2 | | | | | | | | | | |
| SS | 2.0 | 1.3 | | | | | | | | | | |
| SS | 2.0 | 1.5 | | | | | | 15 | | | | |
| SS | 2.0 | 2.0 | | | | | 406.0 | | | | 16.5 - 20.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moderate moisture content, slightly plastic. Organics, wood fragments. | Top of undisturbed material at 16.5 Ft. |
| SS | 2.0 | 1.2 | | | | | 402.5 | 20 | | | | |
| | | | | | | | | | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 1/9/89. | Description and classification by visual examination. |
| | | | | | | | | | | | | No groundwater observed, 1/9/89. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C129

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C130 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,515 E 2,865 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-21-88 | 1-9-89 | Layne-Western, Co. | PC-1A | 6" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 421.5 | ▽ / ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pals |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN g.p.m | WATER PRESSURE TESTS: PRESS. p.s.i. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 421.5 | | | | | |
| | | | | | | | 420.7 | | | | 0.0 - 0.8 Ft. CONCRETE. | |
| SS | 2.3 | 2.0 | | | | | | | | | 0.8 - 15.0 Ft. FILL and silty CLAY (CL). Brownish black (5YR2/1) to light olive gray (5Y2/1). Some dark yellowish brown (10YR4/2). Low moisture content, stiff, slightly plastic. Slag, coal, organics, wood, sandy in places. | Borehole advanced 0-20.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.8 | | | | | | | | | | |
| SS | 2.0 | 1.6 | | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 1.0 | 1.0 | | | | | | | | | | |
| SS | 2.0 | 1.1 | | | | | | | | | | |
| SS | 2.0 | 1.1 | | | | | | 10 | | | | |
| SS | 2.0 | 0.9 | | | | | | | | | | |
| SS | 2.0 | 0.0 | | | | | | | | | | |
| | | | | | | | 406.5 | 15 | | | 15.0 - 20.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moderate moisture content, slightly plastic. Organics, silty, wood fragments. | Top of undisturbed material at 16.0 Ft. |
| SS | 2.0 | 0.8 | | | | | | | | | | |
| SS | 2.0 | 1.0 | | | | | | | | | | |
| | | | | | | | 401.5 | 20 | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 1/9/89. | Description and classification by visual examination. |
| | | | | | | | | | | | | No groundwater observed, 1/9/89. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. C130

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C131 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,511 E 2,903 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-28-88 | 12-23-88 | Layne-Western, Co. | CME-550 | 6" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 421.3 | ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 421.3 | | | | | |
| | | | | | | | 420.5 | | | | 0.0 - 0.8 Ft. CONCRETE. | |
| SS | 1.3 | 1.2 | | | | | | | | | 0.8 - 12.5 Ft. RUBBLE and Silty CLAY (CL). Grayish brown (5YR3/2) to dusky yellowish brown (10YR2/2). Some dark reddish brown (10R3/4). Low moisture content, slightly plastic. Trace of pebbles, sand, organics, and coal. | Borehole advanced 0.8-16.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.4 | | | | | | | | | | |
| SS | 2.0 | 1.6 | | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.6 | | | | | | | | | | |
| SS | 2.0 | 1.1 | | | | | | | | | | |
| SS | 2.0 | 0.8 | | | | | | 10 | | | | |
| SS | 2.0 | 1.6 | | | | | 408.8 | | | | 12.5 - 16.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moderate moisture content, moderately plastic. Trace of organics, dessication cracks, and fluid. | Top of undisturbed material at 12.5 Ft. |
| SS | 2.0 | 1.5 | | | | | | 15 | | | | |
| | | | | | | | 405.3 | | | | Bottom of borehole at 16.0 Ft. Borehole backfilled with bentonite cement, 12/23/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No groundwater observed, 12/23/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C131

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C132 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,695 E 3,033 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-14-88 | 12-19-88 | Layne-Western, Co. | CME-750 | 6" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 422.6 | 12.8/409.8 12/19/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS / X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.6 | | | | | |
| | | | | | | | 421.3 | | | | 0.0 - 1.3 Ft. GRAVEL. | Borehole advanced 0-16.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 1.0 | 0.7 | 15-40 | | | | | | | | | |
| SS | 1.8 | 1.6 | 14-18-21 6/4" | | | | | | | | 1.3 - 13.0 Ft. Silty CLAY (CL) and RUBBLE. Dark yellowish brown (10YR4/2). Dry to low moisture content, soft to medium-stiff. Rubble consists of slag, gravel, brick, and sand; Fe staining. | 2.0-2.2 Ft. Drilling through brick. |
| SS | 2.0 | 1.2 | 4-5-6 3 | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.3 | 1-3-4 5 | | | | | | | | | |
| SS | 2.0 | 1.7 | 2-2-4 4 | | | | | 10 | | | | Samples from 2.2-4.0 and 14.0-16.0 Ft. analysed for metals. |
| SS | 2.0 | 1.4 | 1-3-4 3 | | | | | | | | | |
| SS | 2.0 | 1.7 | 1-2-2 3 | | | | 409.6 ▽ | | | | | |
| SS | 2.0 | 1.7 | 3-2-3 2 | | | | | | | | 13.0 - 16.0 Ft. Sandy CLAY (SC). Olive gray (5Y4/1). Moist, soft, slightly to moderately plastic. Very fine-grained sand and some black (N1) organics, including pieces of wood. | Top of undisturbed material at 13.0 Ft. |
| | | | | | | | | 15 | | | | |
| | | | | | | | 406.6 | | | | Bottom of borehole at 16.0 Ft. Borehole backfilled with bentonite cement, 12/19/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| St. Louis Downtown Site | C132 |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C133 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,505 E 3,025 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-15-88 | 1-9-89 | Layne-Western, Co. | CME-750 | 6" | 13.0 | | 13.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 6 | | 421.0 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 421.0 | | | | | |
| SS | 1.3 | 0.9 | 3-3-3/4 | | | | 420.5 | | | | 0.0 - 0.5 Ft. CONCRETE. | |
| SS | 2.0 | 1.1 | 3-5-3 3 | | | | | | | | 0.5 - 9.0 Ft. GRAVEL and SLAG. Brownish black (5YR2/1). Low moisture content, loose. Angular limestone, some carbonaceous material, brick, glass, and wood; Fe staining. | Borehole advanced 0-13.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 0.8 | 1-1-2 1 | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. Samples from 0-2, 6-8, and 10-12 Ft. analysed for metals. |
| SS | 2.0 | 0.6 | 1-1-1 2 | | | | | | | | | |
| SS | 2.0 | 1.5 | 5-3-2 2 | | | | 412.0 | | | | 9.0 - 13.0 Ft. Silty SAND (SM). Olive gray (5Y4/1). Moist, soft, slightly plastic, very fine-grained. | Top of undisturbed material at 9.0 Ft. |
| SS | 2.0 | 1.6 | 3-2-4 3 | | | | | 10 | | | | |
| | | | | | | | 408.0 | | | | Bottom of borehole at 13.0 Ft. Borehole backfilled with bentonite cement, 1/9/89. | Description and classification by visual examination. |
| | | | | | | | | | | | | No groundwater observed, 1/9/89. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. C133

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 1 | C134 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1836.00; E 3100.00 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-15-88 | 12-15-88 | Layne-Western, Co. | CME-750 | 6" | 14.0 | | 14.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | | ▽ 8.3/ 12/19/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS / % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 1.7 | 1.2 | 6-10-16 2/2" | | | | | | | | 0-0.3 ft. **GRAVEL** | 0-14.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.7 | 7-13-11 10 | | | | | | | | 0.3-10.5 ft. **SILTY CLAY (CL) and RUBBLE**, dark yellowish brown (10YR4/2), low moisture content-moist, loose, rubble consists of gravel, brick, sand and carbonaceous material, Fe staining. | |
| SS | 2.0 | 1.2 | 3-5-6 4 | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 1.0 | 1-1-1 1 | | | | | | | | | 2-4 ft., 8-10 ft. and 12-14 ft. sample intervals analyzed for metals. |
| SS | 2.0 | 0.8 | 1-1-1/1- | | | | | ▽ | | | | |
| SS | 2.0 | 1.8 | 1-1-1 1 | | | | | 10 | | | 10.5-14.0 ft. **SILTY SAND** (SM), olive gray (5Y4/1), moist, soft, very fine grained, cohesive, some black (N1) organics. | Top of undisturbed material at 10.5 ft. |
| SS | 2.0 | 1.7 | 1-1-2 2 | | | | | | | | | |
| | | | | | | | | | | | Bottom of Boring at 14.0 ft. Boring backfilled with bentonite cement, 12/19/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; CA = CALIFORNIA; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C134

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C135 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,345 E 2,515 | Vertical | ------- |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-16-88 | 11-23-88 | Layne-Western, Co. | CME-550 | 6" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 11 | | 424.3 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADJ. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.3 | | | | 0.0 - 1.0 Ft. CONCRETE. | |
| SS | 1.0 | 0.6 | | | | | 423.3 | | | | 1.0 - 17.0 Ft. RUBBLE and silty CLAY (CL). Dusky brown (5YR3/2) to olive gray (5Y5/2). Low moisture content, slightly plastic. Loose. Brick fragments, coal, organics. | Borehole advanced 1-20.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.3 | | | | | | | | | | |
| SS | 2.0 | 0.8 | | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.4 | | | | | | | | | | |
| SS | 2.0 | 1.4 | | | | | | | | | | |
| SS | 2.0 | 0.0 | | | | | | 10 | | | | |
| SS | 2.0 | 1.6 | | | | | | | | | | |
| SS | 2.0 | 1.5 | | | | | | 15 | | | | |
| SS | 2.0 | 1.6 | | | | | 407.3 | | | | 17.0 - 20.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moderate moisture content, moderately plastic. Wood chips, trace of coal. | Top of undisturbed material at 16.8 Ft. |
| SS | 1.0 | 0.9 | | | | | | | | | | |
| SS | 1.0 | 1.0 | | | | | 404.3 | 20 | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 11/23/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No groundwater observed, 11/23/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C135

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C136 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,410 E 2,625 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-14-88 | 11-17-88 | Layne-Western, Co. | CME-550 | 6" | 21.0 | | 21.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 424.5 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pals |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.5 | | | | 0.0 - 1.0 Ft. CONCRETE. | |
| SS | 2.0 | 1.6 | | | | | 423.5 | | | | 1.0 - 17.5 Ft. Silty CLAY (CL) and RUBBLE. | Borehole advanced 1-21.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.0 | | | | | | | | | 1.0-5.0 Ft. Dusky red (5R3/4) to very dark red (5R2/6). Low moisture content, very slightly plastic. Loose. | |
| SS | 2.0 | 0.5 | | | | | | 5 | | | 5.0-9.0 Ft. Very dusky red (10R2/2). Moderate moisture content, slightly plastic. Loose. Clay layers, brick fragments, medium- to coarse-grained material. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.5 | | | | | | | | | | |
| SS | 2.0 | 1.4 | | | | | | 10 | | | 9.0-13.0 Ft. Brownish gray (5YR4/1). Moderate moisture content, moderately plastic. Brick fragments, clay stringers throughout. Loose material in lower 6 inches. | |
| SS | 2.0 | 1.3 | | | | | | | | | | |
| SS | 2.0 | 0.8 | | | | | | | | | 13.0-17.5 Ft. Silty clay (CL) and gravel. Brownish black (5YR2/1). Moderate moisture content, slightly plastic. Coal layers. | |
| SS | 2.0 | 1.0 | | | | | | 15 | | | | |
| SS | 2.0 | 1.5 | | | | | 407.0 | | | | 17.5 - 21.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moderate moisture content, moderately plastic. Trace of organics. | Top of undisturbed material at 17.5 Ft. |
| SS | 2.0 | 2.0 | | | | | | 20 | | | | |
| | | | | | | | 403.5 | | | | Bottom of borehole at 21.0 Ft. Borehole backfilled with bentonite cement, 11/17/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No groundwater observed, 11/17/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| St. Louis Downtown Site | C136 |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C138 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,375 E 2,840 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-12-88 | 1-11-89 | Layne-Western, Co. | PC-1A | 6" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 422.0 | ▽ 16.5/405.5 1/11/89 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pals |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.0 | | | | | |
| | | | | | | | 420.4 | | | | 0.0 - 1.6 Ft. CONCRETE. | Borehole advanced 0-20.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.2 | | | | | | | | | 1.6 - 18.5 Ft. Silty CLAY (CL) and FILL. | |
| SS | 2.0 | 1.8 | | | | | | 5 | | | 1.6-14.0 Ft. Dusky yellowish brown (10YR2/2) to olive black (5Y2/1). Some blackish red (5R2/2). Low to moderate moisture content, slightly plastic. Organics, trace of coal, glass, wood, slag, gravel. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 1.0 | 0.6 | | | | | | | | | | |
| SS | 1.0 | 0.6 | | | | | | | | | | |
| SS | 2.0 | 1.3 | | | | | | 10 | | | | |
| SS | 2.0 | 1.3 | | | | | | | | | | |
| SS | 2.0 | 0.6 | | | | | | | | | | |
| SS | 2.0 | 0.0 | | | | | | 15 | | | 14.0-18.5 Ft. Dusky yellowish brown (10YR2/2) to brownish black (5YR2/1). Slightly plastic, liquefied. Trace of organics and coal. | |
| SS | 2.0 | 1.0 | | | | | | | | | | |
| SS | 2.0 | 0.0 | | | | | 403.5 | | | | | |
| | | | | | | | 402.0 | 20 | | | 18.5 - 20.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moderate to high moisture content, moderately plastic. Trace of organics. | Top of undisturbed material at 18.5 Ft. |
| | | | | | | | | | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 1/11/89. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C138

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C139 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,330 E 2,840 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 1-9-89 | 1-10-89 | Layne-Western, Co. | PC-1A | 6" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 422.0 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.0 | | | | 0.0 - 1.8 Ft. CONCRETE. | Borehole advanced 0-20.0 Ft. with 6-in. O.D. hollow-stem auger. |
| | | | | | | | 420.2 | | | | 1.8 - 16.5 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to dark yellowish brown (10YR4/2). Dry to low moisture content, loose. Rubble consists of slag, carbonaceous material, and brick fragments; Fe staining. Patches of moderate yellowish brown (10YR5/4) silty clay. | |
| SS | 2.0 | 1.0 | | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.7 | | | | | | | | | | |
| SS | 2.0 | 1.8 | | | | | | | | | | 8.0 Ft. OVA reading >1000ppm (in auger). 10.0 Ft. OVA reading 200ppm (in auger). |
| SS | 1.5 | 1.0 | | | | | | 10 | | | | |
| SS | 2.0 | 1.6 | | | | | | | | | | 12.0 Ft. OVA reading 20ppm (in auger). |
| SS | 2.0 | 1.4 | | | | | | | | | | |
| SS | 2.0 | 1.2 | | | | | | 15 | | | | 14.0 Ft. OVA reading >400ppm (in auger). |
| SS | 2.0 | 1.7 | | | | | 405.5 | | | | 16.5 - 20.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, soft to medium-stiff, slightly plastic. Some very fine-grained sand. Trace of black (N1) organics, including rootlets. | Top of undisturbed material at 16.5 Ft. |
| SS | 2.0 | 1.9 | | | | | | | | | | Samples from 2-4 and 18-20 Ft. analyzed for metals. |
| | | | | | | | 402.0 | 20 | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 1/10/89. | Description and classification by visual examination. |
| | | | | | | | | | | | | No groundwater observed, 1/10/89. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C139

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C140 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,260 E 2,765 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-18-88 | 11-26-88 | Layne-Western, Co. | CME-750 | 6" | 18.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 422.4 | ▽ 10.8/411.6 11/28/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS / X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.4 | | | | | |
| | | | | | | | 421.9 | | | | 0.0 - 0.5 Ft. ASPHALT. | |
| SS | 1.4 | 0.9 | 7-8-6/5" | | | | | | | | 0.5 - 14.0 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1). Dry to low moisture content. Rubble consists of gravel, slag, and sand; Fe staining. | Borehole advanced 0-18.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.8 | 5-5-4 9 | | | | | | | | | |
| SS | 2.0 | 1.0 | 3-2-2 1 | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 1.5 | 0.2 | 2-2-2 | | | | | | | | | |
| SS | 2.0 | 0.9 | 1-1-1 1 | | | | | | | | | |
| SS | 2.0 | 0.8 | 1-1-1 1 | | | | | 10 | | | | Samples from 2-4, 6-8, and 16-18 Ft. analysed for metals. |
| SS | 2.0 | 0.5 | 2-2-2 2 | | | | | | | | | |
| SS | 2.0 | 1.7 | 2-3-4 5 | | | | 408.4 | 15 | | | 14.0 - 18.0 Ft. Sandy CLAY (SC). Olive gray. Moist, soft to medium-stiff, moderately plastic. Very fine- to fine-grained sand. Some black (N1) organics. Highly plastic clay lenses. | Top of undisturbed material at 14.0 Ft. |
| SS | 2.0 | 1.7 | 4-2-1 2 | | | | 404.4 | | | | Bottom of borehole at 18.0 Ft. Borehole backfilled with bentonite cement, 11/28/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| St. Louis Downtown Site | C140 |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C141 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,515 E 3,122 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-9-88 | 12-19-88 | Layne-Western, Co. | CME-750 | 6" | 18.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 420.6 | ▽ 15.0/405.6 12/19/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 420.6 | | | | | |
| SS | 1.4 | 1.0 | 6-10 6/5" | | | | 420.4 | | | | 0.0 - 0.2 Ft. ASPHALT. | |
| SS | 2.0 | 1.1 | 10-8-7 8 | | | | | | | | 0.2 - 14.5 Ft. Silty CLAY (CL) and RUBBLE. | Borehole advanced 0-18.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.5 | 4-7-3 4 | | | | | 5 | | | 0.5-6.0 Ft. Dark yellowish brown (10YR4/2). Low moisture content, loose. Rubble consists of slag, gravel, brick, sand, and carbonaceous material; Fe staining. | |
| SS | 2.0 | 1.7 | 1-2-3 4 | | | | | | | | 6.0-11.7 Ft. Olive gray (5Y4/1). Moist, soft, moderately to highly plastic; Fe staining. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.7 | WH-2-2 2 | | | | | | | | | |
| SS | 2.0 | 1.5 | 1-3-3 4 | | | | | 10 | | | | Samples from 8-10 and 14-16 Ft. analysed for metals. |
| SS | 2.0 | 1.5 | 3-1-4 1 | | | | | | | | 11.7-13.0 Ft. Coarse-grained sand. | |
| SS | 2.0 | 1.2 | WR-14-12 10 | | | | | | | | 13.0-14.5 Ft. Pale brown (5YR5/2) silty sand. Moist, soft, very fine-grained. | |
| | | | | | | | 406.1 | | | | | |
| | | | | | | | | 15 | | | 14.5 - 18.0 Ft. Silty SAND (SM). Olive gray (5Y4/1). Moist, soft, some partially decayed wood and angular limestone. | Top of undisturbed material at 14.5 Ft. |
| SS | 2.0 | 1.4 | 7-3-23 27 | | | | | | | | | 16.0 Ft. OVA reading 50ppm (in auger). |
| | | | | | | | 402.6 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 18.0 Ft. Borehole backfilled with bentonite cement, 12/19/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| St. Louis Downtown Site | C141 |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C142 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,038 E 2,952 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-2-88 | 12-7-88 | Layne-Western, Co. | CME-550 | 6" | 12.0 | | 12.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 421.3 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pals |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.3 | | | | | 421.3 | | | | | |
| SS | 2.0 | 1.6 | | | | | | | | | 0.0 - 8.5 Ft. GRAVEL and Silty CLAY (CL). Dusky reddish brown (10R3/4) to dusky brown (5YR2/2). Low to moderate moisture content, slightly plastic. Trace of organics. Sandy in places. | Borehole advanced 0-12.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.2 | | | | | | 5 | | | | |
| SS | 1.0 | 0.5 | | | | | | | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 1.0 | 0.3 | | | | | | | | | | |
| SS | 2.0 | 1.8 | | | | | 412.8 | | | | 8.5 - 12.0 Ft. Silty CLAY (CL). Grayish brown (5YR3/2). Moderate to high moisture content, sandy in places, moderately plastic, stiff. | Top of undisturbed material at 8.5 Ft. |
| SS | 1.5 | 1.4 | | | | | | 10 | | | | |
| SS | 0.5 | 0.5 | | | | | 409.3 | | | | Bottom of borehole at 12.0 Ft. Borehole backfilled with bentonite cement, 12/7/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No groundwater observed, 12/7/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C142

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C143 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,050 E 3,000 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-1-88 | 12-7-88 | Layne-Western, Co. | CME-550 | 6" | 14.0 | | 14.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 420.6 | ▽ 7.5/413.1 12/7/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SYMBOL | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 420.6 | | | | | |
| SS | 2.0 | 1.3 | | | | | | | | | 0.0 - 8.2 Ft. GRAVEL and Silty CLAY (CL). Dusky brown (5YR2/2) to dark reddish brown (10RS/4). Low to moderate moisture content, slightly plastic. Trace of organics, sandy. | Borehole advanced 0-14.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.3 | | | | | | | | | | |
| SS | 2.0 | 1.3 | | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.4 | | | | | | | | | | |
| | | | | | | | 412.4 ▽ | | | | | |
| SS | 2.0 | 1.8 | | | | | | | | | 8.2 - 14.0 Ft. Silty CLAY (CL). Grayish brown (5YR3/2). Moderate to high moisture content, sandy in places, moderately plastic, stiff. | Top of undisturbed material at 8.5 Ft. |
| SS | 2.0 | 1.3 | | | | | | 10 | | | | |
| SS | 2.0 | 1.0 | | | | | | | | | | |
| | | | | | | | 406.6 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 14.0 Ft. Borehole backfilled with bentonite cement, 12/7/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| St. Louis Downtown Site | C143 |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C144 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 2,000 E 3,588 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-1-88 | 11-8-88 | Layne-Western, Co. | CME-750 | 6" | 20.5 | | 20.5 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 422.0 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.0 | | | | | |
| SS | 1.8 | 1.5 | 3-8-11 50/3" | | | | | | | | 0.0 - 2.2 Ft. Silty CLAY (CL). Dark yellowish brown (10YR4/2). Dry, stiff, some brick fragments. | Borehole advanced 0-20.5 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 1.4 | 1.1 | 11-11 50/5" | | | | 419.8 | | | | | |
| | | | | | | | 419.5 | | | | 2.2 - 2.5 Ft. CONCRETE. | |
| | | | | | | | | | | | 2.5 - 20.5 Ft. FILL. | |
| SS | 2.0 | 1.4 | 5-11-27 15 | | | | | 5 | | | 2.5-5.0 Ft. Gravel and concrete. Angular limestone. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 0.5 | 13-5-9 4 | | | | | | | | 5.0-6.0 Ft. Silty clay (CL) and gravel. Dark yellowish brown (10YR4/2). Angular limestone. | |
| SS | 2.0 | 0.9 | 2-2-4 6 | | | | | | | | 6.0-9.0 Ft. Gravel. Angular limestone. | |
| SS | 2.0 | 1.3 | 5-4-3 6 | | | | | 10 | | | 9.0-20.5 Ft. Silty clay (CL) and rubble. Dark yellowish brown (10YR4/2) to brownish black (5YR2/1). Moist, loose. Rubble consists of brick. | Samples from 5-7 and 19-20.5 Ft. analyzed for metals. |
| SS | 2.0 | 1.2 | 3-4-5 7 | | | | | | | | | |
| SS | 2.0 | 1.7 | 3-6-5 4 | | | | | 15 | | | | |
| SS | 2.0 | 1.0 | 4-6-5 4 | | | | | | | | | |
| SS | 1.5 | 1.5 | 2-3-2 | | | | | 20 | | | | |
| | | | | | | | 401.5 | | | | Bottom of borehole at 20.5 Ft. Borehole backfilled with bentonite cement, 11/8/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No groundwater observed, 11/8/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C144

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 2 | C145 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,800 E 3,400 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 10-28-88 | 11-15-88 | Layne-Western, Co. | CME-750 | 6" | 32.0 | | 32.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 16 | | 427.0 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 427.0 | | | | |
| SS | 2.0 | 1.4 | 2-4-4 6 | | | | | | | 0.0 - 19.5 Ft. Silty CLAY (CL) and RUBBLE. Grayish brown (5YR3/2). Dry, loose. Rubble consists of brick, gravel, slag and glass; Fe staining. Patches of moderate yellowish brown (10YR5/4) silty clay. | Borehole advanced 0-32.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 0.5 | 4-22-35 17 | | | | | | | | |
| SS | 2.0 | 1.8 | 9-26-38 31 | | | | | 5 | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.8 | 5-8-9 24 | | | | | | | | |
| SS | 2.0 | 1.3 | 12-5-7 7 | | | | | | | | |
| SS | 2.0 | 1.5 | 6-4-3 4 | | | | | 10 | | | Samples from 6-8, 10-12, and 26-28 Ft. analysed for metals. |
| SS | 2.0 | 0.8 | 3-3-2 2 | | | | | | | | |
| SS | 2.0 | 1.0 | 2-3-3 3 | | | | | | | | |
| SS | 2.0 | 0.9 | 5-10-4 2 | | | | | 15 | | | |
| SS | 2.0 | 2.0 | 1-1-2 1 | | | | | | | | |
| | | | | | | | 407.5 | | | | |
| SS | 2.0 | 1.9 | 2-5-3 5 | | | | | 20 | | 19.5 - 32.0 Ft. Sandy SILT (SM). Olive gray (5Y4/1). Moist, soft to medium-stiff, slightly plastic. Grayish black (N2) to greenish gray (5GY6/1) clay lenses. Some organics, including rootlets. | Top of undisturbed material at 19.5 Ft. |
| SS | 2.0 | 1.4 | 3-2-1 2 | | | | | | | | |
| SS | 2.0 | 2.0 | 1-1-1 1 | | | | | 25 | | | |
| SS | 2.0 | 2.0 | 5-9-4 4 | | | | | | | | |
| SS | 2.0 | 2.0 | 2-7-5 3 | | | | | 30 | | | |
| SS | 2.0 | 2.0 | 2-2-4 2 | | | | | | | | |
| | | | | | | | 395.0 | | | | |
| | | | | | | | | | | Bottom of borehole at 32.0 Ft. Borehole backfilled with bentonite cement, 11/15/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C145

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 2 OF 2 | C145 |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | No groundwater observed, 11/15/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. C145

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C146 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,738 E 3,618 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 10-27-88 | 11-8-88 | Layne-Western, Co. | CME-750 | 6" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 424.0 | ▽ / ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN g.p.m | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SYMBOL | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.2 | 4-13-12 13 | | | | 424.0 | | | | 0.0 - 20.0 Ft. Silty CLAY (CL) and RUBBLE. Grayish brown (5YR3/2). Dry, loose. Rubble consists of brick, gravel, and slag. | Borehole advanced 0-20.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.3 | 6-11-7 6 | | | | | | | | | |
| SS | 2.0 | 0.6 | 3-5-15 3 | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 0.0 | 2-9-11 1 | | | | | | | | | |
| SS | 2.0 | 0.5 | 1-2-4 1 | | | | | | | | | |
| SS | 2.0 | 0.8 | 3-5-7 6 | | | | | 10 | | | | Samples from 2-4, 8-10, and 18-20 Ft. analysed for metals. |
| SS | 2.0 | 1.2 | 6-3-3 4 | | | | | | | | | 10.0 Ft. LEL=3%. |
| SS | 2.0 | 1.3 | 4-50-25 7 | | | | | 15 | | | | |
| SS | 2.0 | 0.9 | 3-4-4 3 | | | | | | | | | |
| SS | 2.0 | 1.4 | 2-2-3 4 | | | | | | | | | 18.0 Ft. OVA reading 5 ppm (inside augers). |
| | | | | | | | 404.0 | 20 | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 11/8/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No groundwater observed, 11/8/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. C146

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C147 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,500 E 3,305 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 10-31-88 | 11-8-88 | Layne-Western, Co. | CME-550 | 6" | 19.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 425.0 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | S. Beck |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN g.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 425.0 | | | | | |
| SS | 2.0 | 1.2 | | | | | 424.5 | | | | 0.0 - 0.5 Ft. TOPSOIL. | |
| | | | | | | | | | | | 0.5 - 19.0 Ft. FILL. Crushed fill material including slag, concrete, red brick, and clay. | Borehole advanced 0-20.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.3 | | | | | | | | | | |
| SS | 2.0 | 0.9 | | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.1 | | | | | | | | | | |
| SS | 2.0 | 1.6 | | | | | | | | | | |
| SS | 2.0 | 2.0 | | | | | | 10 | | | | Samples from 2-4 and 18-20 Ft. analysed for metals. |
| SS | 2.0 | 2.0 | | | | | | | | | | |
| SS | 2.0 | 1.7 | | | | | | 15 | | | | |
| SS | 2.0 | 1.7 | | | | | | | | | | |
| SS | 2.0 | 1.7 | | | | | | | | | | |
| | | | | | | | 406.0 | | | | | |
| | | | | | | | 405.0 | 20 | | | 19.0 - 20.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to olive black (5Y2/1). | Top of undisturbed material at 19.0 Ft. Description and classification by visual examination. |
| | | | | | | | | | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 11/8/88. | |
| | | | | | | | | | | | | No groundwater observed, 11/8/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| St. Louis Downtown Site | C147 |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C148 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,400 E 3,400 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 10-31-88 | 11-8-88 | Layne-Western, Co. | CME-550 | 6" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 13 | | 428.0 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | S. Beck |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.3 | | | | | 428.0 | | | | 0.0 - 20.0 Ft. FILL. Crushed fill material including red brick, glass, wood, and slag. | Borehole advanced 0-20.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 1.0 | 0.8 | | | | | | | | | | |
| SS | 1.0 | 1.0 | | | | | | | | | | |
| SS | 2.0 | 1.3 | | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 1.0 | 0.6 | | | | | | | | | | |
| SS | 1.0 | 0.7 | | | | | | | | | | |
| SS | 2.0 | 1.6 | | | | | | | | | | |
| SS | 2.0 | 0.8 | | | | | | 10 | | | | Samples from 2-4 and 18-20 Ft. analysed for metals. |
| SS | 2.0 | 1.7 | | | | | | | | | | |
| SS | 2.0 | 1.3 | | | | | | 15 | | | | |
| SS | 2.0 | 1.4 | | | | | | | | | | |
| SS | 1.0 | 0.5 | | | | | | | | | | Explosive gases were detected at depth of 18.0 Ft. |
| SS | 1.0 | 0.7 | | | | | 408.0 | 20 | | | | |
| | | | | | | | | | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 11/8/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No groundwater observed, 11/8/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C148

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 2 | C149 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,300 E 3,505 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-2-88 | 11-10-88 | Layne-Western, Co. | CME-750 | 6" | 50.0 | | 50.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 25 | | 430.0 | ▽ 44.0/386.0 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. 430.0 | DEPTH | GRAPHICS SYMBOL | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.5 | 2-9-9 12 | | | | | | | 0.0 - 47.5 Ft. Silty CLAY (CL) and RUBBLE. Dark yellowish brown (10YR4/2) to moderate yellowish brown (10YR5/4). Dry to low moisture content, loose. Rubble consists of slag, brick, carbonaceous material, glass, gravel, and lime; Fe staining. | Borehole advanced 0-50.0 Ft. with 6-in. hollow-stem auger. |
| SS | 2.0 | 0.9 | 12-16-19 14 | | | | | | | | |
| SS | 2.0 | 1.2 | 3-6-9 5 | | | | | 5 | | | |
| SS | 2.0 | 0.5 | 3-2-2 2 | | | | | | | | |
| SS | 2.0 | 1.0 | 1-1-2 2 | | | | | | | | |
| SS | 2.0 | 1.4 | 2-4-4 4 | | | | | 10 | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.1 | 2-3-2 3 | | | | | | | | |
| SS | 2.0 | 0.8 | 3-3-2 3 | | | | | 15 | | | |
| SS | 2.0 | 1.1 | 4-3-2 3 | | | | | | | | |
| SS | 2.0 | 0.8 | 3-2-5 4 | | | | | | | | |
| SS | 2.0 | 1.7 | 2-2-2 2 | | | | | 20 | | | Samples from 8-10, 42-44, and 48-50 Ft. analysed for metals. |
| SS | 2.0 | 1.7 | 3-2-3 2 | | | | | | | | |
| SS | 2.0 | 1.2 | 2-3-3 4 | | | | | 25 | | | |
| SS | 2.0 | 1.2 | 4-4-4 4 | | | | | | | | |
| SS | 2.0 | 1.1 | 3-3-3 4 | | | | | 30 | | | |
| SS | 2.0 | 0.3 | 3-4-4 4 | | | | | | | | |
| SS | 2.0 | 0.6 | 5-4-3 4 | | | | | | | | |
| SS | 2.0 | 1.3 | 3-2-3 4 | | | | | | | | |

SS = SPLIT SPOON; ST = SHELBY TUBE; O = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. C149

# GEOLOGIC DRILL LOG

PROJECT: FUSRAP | JOB NO.: 14501-116 | SHEET NO.: 2 OF 2 | HOLE NO.: C149

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" / % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.4 | 3-3-3 3 | | | | | | | | | |
| SS | 2.0 | 1.3 | 4-4-3 3 | | | | | | | | | 38.0 Ft. OVA reading 1000 ppm, Exotox 40 ppm (in augers), 60 ppm (ambient). |
| SS | 2.0 | 1.3 | 3-3-3 3 | | | | | 40 | | | | |
| SS | 1.8 | 0.5 | 3-3-5 8/3" | | | | | | | | | |
| SS | 2.0 | 0.9 | 4-4-3 4 | | | | | 45 | | | | 44.0 Ft. OVA reading >1000 ppm, Exotox >100 ppm toxic, LEL=6% (in augers). |
| SS | 2.0 | 1.3 | | | | | 382.5 | | | | | |
| SS | 2.0 | 1.2 | 4-3-2 1 | | | | | | | | 47.5 - 50.0 Ft. Silty SAND (SM). Olive gray (5Y4/1). Fine- to medium-grained sand (quarts and feldspar). Saturated, noncohesive. Some angular pebbles (1/8-inch). | Top of undisturbed material at 47.5 Ft. |
| | | | | | | | 380.0 | 50 | | | Bottom of borehole at 50.0 Ft. Borehole backfilled with bentonite cement, 11/10/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C149

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C150 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,000 E 3,570 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-1-88 | 11-9-88 | Layne-Western, Co. | CME-750 | 6" | 22.0 | | 22.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 422.0 | ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.0 | | | | | |
| SS | 2.0 | 1.4 | 2-6-15 25 | | | | | | | | 0.0 - 22.0 Ft. Silty CLAY (CL) and RUBBLE. Brownish gray (5YR4/1). Dry, loose. Rubble consists of brick, gravel, sand and glass; Fe staining. Patches of moderate yellowish brown (10YR5/4) to dark yellowish brown (10YR4/2) silty clay. | Borehole advanced 0-22.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.4 | 15-24-16 20 | | | | | | | | | |
| SS | 2.0 | 1.7 | 8-14-14 11 | | | | | 5 | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.7 | 4-7-8 11 | | | | | | | | | |
| SS | 2.0 | 1.3 | 3-4-7 5 | | | | | | | | | |
| SS | 2.0 | 1.2 | 5-5-4 4 | | | | | 10 | | | | Samples from 2-4 and 18-20 Ft. analysed for metals. |
| SS | 2.0 | 1.2 | 4-4-3 4 | | | | | | | | | |
| SS | 2.0 | 1.7 | 3-4-7 5 | | | | | 15 | | | | |
| SS | 2.0 | 1.4 | 4-3-5 5 | | | | | | | | | |
| SS | 2.0 | 1.3 | 5-5-5 6 | | | | | 20 | | | | |
| | | | | | | | 400.0 | | | | Bottom of borehole at 22.0 Ft. Borehole backfilled with bentonite cement, 11/9/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No groundwater observed, 11/9/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| St. Louis Downtown Site | C150 |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C151 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,342 E 1,340 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-3-88 | 12-8-88 | Layne-Western, Co. | CME-750 | 6" | 12.0 | | 12.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 6 | | 424.7 | ▽ 6.8/417.9 12/8/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS / X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.7 | | | | | |
| SS | 1.2 | 0.8 | 5-4-1/3" | | | | 424.3 | | | | 0.0 - 0.4 Ft. ASPHALT. | |
| SS | 2.0 | 1.3 | 2-2-1 1 | | | | | | | | 0.4 - 8.0 Ft. FILL. | Borehole advanced 0-12.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.9 | 1-1-1 2 | | | | | 5 | | | 0.4 - 0.8 Ft. Gravel. Angular limestone. 0.8 - 8.0 Ft. Silty clay (CL) and rubble. Brownish black (5YR2/1) to moderate yellowish brown (10YR5/4). Low moisture content to moist, loose. Rubble consists of slag, brick, gravel, carbonaceous material, and sand; Fe staining. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 1.6 | 1-1-2 2 | | | | | | | | | |
| | | | | | | | 416.7 | | | | | |
| SS | 2.0 | 1.3 | 1-1-1 2 | | | | | | | | 8.0 - 12.0 Ft. Silty CLAY (CL). Light olive gray (5Y6/1) to pale brown (5YR5/2). Moist, soft, highly plastic; Fe staining. | Samples from 8-10 and 10-12 Ft. analysed for metals. |
| SS | 2.0 | 1.4 | 1-1-1 2 | | | | | 10 | | | | Top of undisturbed material at 8.0 Ft. |
| | | | | | | | 412.7 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 12.0 Ft. Borehole backfilled with bentonite cement, 12/8/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C151

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C152 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,196 E 1,112 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-17-88 | 12-23-88 | Layne-Western, Co. | CME-750 | 6" | 8.0 | | 8.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 4 | | 427.8 | ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 427.8 | | | | | |
| SS | 1.5 | 0.8 | 13-10-7 | | | | 427.5<br>426.8 | | | | 0.0 - 0.3 Ft. ASPHALT.<br>0.3 - 1.0 Ft. GRAVEL. | Borehole advanced 0-8.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.2 | 2-4-6<br>6 | | | | | | | | 1.0 - 5.0 Ft. Silty CLAY (CL). Moderate yellowish brown (10YR5/4). Dry, medium-stiff to stiff, slightly plastic. | |
| SS | 2.0 | 1.2 | 3-2-3<br>5 | | | | 422.8 | 5 | | | | |
| SS | 2.0 | 1.5 | 3-2-3<br>4 | | | | | | | | 5.0 - 8.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, soft to medium-stiff, moderately plastic. Some black (N1) organics. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| | | | | | | | 419.8 | | | | Bottom of borehole at 8.0 Ft. Borehole backfilled with bentonite cement, 12/23/88. | Samples from 0-2 and 6-8 Ft. analysed for metals.<br>Top of undisturbed material at 5.0 Ft.<br>Description and classification by visual examination.<br>No groundwater observed, 12/23/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| St. Louis Downtown Site | C152 |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C153 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,029 E 1,130 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-17-88 | 12-23-88 | Layne-Western, Co. | CME-750 | 6" | 8.0 | | 8.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 4 | | 427.0 | ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADJ. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS / X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SYMBOL | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 427.0 | | | | | |
| SS | 1.5 | 0.8 | 8-5-5 | | | | 426.8 | | | | 0.0 - 0.2 Ft. ASPHALT. | |
| | | | | | | | 426.2 | | | | 0.2 - 0.8 Ft. GRAVEL. Angular limestone. | Borehole advanced 0-8.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 0.8 | 2-3-2 4 | | | | | | | | 0.8 - 4.2 Ft. Silty CLAY (CL). Moderate yellowish brown (10YR4/2). Low moisture content, medium-stiff. Some pieces of slag and gravel. | |
| SS | 2.0 | 1.5 | 2-3-5 6 | | | | 422.8 | 5 | | | 4.2 - 8.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to greenish gray (5GY4/1). Low moisture content, medium-stiff, slightly plastic. Trace of black (N1) organics and pebbles. | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 2.0 | 2.0 | 2-4-5 7 | | | | 419.0 | | | | Bottom of borehole at 8.0 Ft. Borehole backfilled with bentonite cement, 12/23/88. | Samples from 4-6 and 6-8 Ft. analysed for metals. |
| | | | | | | | | | | | | Top of undisturbed material at 4.2 Ft. |
| | | | | | | | | | | | | Description and classification by visual examination. |
| | | | | | | | | | | | | No groundwater observed, 12/23/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C153

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | C154 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,385 E 2,660 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-14-88 | 11-17-88 | Layne-Western, Co. | CME-550 | 6" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 12 | | 423.3 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" X CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 423.3 | | | | | |
| SS | 1.5 | 0.8 | | | | | 422.8 | | | | 0.0 - 0.5 Ft. CONCRETE. | |
| SS | 2.0 | 1.4 | | | | | | | | | 0.5 - 15.8 Ft. FILL. Very dusky red (10R2/2) to moderate reddish brown (10R4/6) with some pale yellowish brown (10YR6/2). Silty to gravelly, moderately plastic, moderate to low moisture content, lumpy. Trace of organics, coal, bricks, and glass fragments. | Borehole advanced 0.5-20.0 Ft. with 6-in. O.D. hollow-stem auger. |
| SS | 2.0 | 1.6 | | | | | | 5 | | | | |
| SS | 1.0 | 0.6 | | | | | | | | | | Radiologically sampled and gamma-logged by TMA/Eberline. |
| SS | 1.0 | 0.8 | | | | | | | | | | |
| SS | 2.0 | 0.5 | | | | | | | | | | |
| SS | 2.0 | 1.4 | | | | | | 10 | | | | |
| SS | 2.0 | 0.8 | | | | | | | | | | |
| SS | 2.0 | 1.3 | | | | | | 15 | | | | |
| SS | 1.0 | 1.0 | | | | | 407.5 | | | | 15.8 - 20.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Low density, some organics, moderately plastic, moderate moisture content. Trace of coal seams. | Top of undisturbed material at 15.8 Ft. |
| SS | 1.0 | 1.0 | | | | | | | | | | |
| SS | 2.0 | 1.9 | | | | | 403.3 | 20 | | | | |
| | | | | | | | | | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 11/17/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No groundwater observed, 11/17/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: C154

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R100 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 2,300 E 1,460 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-2-88 | 12-2-88 | Layne-Western, Co. | CME-750 | 6" | 8.0 | | 8.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 4 | | 425.0 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 425.0 | | | | | |
| | | | | | | | 424.8 | | | | 0.0 - 0.2 Ft. ASPHALT. | |
| SS | 0.6 | 0.6 | 3 | | | | | | | | 0.2 - 4.0 Ft. FILL. 0.2-0.8 Ft. Brick. | 0-8.0 ft. advanced with 6-inch hollow stem auger. |
| SS | 2.0 | 1.6 | 2-4-4 6 | | | | | | | | 0.8-2.2 Ft. Sand and gravel. Angular limestone. | |
| | | | | | | | 421.0 | | | | | |
| SS | 2.0 | 1.6 | 2-5-5 6 | | | | | 5 | | | 2.2-4.0 Ft. Silty clay (CL). Olive black (5Y2/1) to light olive brown (5Y5/6). Low moisture content, medium-stiff. Fe staining. Some brick fragments. | Sampled and radiologically logged by TMA/Eberline. |
| SS | 2.0 | 2.0 | 2-4-6 8 | | | | | | | | 4.0 - 8.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, medium-stiff, slightly plastic. Some black (N1) organics, dessication cracks. | Top of undisturbed material at 4.0 ft. |
| | | | | | | | 417.0 | | | | Bottom of borehole at 8.0 Ft. Borehole backfilled with bentonite cement, 12/8/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 12/8/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R100

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R101 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 2,278 E 1,583 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-2-88 | 12-2-88 | Layne-Western, Co. | CME-750 | 6" | 8.0 | | 8.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 4 | | 423.0 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 423.0 | | | | | |
| | | | | | | | 422.8 | | | | 0.0 - 0.2 Ft. ASPHALT. | |
| SS | 1.2 | 0.8 | 5-8-1/2" | | | | | | | | 0.2 - 6.5 Ft. Sandy CLAY (SC). Moderate yellowish brown (10YR5/4) to dark yellowish brown (10YR4/2). Dry to low moisture content, medium-stiff. Very fine- to fine-grained sand, friable; some gravel and carbonaceous material, trace of slag and brick fragments; Fe staining. | 0-8.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.4 | 3-5-5 5 | | | | | | | | | |
| SS | 2.0 | 1.1 | 5-3-6 3 | | | | | 5 | | | | Sampled and radiologically logged by TMA/Eberline. |
| SS | 2.0 | 1.5 | 2-3-3 4 | | | | 416.5 | | | | 6.5 - 8.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Low moisture content, soft to medium-stiff, slightly plastic. Some black (N1) organics. | Top of undisturbed material at 6.5 ft. |
| | | | | | | | 415.0 | | | | Bottom of borehole at 8.0 Ft. Borehole backfilled with bentonite cement, 12/8/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 12/8/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R101

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R102 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,963 E 1,722 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-1-88 | 12-1-88 | Layne-Western, Co. | CME-550 | 6" | 11.0 | | 11.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 5 | | 418.7 | 6.7/412.0 12/8/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 418.7 | | | | | |
| | | | | | | | 417.9 | | | | 0.0 - 0.8 Ft. CONCRETE. | |
| SS | 2.2 | 1.6 | | | | | | | | | 0.8 - 9.2 Ft. RUBBLE and SILTY CLAY (CL). Dusky yellowish brown (10YR2/2). Moderate to high moisture content, moderately plastic. Organics, slag. | .8-11.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.5 | | | | | | | | | | |
| SS | 2.0 | 0.4 | | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 2.0 | | | | | | | | | | |
| SS | 2.0 | 1.6 | | | | | 409.5 | | | | | |
| | | | | | | | | 10 | | | 9.2 - 11.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moderate moisture content, moderately plastic, firm. Dessication cracks, trace of organics. | Top of undisturbed material at 10.5 ft. |
| | | | | | | | 407.7 | | | | Bottom of borehole at 11.0 Ft. Borehole backfilled with bentonite cement, 12/8/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. R102

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R103 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,900 E 1,675 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-22-88 | 11-22-88 | Layne-Western, Co. | CME-550 | 6" | 13.0 | | 13.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 6 | | 419.6 | ▽ 6.5/413.1 12/1/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. p.s.i. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 419.6 | | | | 0.0 - 1.0 Ft. CONCRETE and ASPHALT. | |
| SS | 2.0 | 1.8 | | | | | 418.6 | | | | 1.0 - 7.0 Ft. RUBBLE and COAL. Dusky yellowish brown (10YR2/2), moderate red (5R5/4). Low moisture content, slightly plastic, loose. Brick fragments, coal, slag, organics. | 1-13.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 0.6 | | | | | | | | | | |
| SS | 2.0 | 1.0 | | | | | | 5 | | | | |
| SS | 2.0 | 0.6 | | | | | 412.6 ▽ | | | | 7.0 - 9.2 Ft. Silty CLAY (CL). Grayish green (10G4/2). High moisture content, very fluid. Trace of organics and coal. | |
| SS | 2.0 | 1.6 | | | | | 410.4 | | | | 9.2 - 13.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). High moisture content, highly plastic, fluid. Trace of organics. | Sampled and gamma logged by TMA/Eberline. Top of undisturbed material at 9.6 ft. |
| SS | 2.0 | 1.6 | | | | | | 10 | | | | |
| | | | | | | | 406.6 | | | | Bottom of borehole at 13.0 Ft. Borehole backfilled with bentonite cement, 12/1/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; O = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R103

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R104 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,910 E 1,920 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-23-88 | 11-23-88 | Layne-Western, Co. | CME-750 | 6" | 12.0 | | 12.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 6 | | 420.1 | ▽ 4.6/415.5 11/29/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | BAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.F.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 420.1 | | | | | |
| | | | | | | | 419.6 | | | | 0.0 - 0.5 Ft. ASPHALT. | |
| SS | 1.2 | 0.6 | 2-2-1/2" | | | | | | | | 0.5 - 10.5 Ft. Silty CLAY (CL) and RUBBLE. Dark yellowish brown (10YR4/2). Dry, loose. Rubble consists of gravel, brick, and slag. | 0-12.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 0.5 | 1-1-1 1 | | | | | | | | | |
| SS | 2.0 | 1.7 | WH-WH 2 | | | 1 | | 5 | | | 3.5-10.5 Ft. Silty clay. Dark gray (N3) to light olive gray (5Y6/1). Moist, moderately plastic. Some carbonaceous material, brick fragments, sand, and angular pebbles. | Sampled and radiologically logged by TMA/Eberline. |
| SS | 2.0 | 1.7 | WH-WH 1 | | | 1 | | | | | | |
| SS | 2.0 | 1.3 | 2-3-3 2 | | | | | 10 | | | | |
| SS | 2.0 | 1.1 | 1-2-1 2 | | | | 409.6 | | | | 10.5 - 12.0 Ft. CLAY (CL). Olive gray (5Y4/1). Moist, soft, highly plastic. Trace of black (N1) organics. | Top of undisturbed material at 10.5 ft. |
| | | | | | | | 408.1 | | | | Bottom of borehole at 12.0 Ft. Borehole backfilled with bentonite cement, 11/29/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| St. Louis Downtown Site | R104 |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R105 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,850 E 2,000 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-21-88 | 11-21-88 | Layne-Western, Co. | CME-550 | 6" | 13.0 | | 13.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 6 | | 423.3 | ▽ 4.8/418.5 11/29/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 423.3 | | | | | |
| | | | | | | | 422.3 | | | | 0.0 - 1.0 Ft. CONCRETE. | |
| SS | 2.0 | 1.5 | | | | | | | | | 1.0 - 9.3 Ft. RUBBLE and silty CLAY (CL). Pale reddish brown (10R5/4), greenish black (5GY2/1). Moderate to high moisture content, moderately plastic, sandy. Coal, brick fragments, wood chips. | 1-13.0 ft. advanced with 6.0-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.5 | | | | | | | | | | |
| SS | 2.0 | 1.5 | | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 1.6 | | | | | | | | | | |
| SS | 2.0 | 1.3 | | | | | 414.0 | 10 | | | 9.3 - 13.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to light olive gray (5Y5/2), and olive gray (5Y3/2). Moderate to high moisture content, highly plastic. Trace of organics. | Top of undisturbed material at 9.3 ft. |
| SS | 2.0 | 1.5 | | | | | 410.3 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 13.0 Ft. Borehole backfilled with bentonite cement, 11/29/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. R105

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R106 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,438 E 1,616 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-5-88 | 12-5-88 | Layne-Western, Co. | CME-750 | 6" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 424.3 | ▽ 5.0/419.3 12/7/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.3 | | | | | |
| SS | 1.5 | 0.7 | 11-11-12 | | | | 423.9 | | | | 0.0 - 0.4 Ft. CONCRETE. | |
| SS | 2.0 | 1.3 | 5-3-4 6 | | | | | | | | 0.4 - 11.3 Ft. Silty CLAY (CL). Dark yellowish brown (10YR4/2). Dry, medium-stiff to stiff. Some gravel and brick, trace of carbonaceous material and slag. | 0-16.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 0.9 | 2-3-4 2 | | | | | 5 | | | 4.0-11.3 Ft. Rubble. Moist, loose. Slag, gravel, and sand. | |
| SS | 2.0 | 0.7 | 3-2-2 1 | | | | | | | | | Sampled and radiologically logged by TMA/Eberline. 6.0 ft. OVA reading 1ppm (in auger). |
| SS | 2.0 | 0.9 | 2-2-2 1 | | | | | | | | | |
| SS | 1.3 | 1.2 | WH-3-50- | | | | | 10 | | | | 10.0 ft. OVA reading <10ppm (in auger). |
| | | | | | | | 413.0 | | | | 11.3 - 12.5 Ft. CONCRETE. | 11.3-12.5 ft. Rough drilling. |
| SS | 1.5 | 0.3 | 3-7-5 | | | | 411.8 | | | | 12.5 - 14.0 Ft. RUBBLE. Moist, loose. Slag and sand, some olive gray (5Y4/1) silt. | |
| SS | 2.0 | 2.0 | 3-4-5 5 | | | | 410.3 | 15 | | | 14.0 - 16.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, medium-stiff, moderately to highly plastic. Some black (N1) organics. | Top of undisturbed material 14.0 ft. |
| | | | | | | | 408.3 | | | | Bottom of borehole at 16.0 Ft. Borehole backfilled with bentonite cement, 12/7/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R106

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R107 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,347 E 1,565 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-8-88 | 12-9-88 | Layne-Western, Co. | CME-750 | 6" | 18.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 424.3 | ▽ 5.8/418.5 12/19/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.3 | | | | | |
| | | | | | | | 423.7 | | | | 0.0 - 0.6 Ft. CONCRETE. | |
| SS | 1.3 | 0.6 | 3-2-1/4" | | | | | | | | 0.6 - 14.5 Ft. Silty CLAY (CL) and RUBBLE. Dark yellowish brown (10YR4/2). Moist, loose. Rubble consists of slag, gravel, brick, carbonaceous material, and sand; Fe staining. | 0-18.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 0.8 | 2-2-2 7 | | | | | | | | | |
| SS | 2.0 | 0.5 | 6-3-2 1 | | | | | 5 | | | | |
| SS | 2.0 | 0.5 | WH-1/18" | | | | | ▽ | | | | Sampled and radiologically logged by TMA/Eberline. 2.0 ft. OVA reading 2ppm (in auger). |
| SS | 2.0 | 1.1 | | | | | | | | | | 6.0 ft. OVA reading 1ppm (in auger). |
| SS | 2.0 | 1.6 | WR-31-46 37 | | | | | 10 | | | | 10.0 ft. OVA reading 2ppm (in auger). |
| SS | 2.0 | 0.9 | 9-8-8 5 | | | | | | | | | 12.0 ft. OVA reading 45ppm (in auger). |
| SS | 2.0 | 1.2 | 2-4-6 9 | | | | 409.8 | 15 | | | | 14.0 ft. OVA reading 95ppm (in auger). |
| SS | 2.0 | 1.7 | 3-5-7 8 | | | | | | | | 14.5 - 18.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, medium-stiff, moderately to highly plastic. Some black (N1) organics, including rootlets. | Top of undisturbed material 14.5 ft. |
| | | | | | | | 406.3 | | | | Bottom of borehole at 18.0 Ft. Borehole backfilled with bentonite cement, 12/19/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R107

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R108 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,459 E 1,720 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-6-88 | 12-7-88 | Layne-Western, Co. | CME-750 | 6" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 420.0 | ▽ 4.0/416.0 12/7/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 420.0 | | | | | |
| | | | | | | | 419.2 | | | | 0.0 - 0.8 Ft. CONCRETE. | |
| SS | 1.0 | 0.5 | 3-5 | | | | | | | | 0.8 - 13.0 Ft. Silty CLAY (CL) and RUBBLE. Dark yellowish brown (10YR4/2) to grayish black (N2). Low moisture content to moist, loose. Rubble consists of gravel, brick, slag, and sand. | 0-14.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.5 | 4-8-14 28 | | | | | | | | | |
| SS | 2.0 | 1.3 | 8-29-25 15 | | | | | 5 | | | | Sampled and radiologically logged by TMA/Eberline. 6.0 ft. OVA reading 50ppm (in auger). |
| SS | 2.0 | 1.7 | 13-6-9 5 | | | | | | | | | |
| SS | 2.0 | 1.2 | 2-5-4 3 | | | | | | | | 8.5-13.0 Ft. Silty sand (SM). Olive gray (5Y4/1). Moist, soft. Very fine-grained sand, fragments of slag and brick, trace of black (N1) organics and pebbles (1/8-inch). | |
| SS | 2.0 | 1.2 | 4-2-3 5 | | | | | 10 | | | | 10.0 ft. OVA reading 150ppm (in auger). |
| SS | 2.0 | 1.3 | 1-2-4 4 | | | | 407.0 | | | | | 12.0 ft. OVA reading 30ppm(in auger). |
| SS | 2.0 | 1.8 | 3-5-7 5 | | | | | | | | 13.0 - 16.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Low moisture content, medium-stiff, slightly to moderately plastic. Some black (N1) organics. | Top of undisturbed material 13.0 ft. |
| | | | | | | | | 15 | | | | |
| | | | | | | | 404.0 | | | | Bottom of borehole at 16.0 Ft. Borehole backfilled with bentonite cement, 12/7/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R108

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R109 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,348 E 1,794 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-2-88 | 12-5-88 | Layne Western | CME-550 | 6" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 423.5 | ▽ 7.1/416.4 12/7/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 423.5 | | | | | |
| SS | 2.3 | 1.6 | | | | | 422.7 | | | | 0.0 - 0.75 Ft. CONCRETE. | .75-20.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.3 | | | | | | | | | 0.75 - 18.0 Ft. FILL. Dark reddish brown (10RS/4) to blackish red (5R2/2), brownish gray (5YR4/1). Low to very high moisture content, moderately plastic, very fluid in places. Organics, trace of coal. | |
| SS | 2.0 | 1.2 | | | | | | 5 | | | | |
| SS | 2.0 | 1.0 | | | | | | | | | | |
| SS | 2.0 | 1.1 | | | | | | 10 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 1.1 | | | | | | | | | | |
| SS | 2.0 | 1.6 | | | | | | | | | | |
| SS | 2.0 | 1.0 | | | | | | 15 | | | | |
| SS | 1.0 | 0.0 | | | | | 405.5 | | | | | Top of undisturbed material at 16.8 ft. |
| SS | 2.0 | 1.0 | | | | | | | | | 18.0 - 20.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moderately plastic, very fluid. Silty, trace of organics. | |
| | | | | | | | 403.5 | 20 | | | | |
| | | | | | | | | | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 12/7/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R109

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R110 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,700 E 2,297 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-16-88 | 11-16-88 | Layne-Western, Co. | CME-750 | 6" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 423.6 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 423.6 | | | | | |
| SS | 1.4 | 1.1 | 5-7-3/4" | | | | 423.0 | | | | 0.0 - 0.6 Ft. ASPHALT. | |
| SS | 2.0 | 1.6 | 5-10-8 6 | | | | | | | | 0.6 - 13.5 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1). Dry to low moisture content, loose. Rubble consists of gravel, brick, carbonaceous material, slag and sand; Fe staining. Patches of moderate yellowish brown (10YR5/4) to greenish gray (5GY6/1) silty clay. | 0-16.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.4 | 5-4-5 4 | | | | | 5 | | | | |
| SS | 2.0 | 0.7 | 2-5-5 5 | | | | | | | | | Sampled and radiologically logged by TMA/Eberline. |
| SS | 2.0 | 1.8 | 2-2-1 2 | | | | | | | | | |
| SS | 2.0 | 1.9 | 1-1-3 4 | | | | | 10 | | | | |
| SS | 2.0 | 1.7 | 2-2-8 11 | | | | | | | | | |
| SS | 2.0 | 2.0 | 6-10-7 6 | | | | 410.1 | | | | 13.5 - 16.0 Ft. Silty SAND (SM). Olive gray (5Y4/1). Moist, soft. Very fine-grained sand, some clay (moderately plastic), trace of black (N1) organics. | Top of undisturbed material at 13.5 ft. |
| | | | | | | | 407.6 | 15 | | | Bottom of borehole at 16.0 Ft. Borehole backfilled with bentonite cement, 11/17/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 11/17/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R110

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R111 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,830 E 2,350 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-18-88 | 11-18-88 | Layne-Western, Co. | CME-550 | 6" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 420.4 | ▽ 13.5/406.9 11/28/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.9 | | | | | 420.4 | | | | 0.0 - 14.4 Ft. RUBBLE. Very dusky red (10R2/2) to dusky yellowish brown (10YR2/2). Low moisture content, slightly plastic, loose. Coal, brick fragments; sandy, coarse-grained. | 0-16.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.4 | | | | | | | | | | |
| SS | 2.0 | 2.0 | | | | | | 5 | | | 2.0-14.4 Ft. Coal and rubble. Brownish black (5YR2/1), olive gray (5Y2/1). Low moisture content, slightly plastic, silty. Brick fragments, organics. | |
| SS | 2.0 | 2.0 | | | | | | | | | | |
| SS | 2.0 | 1.4 | | | | | | | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 1.6 | | | | | | 10 | | | | |
| SS | 2.0 | 1.6 | | | | | | | | | | |
| SS | 2.0 | 1.8 | | | | | 406.0 | | | | | Top of undisturbed material at 14.3 ft. |
| | | | | | | | | 15 | | | 14.4 - 16.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Low to moderate moisture content, moderately plastic. Trace of organics, some dessication cracks. | Description and classification by visual examination. |
| | | | | | | | 404.4 | | | | Bottom of borehole at 16.0 Ft. Borehole backfilled with bentonite cement, 11/28/88. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R111

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R112 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,565 E 2,451 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-21-88 | 11-21-88 | Layne-Western, Co. | CME-750 | 6" | 14.0 | | 14.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 424.4 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" / % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.4 | | | | | |
| | | | | | | | 423.8 | | | | 0.0 - 0.6 Ft. CONCRETE. | |
| SS | 1.3 | 0.8 | 6-14-2/- | | | | | | | | 0.6 - 11.5 Ft. GRAVEL. 0.8-10.0 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to grayish black (N2). Low moisture content, loose. Rubble consists of gravel, sand, carbonaceous material, slag, brick fragments, and wood. | 0-14.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.2 | 5-3-4 4 | | | | | | | | | |
| SS | 2.0 | 1.3 | 4-6-5 10 | | | | | 5 | | | | Sampled and radiologically logged by TMA/Eberline. |
| SS | 2.0 | 0.3 | 5-5-2 4 | | | | | | | | | |
| SS | 2.0 | 0.2 | 5-3-2 2 | | | | | | | | | |
| SS | 2.0 | 1.5 | 1-2-3 4 | | | | | 10 | | | 10.0-11.5 Ft. Silty clay (CL). Olive gray (5Y4/1) to greenish gray (5GY6/1). Moist, soft to medium-stiff. Some brick fragments and coarse-grained sand (disturbed). | |
| SS | 2.0 | 1.9 | 2-4-4 5 | | | | 412.9 | | | | | Top of undisturbed material at 11.5 ft. |
| | | | | | | | 410.4 | | | | 11.5 - 14.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Low moisture, medium-stiff, slightly plastic. Some black (N1) organics, trace of very fine-grained sand. | Description and classification by visual examination. |
| | | | | | | | | | | | Bottom of borehole at 14.0 Ft. Borehole backfilled with bentonite cement, 11/28/88. | |
| | | | | | | | | | | | | No ground water observed, 11/28/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R112

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R113 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,550 E 2,660 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-14-88 | 11-14-88 | Layne-Western, Co. | CME-750 | 6" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 424.5 | ▽ 15.8/408.7 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS / % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.5 | | | | 0.0 - 0.9 Ft. CONCRETE. | |
| SS | 1.1 | 0.9 | 4-7 | | | | 423.6 | | | | 0.9 - 13.5 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1). Dry to low moisture content, loose. Rubble consists of gravel, carbonaceous material, slag, and sand; Fe staining. Patches of moderate yellowish brown (10YR5/4) silty clay. | 0-18.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.4 | 5-8-5 5 | | | | | | | | | |
| SS | 2.0 | 0.8 | 3-4-3 3 | | | | | 5 | | | | Sampled and radiologically logged by TMA/Eberline. |
| SS | 2.0 | 1.3 | 3-4-7 7 | | | | | | | | | |
| SS | 2.0 | 0.8 | 3-3-4 2 | | | | | | | | | |
| SS | 2.0 | 1.2 | 2-1-1 1 | | | | | 10 | | | | |
| SS | 2.0 | 0.8 | 1-1-3 3 | | | | | | | | | |
| SS | 2.0 | 1.7 | 2-1-1 1 | | | | 411.0 | | | | 13.5 - 16.0 Ft. Silty SAND (SM). Olive gray (5Y4/1). Moist, soft. Very fine-grained sand, some clay (moderately plastic), trace of black (N1) organics. | Top of undisturbed material at 13.5 ft. |
| | | | | | | | 408.5 ▽ | 15 | | | Bottom of borehole at 16.0 Ft. Borehole backfilled with bentonite cement, 11/17/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. R113

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R114 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,700 E 2,710 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-14-88 | 11-14-88 | Layne-Western, Co. | CME-750 | 6" | 18.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 422.0 | ▽ 17.0/405.0 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.0 | | | | | |
| | | | | | | | 421.2 | | | | 0.0 - 0.8 Ft. CONCRETE. | |
| SS | 1.2 | 0.5 | S-4-2/2" | | | | | | | | 0.8 - 14.5 Ft. Silty CLAY (CL) and RUBBLE. Dark yellowish brown (10YR4/2). Moist, loose to stiff. Rubble consists of slag, brick, coal, and sand; Fe staining. Patches of moderate yellowish brown (10YR5/4) silty clay. | 0-18.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.7 | 4-10-7 6 | | | | | | | | | |
| SS | 2.0 | 1.0 | 1-2-3 1 | | | | | 5 | | | | Sampled and radiologically logged by TMA/Eberline. |
| SS | 2.0 | 1.0 | 1-1-1 1 | | | | | | | | | |
| SS | 1.5 | 0.8 | 2-2-2 | | | | | | | | | Overdrilled to 8.5 ft. |
| SS | 2.0 | 1.6 | 1-2-1 2 | | | | | 10 | | | | |
| SS | 2.0 | 1.3 | 1-1-3 1 | | | | | | | | | |
| SS | 2.0 | 1.7 | 1-1-2 3 | | | | 407.4 | 15 | | | 14.5 - 16.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, soft, slightly plastic. Trace of organic material (wood) and very fine-grained sand. | Top of undisturbed material at 14.5 ft. |
| SS | 2.0 | 1.2 | 4-5-5 6 | | | | 406.0 | | | | 16.0 - 18.0 Ft. Silty SAND (SM). Olive gray (5Y4/1). Moist, medium-stiff, slightly plastic. Very fine-grained sand. | Description and classification by visual examination. |
| | | | | | | | 404.0 | | | | Bottom of borehole at 18.0 Ft. Borehole backfilled with bentonite cement, 11/17/88. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R114

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R115 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,637 E 2,753 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 1-12-89 | 1-12-89 | Layne-Western, Co. | PC-1A | 6" | 18.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 423.0 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 423.0 | | | | | |
| SS | 1.6 | 0.9 | | | | | 422.6 | | | | 0.0 - 0.4 Ft. CONCRETE. | 0-18.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 0.8 | | | | | 420.5<br>420.3 | | | | 0.4 - 2.5 Ft. Silty CLAY (CL). Dark yellowish brown (10YR4/2) to moderate yellowish brown (10YR5/4). Dry, stiff. Some coarse-grained sand. | |
| SS | 2.0 | 1.3 | | | | | | 5 | | | 2.5 - 2.7 Ft. CONCRETE. | |
| SS | 2.0 | 1.2 | | | | | | | | | 2.7 - 16.0 Ft. Silty CLAY (CL) and RUBBLE. Dark yellowish brown (10YR4/2) to olive black (5Y2/1). Low moisture content to moist, loose. Rubble consists of slag, brick fragments, carbonaceous material, sand, and gravel. | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 0.2 | | | | | | | | | | |
| SS | 2.0 | 1.2 | | | | | | 10 | | | | |
| SS | 2.0 | 0.3 | | | | | | | | | | |
| SS | 2.0 | 0.2 | | | | | | | | | | |
| | | | | | | | | 15 | | | | |
| SS | 2.0 | 1.6 | | | | | 407.0 | | | | 16.0 - 18.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, soft to medium-stiff. Trace of very fine-grained sand and black (N1) organics. | Top of undisturbed material at 16.0 ft. |
| | | | | | | | 405.0 | | | | Bottom of borehole at 18.0 Ft. Borehole backfilled with bentonite cement, 1/13/89. | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 1/13/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R115

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R116 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,653 E 2,830 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-17-88 | 12-17-88 | Layne-Western, Co. | PC-1A | 6" | 17.0 | | 17.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 423.0 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 423.0 | | | | | |
| | | | | | | | 422.0 | | | | 0.0 - 1.0 Ft. CONCRETE. | |
| SS | 2.0 | 1.3 | | | | | | | | | 1.0 - 15.2 Ft. FILL and silty CLAY (CL). Brownish black (5YR2/1) to grayish olive (10Y4/2), olive gray (5Y4/1). Low moisture content, slightly plastic, silty to sandy texture. Organics, slag, wood, brick fragments. | 0-17.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.3 | | | | | | | | | | |
| SS | 2.0 | 1.6 | | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 1.3 | | | | | | | | | 7.0-15.2 Ft. Brownish black (5YR2/1). Slight to moderate moisture content, sandy and loose in places. Contains yellow inclusions, tile fragments. | |
| SS | 2.0 | 0.6 | | | | | | 10 | | | | |
| SS | 2.0 | 0.5 | | | | | | | | | | |
| SS | 2.0 | 0.6 | | | | | | | | | | |
| SS | 2.0 | 1.3 | | | | | 407.8 | 15 | | | | |
| | | | | | | | 406.0 | | | | 15.2 - 17.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moderate moisture content, slightly plastic. Trace of organics. | Top of undisturbed material at 15.8 ft. |
| | | | | | | | | | | | Bottom of borehole at 17.0 Ft. Borehole backfilled with bentonite cement, 12/19/88. | Description and classification of soils by visual examination. |
| | | | | | | | | | | | | No ground water observed, 12/19/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. R116

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R117 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,700 E 2,899 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-28-88 | 11-28-88 | Layne-Western, Co. | CME-550 | 6" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 422.4 | ▽▼ 15.0/407.4 12/23/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.6 | | | | | 422.4 | | | | 0.0 - 12.8 Ft. RUBBLE. Moderate brown (5YR3/4) to dusky yellowish brown (10YR2/2). Low moisture content, slightly plastic. Bricks, organics, coal, slag. | 0-16.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.6 | | | | | | | | | | |
| SS | 2.0 | 0.8 | | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 0.6 | | | | | | | | | | |
| SS | 2.0 | 1.5 | | | | | | | | | 8.5-12.8 Ft. Sandy clay (SC). Grayish brown (5YR3/2). High moisture content, sandy, fluid. Trace of organics and coal. | |
| SS | 2.0 | 1.3 | | | | | | 10 | | | | |
| SS | 2.0 | 1.5 | | | | | 409.6 | | | | 12.8 - 16.0 Ft. Silty CLAY (CL). Olive gray (5G4/1). Moderate moisture content, moderately plastic. Trace of organics. | Top of undisturbed material at 12.7 ft. |
| SS | 2.0 | 1.3 | | | | | ▽ 406.4 | 15 | | | | |
| | | | | | | | | | | | Bottom of borehole at 16.0 Ft. Borehole backfilled with bentonite cement, 12/23/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R117

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R118A |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,837 E 3,000 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-13-88 | 12-13-88 | Layne-Western, Co. | CME-750 | 6" | 6.0 | | 6.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 3 | | 422.0 | ▽ / / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.0 | | | | | |
| SS | 1.4 | 0.6 | 12-14-1- | | | | 421.4 | | | | 0.0 - 0.6 Ft. GRAVEL. | |
| SS | 2.0 | 1.2 | 6-7-9 11 | | | | | | | | 0.6 - 6.0 Ft. Silty CLAY (CL) and RUBBLE. Dark yellowish brown (10YR4/2). Dry, loose. Rubble consists of brick fragments, gravel, sand, and carbonaceous material. | 0-5.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 0.8 | 4-11-14 12 | | | | | 5 | | | | Sampled and radiologically logged by TMA/Eberline. |
| | | | | | | | 416.0 | | | | | Auger refusal at 5.0 ft. |
| | | | | | | | | | | | Bottom of borehole at 6.0 Ft. Borehole backfilled with bentonite cement, 12/19/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 12/19/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R118A

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R118B |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,837 E 2,996 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-13-88 | 12-13-88 | Layne-Western, Co. | CME-750 | 6" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 5 | | 422.0 | ▽ 9.2/412.8 12/19/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.0 | | | | | |
| | | | | | | | 421.4 | | | | 0.0 - 0.6 Ft. GRAVEL. | |
| | | | | | | | | | | | 0.6 - 13.0 Ft. Silty CLAY (CL) and RUBBLE. Dark yellowish brown (10YR4/2). Low moisture content to moist, loose. Rubble consists of brick fragments, gravel, sand, and carbonaceous material. | 0-16.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| | | | | | | | | 5 | | | | |
| SS | 2.0 | 1.2 | 2-8-6 9 | | | | | | | | | Sampled and radiologically logged by TMA/Eberline. |
| SS | 2.0 | 0.9 | 2-7-11 8 | | | | | | | | | |
| | | | | | | | | 10 | | | | |
| SS | 2.0 | 0.6 | 5-4-4 3 | | | | | | | | | 10.0 ft. OVA reading 4ppm (in auger), 2ppm (ambient). |
| SS | 2.0 | 0.6 | 1-3-3 2 | | | | 409.0 | | | | | |
| SS | 2.0 | 2.0 | 2-2-4 3 | | | | | | | | 13.0 - 16.0 Ft. Silty SAND (SM). Olive gray (5Y4/1). Moist, soft, very fine-grained. | Top of undisturbed material 13.0 ft. |
| | | | | | | | | 15 | | | | |
| | | | | | | | 406.0 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 16.0 Ft. Borehole backfilled with bentonite cement, 12/19/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. R118B

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R119 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,600 E 3,050 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-15-88 | 12-15-88 | Layne-Western, Co. | CME-750 | 6" | 16.0 | | 17.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 421.0 | ▽ 12.5/408.5 12/23/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 421.0 | | | | | |
| SS | 1.5 | 0.8 | 5-10-14 | | | | 420.8 | | | | 0.0 - 0.3 Ft. ASPHALT. | |
| SS | 2.0 | 1.4 | 6-11-15 13 | | | | | | | | 0.3 - 14.0 Ft. Silty CLAY (CL) and RUBBLE. Dark yellowish brown (10YR4/2). Dry, loose. Rubble consists of slag, gravel, sand, and brick fragments; Fe staining. | 0-17.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.4 | 4-7-6 9 | | | | | 5 | | | | |
| SS | 2.0 | 1.4 | 4-5-8 11 | | | | | | | | | Sampled and radiologically logged by TMA/Eberline. |
| SS | 2.0 | 1.7 | 14-13-6 6 | | | | | | | | 7.5-14.0 Ft. Slag. Brownish black (5YR2/1). Moist. Fe staining. | |
| SS | 2.0 | 0.8 | 2-6-4 1 | | | | | 10 | | | | |
| SS | 2.0 | 0.5 | 2-1-2 2 | | | | | ▽ | | | | |
| SS | 2.0 | 1.4 | 2-1-4 6 | | | | 407.0 | 15 | | | 14.0 - 17.0 Ft. Silty SAND (SM). Olive gray (5Y4/1). Moist, soft, slightly plastic, very fine-grained. Trace of black (N1) organics. | Top of undisturbed material 14.0 ft. |
| | | | | | | | 404.0 | | | | Bottom of borehole at 17.0 Ft. Borehole backfilled with bentonite cement, 12/23/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R119

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R120 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,700 E 3,125 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-12-88 | 12-12-88 | Layne-Western, Co. | CME-750 | 6" | 14.0 | | 14.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 420.5 | ▽ 11.5/409.0 12/19/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 420.5 | | | | | |
| SS | 1.5 | 0.8 | 8-40-35 | | | | 419.9 | | | | 0.0 - 0.6 Ft. GRAVEL. | |
| SS | 2.0 | 1.7 | 10-15-17 21 | | | | | | | | 0.6 - 9.5 Ft. Silty CLAY (CL). Moderate yellowish brown (10YR5/4). Dry, stiff. Some brick and gravel; Fe staining. | 0-14.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.4 | 5-9-7 6 | | | | | 5 | | | 4.7-9.5 Ft. Sandy silt (SM). Pale brown (5YR5/2) to light olive gray (5Y6/1). Moist, medium-stiff. Very fine-grained sand, some pieces of slag. | Sampled and radiologically logged by TMA/Eberline. 6.0 ft. OVA reading 1.5ppm (in auger). |
| SS | 2.0 | 1.1 | 2-2-4 4 | | | | | | | | | |
| SS | 2.0 | 1.5 | 3-7-5 7 | | | | 411.0 | | | | | |
| SS | 2.0 | 1.5 | 3-2-3 3 | | | | | 10 | | | 9.5 - 14.0 Ft. Sandy SILT (SM). Olive gray (5Y4/1). Moist, soft, slightly plastic. Some pieces of decaying wood. | Top of undisturbed material 9.5 ft. |
| SS | 2.0 | 1.8 | 2-2-3 3 | | | | | | | | | |
| | | | | | | | 406.5 | | | | Bottom of borehole at 14.0 Ft. Borehole backfilled with bentonite cement, 12/19/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. R120

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R121 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,387 E 1,410 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-21-88 | 12-21-88 | Layne-Western, Co. | CME-750 | 6" | 12.0 | | 12.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 6 | | 425.4 | ▽ 6.4/419.0 12/23/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 425.4 | | | | | |
| SS | 2.0 | 0.8 | 4-5-5 | | | | 425.2 | | | | 0.0 - 0.3 Ft. ASPHALT. | |
| | | | | | | | 424.8 | | | | 0.3 - 0.6 Ft. GRAVEL. | 0-12.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.1 | 5-4-4 10 | | | | | | | | 0.6 - 7.0 Ft. Silty CLAY (CL) and RUBBLE. Dark yellowish brown (10YR4/2). Low moisture content, loose. Rubble consists of slag and brick. | |
| SS | 2.0 | 1.5 | 2-1-2 2 | | | | | 5 | | | | |
| SS | 2.0 | 1.7 | 2-2-1 1 | | | | 418.4 | | | | | Sampled and radiologically logged by TMA/Eberline. |
| | | | | | | | | | | | 7.0 - 12.0 Ft. Silty CLAY (CL). Moderate yellowish brown (10YR5/4) to dark yellowish brown (10YR4/2). Moist, soft, slightly plastic. | Top of undisturbed material 7.0 ft. |
| SS | 2.0 | 1.7 | WH/12"-2 2 | | | | | 10 | | | | |
| SS | 2.0 | 1.9 | WH-2-1 2 | | | | | | | | | |
| | | | | | | | 413.4 | | | | Bottom of borehole at 12.0 Ft. Borehole backfilled with bentonite cement, 12/23/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. R121

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R122 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,836 E 3,168 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-12-88 | 12-12-88 | Layne-Western, Co. | CME-750 | 6" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 424.0 | ▽ 9.3/414.7 12/19/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECCUERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.0 | | | | | |
| SS | 1.4 | 0.7 | 14-8-5/- | | | | 423.2 | | | | 0.0 - 0.8 Ft. GRAVEL and SAND. Angular limestone. | 0-20.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 0.4 | 5-8-7 7 | | | | | | | | 0.8 - 18.5 Ft. Silty CLAY (CL) and RUBBLE. Dark yellowish brown (10YR4/2). Low moisture content to moist, loose. Rubble consists of slag, brick fragments, and wood. | |
| SS | 2.0 | 1.1 | 3-2-3 5 | | | | | 5 | | | | Sampled and radiologically logged by TMA/Eberline. |
| SS | 2.0 | 0.8 | 3-6-9 13 | | | | | | | | | |
| SS | 2.0 | 1.9 | 2-2-8 7 | | | | | 10 | | | 10.5-18.5 Ft. Silty clay (CL). Olive gray (5Y4/1) to olive black (5Y2/1). Moist, medium-stiff. Some pebbles, trace of very fine-grained sand. | |
| SS | 2.0 | 1.0 | 5-3-3 4 | | | | | | | | | |
| SS | 2.0 | 1.5 | 3-3-8 16 | | | | | | | | | 14.0 ft. OVA reading 2ppm (in auger). |
| SS | 2.0 | 1.4 | 10-11-7 9 | | | | | 15 | | | | 16.0 ft. OVA reading 3ppm (in auger). |
| SS | 2.0 | 0.3 | 4-3-4 4 | | | | | | | | | |
| SS | 2.0 | 1.8 | 2-3-2 4 | | | | 405.5 | | | | 18.5 - 20.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, soft, highly plastic. Some black (N1) organics, including rootlets. | Top of undisturbed material 18.5 ft. |
| | | | | | | | 404.0 | 20 | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 12/19/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R122

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R123 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,322 E 2,165 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-16-88 | 11-16-88 | Layne-Western, Co. | CME-550 | 6" | 17.0 | | 17.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 422.0 | ▽ / / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.0 | | | | | |
| | | | | | | | 421.0 | | | | 0.0 - 1.0 Ft. ASPHALT and CONCRETE. | |
| SS | 2.0 | 1.5 | | | | | | | | | 1.0 - 11.5 Ft. Silty CLAY (CL) and RUBBLE. Very dusky red (10R2/2) to dusky yellowish brown (10YR2/2). Low moisture content, slightly plastic. Coarse-grained, brick fragments. | 1-17 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.9 | | | | | | | | | | |
| SS | 2.0 | 1.6 | | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 1.3 | | | | | | | | | 7.0-11.5 Ft. Silty clay (CL). Grayish brown (5YR3/2) to grayish red (5R4/2). Low moisture content, slightly plastic, loose. Glass, coal. | |
| SS | 2.0 | 0.8 | | | | | | 10 | | | | |
| SS | 2.0 | 1.1 | | | | | 410.5 | | | | 11.5 - 17.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moderate moisture content, moderately plastic. Trace of organics. | |
| SS | 2.0 | 1.5 | | | | | | | | | | |
| SS | 2.0 | 2.0 | | | | | | 15 | | | | Top of undisturbed material at 14.5 ft. |
| | | | | | | | 405.0 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 17.0 Ft. Borehole backfilled with bentonite cement, 11/17/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 11/17/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R123

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R124 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,285 E 1,165 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-17-88 | 12-17-88 | Layne-Western, Co. | CME-750 | 6" | 6.0 | | 6.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 3 | | 425.0 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 425.0 | | | | | |
| SS | 1.5 | 0.8 | 15-14-7 | | | | 424.8 | | | | 0.0 - 0.2 Ft. ASPHALT. | 0-6.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| | | | | | | | 424.0 | | | | 0.2 - 1.0 Ft. GRAVEL. | |
| SS | 2.0 | 1.8 | 5-7-5 6 | | | | | | | | 1.0 - 5.0 Ft. SLAG. Brownish black (5YR2/1). Fe staining. | |
| | | | | | | | | | | | 3.0-5.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to olive black (5Y2/1). Low moisture content, medium-stiff, slightly plastic. | Sampled and radiologically logged by TMA/Eberline. |
| SS | 2.0 | 1.6 | 2-3-5 8 | | | | 420.0 | 5 | | | | |
| | | | | | | | | | | | 5.0 - 6.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1) to greenish gray (5GY6/1). Low moisture content, soft to medium-stiff, slightly plastic. | Top of undisturbed material 5.0 ft. |
| | | | | | | | 419.0 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 6.0 Ft. Borehole backfilled with bentonite cement, 12/23/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 12/23/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. R124

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R127 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,065 E 1,425 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-20-88 | 12-20-88 | Layne-Western, Co. | CME-750 | 6" | 14.0 | | 14.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 424.6 | ▽▽ 5.3/419.3 12/23/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.2 | 4-9-10 4 | | | | 424.6 | | | | 0.0 - 13.0 Ft. SLAG. Brownish black (5YR2/1). | 0-14.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.5 | 1-2-3 3 | | | | | | | | | |
| SS | 2.0 | 1.0 | 7-7-1 1 | | | | | 5 | | | | Sampled and radiologically logged by TMA/Eberline. |
| SS | 2.0 | 1.7 | 1/24" | | | | | | | | | |
| SS | 2.0 | 1.4 | WH-2-3 2 | | | | | | | | 8.0-13.0 Ft. Silty clay (CL). Moderate yellowish brown (10YR5/4) to olive gray (5Y4/1). Moist, soft, slightly plastic, some pebbles. | |
| SS | 2.0 | 1.7 | 1-1-2 2 | | | | | 10 | | | | |
| SS | 2.0 | 1.7 | 2-3-4 4 | | | | 411.6 | | | | | |
| | | | | | | | 410.6 | | | | 13.0 - 14.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, soft to medium-stiff, slightly plastic. Some black (N1) organics. | Top of undisturbed material 13.0 ft. Description and classification by visual examination. |
| | | | | | | | | | | | Bottom of borehole at 14.0 Ft. Borehole backfilled with bentonite cement, 12/23/88. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R127

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R129 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,255 E 2,560 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-9-88 | 11-10-88 | Layne-Western, Co. | CME-550 | 6" | 18.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 422.1 | ▽ 12.2/409.9 11/23/88 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 0.3 | | | | | 422.1 | | | | 0.0 - 10.0 Ft. Silty CLAY and GRAVEL. Light olive gray (5Y5/2) to dark yellowish brown (10YR4/2), some grayish orange (10YR7/4). Low moisture content, slightly plastic. Brick material, pebbles, sandy. | 0-18.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.0 | | | | | | | | | | |
| SS | 2.0 | 1.3 | | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 1.3 | | | | | | | | | 6.0-10.0 Ft. Silty clay (CL) and rubble. Very pale orange (10YR8/2) to olive gray (5Y4/1), some dark reddish brown (10R3/4). Moderate moisture content, slightly plastic. Sandy, angular grains; some Fe staining. Trace of organics. | |
| SS | 2.0 | 1.4 | | | | | | | | | | |
| SS | 2.0 | 1.5 | | | | | 412.1 | 10 | | | 10.0 - 14.0 Ft. Silty CLAY (CL). Dark reddish brown (10R3/4) to dusky yellowish brown (10YR2/2), some brownish black (5YR2/1), mottled with grayish pink (5R8/2) material. Moderate moisture content, moderately plastic, slightly silty. Trace of organics. | |
| SS | 2.0 | 1.1 | | | | | ▽ | | | | | |
| SS | 2.0 | 2.0 | | | | | 408.1 | 15 | | | 14.0 - 18.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, medium-stiff, moderately plastic, dessication cracks. | Top of undisturbed material at 14.5 ft. |
| SS | 2.0 | 2.0 | | | | | | | | | | |
| | | | | | | | 404.1 | | | | Bottom of borehole at 18.0 Ft. Borehole backfilled with bentonite cement, 11/23/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R129

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R130 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,370 E 2,703 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-10-88 | 11-14-88 | Layne-Western, Co. | CME-550 | 6" | 21.0 | | 21.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 422.2 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.2 | | | | 0.0 - 1.0 Ft. CONCRETE. | |
| SS | 2.0 | 1.4 | | | | | 421.2 | | | | 1.0 - 17.3 Ft. Sandy GRAVEL and silty CLAY (Cl). Grayish brown (5YR3/2) to dark reddish brown (10R3/4). Low moisture content, slightly plastic, crumbly. Brick fragments, coal, coarse-grained in part. | 1-21.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.8 | | | | | | | | | | |
| SS | 2.0 | 1.2 | | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 1.3 | | | | | | | | | | |
| SS | 2.0 | 1.1 | | | | | | 10 | | | | |
| SS | 2.0 | 1.1 | | | | | | | | | 11.0-17.3 Ft. Silty clay (CL). Grayish brown (5YR3/2) to olive gray (5Y4/1). Low to moderate moisture content, slightly plastic. Coal, bricks, trace of organics. | |
| SS | 2.0 | 1.3 | | | | | | | | | | |
| SS | 2.0 | 0.5 | | | | | | 15 | | | | |
| SS | 2.0 | 1.6 | | | | | 404.9 | | | | 17.3 - 21.0 Ft. Silty CLAY (CL). Olive black (5Y2/1) to greenish black (5GY2/1), some olive gray (5Y4/1). Moderate moisture content, moderately plastic, silty. Coal streaks, dessication cracks, grades from silty to clay. | Top of undisturbed material at 17.3 ft. |
| SS | 2.0 | 1.1 | | | | | | 20 | | | | |
| | | | | | | | 401.2 | | | | Bottom of borehole at 21.0 Ft. Borehole backfilled with bentonite cement, 11/17/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 11/17/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. R130

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R131 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,548 E 2,303 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-16-88 | 12-16-88 | Layne-Western, Co. | CME-750 | 6" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 423.9 | ▽ 15.7/408.2 1/9/89 | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 423.9 | | | | | |
| | | | | | | | 423.4 | | | | 0.0 - 0.5 Ft. ASPHALT. | |
| SS | 1.3 | 0.3 | 19-11-1- | | | | 423.0 | | | | 0.5 - 0.9 Ft. GRAVEL, angular limestone. | 0-20.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.2 | 5-7-9 12 | | | | | | | | 0.9 - 15.0 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1). Dry, loose. Rubble consists of gravel, slag, brick and sand, patches of moderate yellowish brown (10YR5/4) silty clay. | |
| SS | 2.0 | 1.0 | 3-40-14 14 | | | | | 5 | | | | |
| SS | 2.0 | 1.7 | 4-8-8 4 | | | | | | | | 5.5-6.5 Ft. Sand (SW). Coarse-grained. | Sampled and radiologically logged by TMA/Eberline. |
| SS | 2.0 | 1.9 | 2-1-3 4 | | | | | | | | 6.5-8.0 Ft. Slag. Olive black (5Y2/1) to brownish black (5YR2/1). Moist, loose. | |
| SS | 2.0 | 1.9 | 2-1-3 3 | | | | | 10 | | | 8.0-8.5 Ft. Sand (SP). Coarse-grained; some pebbles and dark yellowish brown (10YR4/2) silt. | |
| SS | 2.0 | 1.3 | 2-4-7 6 | | | | | | | | 8.5-15.0 Ft. Silty clay (CL) and rubble. Olive gray (5Y4/1) to moderate yellowish brown (10YR5/4). Moist, soft, loose. Rubble consists of slag and brick fragments, patches of greenish gray (5GY6/1) silty clay; Fe staining. | |
| SS | 2.0 | 1.8 | 1-2-4 5 | | | | 408.9 | 15 | | | | |
| | | | | | | | ▽ | | | | 15.0 - 16.5 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist, medium-stiff, slightly plastic. Some black (N1) organics. | Top of undisturbed material 15.0 ft. |
| SS | 2.0 | 1.6 | 5-13-7 12 | | | | 407.4 | | | | 16.5 - 20.0 Ft. Sandy CLAY (SC). Light olive gray (5Y6/1) to pale brown (5YR5/2). Moist, soft, moderately plastic. Very fine-grained sand; Fe staining. | |
| SS | 2.0 | 2.0 | 3-5-4 5 | | | | 403.9 | 20 | | | | |
| | | | | | | | | | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 1/9/89. | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 1/9/89. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R131

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R132 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,950 E 1,412 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-20-88 | 12-20-88 | Layne-Western, Co. | CME-750 | 6" | 14.0 | | 14.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 423.0 | ▽ 8.1/414.9 12/23/88 ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.0 | 7-11-12 11 | | | | 423.0 | | | | 0.0 - 13.0 Ft. Silty CLAY (CL) and RUBBLE. Brownish black (5YR2/1) to olive black (5Y2/1). Low moisture content, loose. Rubble consists of sand, gravel, brick fragments, slag and wood, some patches of moderate yellowish brown (10YR5/4) silty clay. | 0-14.0 ft. advanced with 6-inch O.D hollow stem auger. |
| SS | 2.0 | 1.3 | 5-7-16 17 | | | | | | | | | |
| SS | 2.0 | 1.2 | 2-2-3 2 | | | | | 5 | | | | Sampled and radiologically logged by TMA/Eberline. |
| SS | 2.0 | 1.1 | 2-1-3 1 | | | | | | | | | |
| SS | 2.0 | 1.3 | 1-1/12"- | | | | | | | | | |
| SS | 2.0 | 1.4 | 3-5-12 7 | | | | | 10 | | | | |
| SS | 2.0 | 1.7 | 1-4-6 7 | | | | 410.0 | | | | | |
| | | | | | | | 409.0 | | | | 13.0 - 14.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Low moisture content, medium-stiff, slightly plastic. Some black (N1) organics. | Top of undisturbed material 13.0 ft. Description and classification by visual examination. |
| | | | | | | | | | | | Bottom of borehole at 14.0 Ft. Borehole backfilled with bentonite cement, 12/23/88. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R132

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R133 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,228 E 2,934 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-30-88 | 11-30-88 | Layne-Western, Co. | CME-750 | 6" | 12.0 | | 12.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 6 | | 422.8 | ▽ 11.0/411.8 12/1/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.8 | | | | | |
| | | | | | | | 422.1 | | | | 0.0 - 0.7 Ft. GRAVEL. | |
| SS | 1.1 | 0.8 | 4-5 | | | | | | | | 0.7 - 10.5 Ft. Silty CLAY (CL) and RUBBLE. Dark yellowish brown (10YR4/2) to brownish black (5YR2/1). Moist, loose. Rubble consists of gravel, slag, sand, brick fragments, and carbonaceous material; Fe staining. | 0-12.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.4 | 7-9-5 5 | | | | | | | | | |
| SS | 2.0 | 0.7 | 1-2-3 8 | | | | | 5 | | | | Sampled and radiologically logged by TMA/Eberline. |
| SS | 2.0 | 1.4 | 2-6-4 4 | | | | | | | | | |
| SS | 2.0 | 0.9 | 3-2-4 7 | | | | | | | | | |
| SS | 2.0 | 1.3 | 1-3-3 2 | | | | | 10 | | | | |
| | | | | | | | 412.3 ▽ | | | | 10.5 - 12.0 Ft. Sandy SILT (SM). Olive gray (5Y4/1). Moist, soft, slightly plastic. Very fine-grained sand, some black (N1) organics. | Top of undisturbed material at 10.5 ft. |
| | | | | | | | 410.8 | | | | | Description and classification by visual examination. |
| | | | | | | | | | | | Bottom of borehole at 12.0 Ft. Borehole backfilled with bentonite cement, 12/1/88. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. R133

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R134 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,108 E 2,938 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-30-88 | 11-30-88 | Layne-Western, Co. | CME-750 | 6" | 12.0 | | 12.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 6 | | 421.4 | ▽ 10.5/410.9 12/1/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 421.4 | | | | | |
| SS | 1.4 | 0.8 | 17-15-1- | | | | 420.9 | | | | 0.0 - 0.5 Ft. GRAVEL.<br>0.5 - 9.0 Ft. Silty CLAY (CL) and RUBBLE. Dark yellowish brown (10YR4/2). Moist, loose. Rubble consists of gravel, slag, sand, brick fragments, and carbonaceous material. | 0-12.0 ft. advanced with 6-inch hollow O.D. stem auger. |
| SS | 2.0 | 0.8 | 15-19-11 10 | | | | | | | | | |
| SS | 2.0 | 1.2 | 3-5-7 9 | | | | | 5 | | | | Sampled and radiologically logged by TMA/Eberline. |
| SS | 2.0 | 0.8 | 3-2-2 2 | | | | | | | | | |
| SS | 2.0 | 1.5 | 1-2-5 4 | | | | 412.4 | | | | 9.0 - 12.0 Ft. Sandy SILT (SM). Olive gray (5Y4/1). Moist, soft, slightly plastic. Very fine-grained sand, some black (N1) organics. | Top of undisturbed material at 9.0 ft. |
| SS | 2.0 | 1.6 | 3-2-1 3 | | | | | 10 ▽ | | | | |
| | | | | | | | 409.4 | | | | Bottom of borehole at 12.0 Ft. Borehole backfilled with bentonite cement, 12/1/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. R134

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R135 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,145 E 3,013 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 12-2-88 | 12-2-88 | Layne-Western, Co. | CME-550 | 6" | 12.0 | | 12.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 6 | | 421.0 | ▽ 9.5/411.5 12/7/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.1 | | | | | 421.0 | | | | | |
| SS | 2.0 | 1.0 | | | | | | | | | 0.0 - 7.5 Ft. GRAVEL and silty CLAY (CL). Dusky brown (5YR2/2) to dark reddish brown (10R3/4). Low to moderate moisture content, slightly plastic. Trace of organics, sandy in places. | 0-12.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.1 | | | | | | 5 | | | | |
| SS | 2.0 | 1.3 | | | | | | | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 1.6 | | | | | 413.5 | | | | 7.5 - 12.0 Ft. Silty CLAY (CL). Grayish brown (5YR3/2). Moderate to high moisture content, moderately plastic, sandy in places, stiff. | Top of undisturbed material at 8.5 ft. |
| SS | 2.0 | 1.4 | | | | | | 10 | | | | |
| | | | | | | | 409.0 | | | | Bottom of borehole at 12.0 Ft. Borehole backfilled with bentonite cement, 12/7/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R135

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R136 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 2,020 E 3,435 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 10-25-88 | 10-25-88 | Layne-Western, Co. | CME-750 | 6" | 28.0 | | 28.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 14 | | 422.1 | ▽ / ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.1 | | | | | |
| SS | 2.0 | 1.6 | 3-6-14 16 | | | | | | | | 0.0 - 22.0 Ft. Silty CLAY (CL) and RUBBLE. Moderate yellowish brown (10YR5/4). Dry, stiff. Rubble consists of slag, brick, glass and gravel. | 0-28.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.1 | 9-19-18 17 | | | | | | | | | |
| SS | 2.0 | 1.3 | 4-5-3 2 | | | | | 5 | | | | |
| SS | 2.0 | 1.0 | 6-8-9 8 | | | | | | | | | |
| SS | 2.0 | 1.4 | 5-5-5 6 | | | | | | | | | |
| SS | 2.0 | 1.8 | 2-6-9 8 | | | | | 10 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 1.7 | 4-5-11 7 | | | | | | | | | |
| SS | 2.0 | 1.2 | 2-2-3 4 | | | | | 15 | | | | |
| SS | 2.0 | 1.2 | 2-6-5 4 | | | | | | | | | |
| SS | 2.0 | 1.0 | 3-5-5 5 | | | | | | | | | |
| SS | 2.0 | 1.4 | 5-5-6 13 | | | | | 20 | | | | |
| SS | 2.0 | 2.0 | 6-9-10 13 | | | | 400.1 | | | | 22.0 - 28.0 Ft. Sandy SILT (SM). Olive gray (5Y4/1). Very fine-grained sand, wet, soft. Some black (N1) organics, including rootlets and twigs. | Top of undisturbed material at 22.0 ft. |
| SS | 2.0 | 2.0 | 4-4-6 6 | | | | | 25 | | | | |
| SS | 2.0 | 0.9 | 4-5-7 9 | | | | 394.1 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 28.0 Ft. Borehole backfilled with bentonite cement, 11/17/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 11/17/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R136

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R137 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,918 E 3,315 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-1-88 | 11-1-88 | Layne-Western, Co. | CME-550 | 6" | 14.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 421.6 | ▽ 14.7/406.9 11/9/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | S. Beck |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.2 | | | | | 421.6 | | | | 0.0 - 14.0 Ft. FILL. Crushed granular fill, including concrete and clay. | 0-16.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.2 | | | | | | | | | | |
| SS | 2.0 | 1.1 | | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 1.1 | | | | | | | | | | |
| SS | 2.0 | 1.8 | | | | | | | | | | |
| SS | 2.0 | 0.8 | | | | | | 10 | | | | |
| SS | 2.0 | 1.8 | | | | | | | | | | |
| SS | 2.0 | 1.6 | | | | | 407.6 ▽ | 15 | | | 14.0 - 16.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). | Top of undisturbed material at 14.0 ft. |
| | | | | | | | 405.6 | | | | Bottom of borehole at 16.0 Ft. Borehole backfilled with bentonite cement, 11/9/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 11/9/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R137

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 2 | R138 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,925 E 3,500 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 10-25-88 | 10-25-88 | Layne-Western, Co. | CME-550 | 6" | 32.0 | | 34.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 17 | | 423.0 | ▼ / / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | S. Beck |

| SAMP. TYPE AND DIAM. | SAMP. ADV. / LEN CORE | SAMPLE REC. / CORE REC. | SAMPLE BLOWS "N" / % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | PRESS. P.S.I. | TIME IN MIN. | ELEV. | DEPTH | GRAPHICS SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 423.0 | | | | |
| SS | 2.0 | 1.1 | | | | | | | | 0.0 - 32.0 Ft. CLAY (CL). Dark yellowish brown (10YR4/2) to moderate yellowish brown (10YR5/4). Very cohesive. | 0-34.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.3 | | | | | | | | | |
| SS | 2.0 | 1.4 | | | | | | 5 | | | |
| SS | 2.0 | 1.5 | | | | | | | | | |
| SS | 2.0 | 1.6 | | | | | | | | | |
| SS | 2.0 | 1.7 | | | | | | 10 | | 10.0-15.0 Ft. Silty clay (CL). | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 1.4 | | | | | | | | | |
| SS | 2.0 | 1.8 | | | | | | 15 | | 15.0-32.0 Ft. Fill. Mixture of crushed material including bricks, slag, glass, concrete, metal and clay. | |
| SS | 2.0 | 1.7 | | | | | | | | | |
| SS | 2.0 | 1.8 | | | | | | | | | |
| SS | 2.0 | 1.9 | | | | | | 20 | | | |
| SS | 2.0 | 1.5 | | | | | | | | | |
| SS | 2.0 | 1.5 | | | | | | 25 | | | |
| SS | 2.0 | 1.2 | | | | | | | | | |
| SS | 2.0 | 1.3 | | | | | | | | | |
| SS | 2.0 | 1.4 | | | | | | 30 | | | |
| SS | 2.0 | 1.2 | | | | | 391.0 | | | 32.0 - 34.0 Ft. Sandy SILT (SM). Olive gray (5Y4/1). | Top of undisturbed material at 32.0 ft. |
| | | | | | | | 389.0 | | | Bottom of borehole at 34.0 Ft. Borehole | Description and classification by |

SS = SPLIT SPOON; ST = SHELBY TUBE; O = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R138

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 2 OF 2 | R138 |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | backfilled with bentonite cement, 11/15/88. | visual examination.<br><br>No ground water observed, 11/15/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. R138

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 2 | R139 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,799 E 3,606 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 10-26-88 | 10-26-88 | Layne-Western, Co. | CME-550 | 6" | 34.0 | | 36.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 18 | | 424.0 | ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | S. Beck |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.0 | | | | | |
| SS | 2.0 | 1.0 | | | | | 423.5 | | | | 0.0 - 0.5 Ft. TOPSOIL. Black (N1). | |
| SS | 2.0 | 0.7 | | | | | | | | | 0.5 - 34.0 Ft. FILL. Crushed fill material including red brick, concrete, slag, wood and clay. | 0-36.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 0.7 | | | | | | 5 | | | | |
| SS | 2.0 | 1.3 | | | | | | | | | | |
| SS | 2.0 | 0.7 | | | | | | 10 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 0.3 | | | | | | | | | | |
| SS | 2.0 | 0.7 | | | | | | | | | | |
| SS | 2.0 | 0.3 | | | | | | 15 | | | | |
| SS | 2.0 | 1.3 | | | | | | | | | | |
| SS | 2.0 | 1.8 | | | | | | 20 | | | | |
| SS | 2.0 | 1.5 | | | | | | | | | | |
| SS | 2.0 | 2.0 | | | | | | | | | | |
| SS | 2.0 | 1.8 | | | | | | 25 | | | | |
| SS | 2.0 | 1.9 | | | | | | | | | | |
| SS | 2.0 | 1.9 | | | | | | 30 | | | | |
| SS | 2.0 | 1.6 | | | | | | | | | | |
| SS | 2.0 | 1.1 | | | | | 390.0 | | | | | |
| SS | 2.0 | 1.7 | | | | | | | | | 34.0 - 36.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Pockets of sand and gravel. | Top of undisturbed material at 34.0 ft. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R139

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 2 OF 2 | R139 |

| SAMP. TYPE AND DIAM. | SAMP. ADV. / LEN CORE | SAMPLE REC. / CORE REC. | SAMPLE BLOWS "N" / % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 388.0 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 36.0 Ft. Borehole backfilled with bentonite cement, 11/8/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 11/8/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. R139

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R140 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,700 E 3,300 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-1-88 | 11-1-88 | Layne-Western, Co. | CME-550 | 6" | 19.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 425.0 | ▽ / / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | S. Beck |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.4 | | | | | 425.0 | | | | 0.0 - 19.0 Ft. FILL. Crushed granular fill material including concrete, red brick, glass and clay. | 0-20.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.2 | | | | | | | | | | |
| SS | 2.0 | 1.2 | | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 1.0 | | | | | | | | | | |
| SS | 2.0 | 1.1 | | | | | | | | | | |
| SS | 2.0 | 1.2 | | | | | | 10 | | | | |
| SS | 2.0 | 1.4 | | | | | | | | | | |
| SS | 2.0 | 1.6 | | | | | | 15 | | | | |
| SS | 2.0 | 1.7 | | | | | | | | | | |
| SS | 2.0 | 2.0 | | | | | 406.0 | | | | | |
| | | | | | | | 405.0 | 20 | | | 19.0 - 20.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). | Top of undisturbed material at 19.0 ft. Description and classification by visual examination. |
| | | | | | | | | | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 11/9/88. | No ground water observed, 11/9/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R140

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R141 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,700 E 3,500 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-7-88 | 11-7-88 | Layne-Western, Co. | CME-550 | 6" | 22.0 | | 22.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 11 | | 428.0 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.8 | | | | | 428.0 | | | | 0.0 - 22.0 Ft. Silty CLAY (CL) and sandy GRAVEL. Grayish brown (5YR3/2), pale yellowish brown (10YR6/2, pinkish gray (5YR8/1), and brownish black (5YR2/1). Low to moderate moisture content, silty. Bricks, coal, and slag material. | 0-22.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.6 | | | | | | | | | | |
| SS | 2.0 | 1.8 | | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline |
| SS | 2.0 | 1.8 | | | | | | | | | 6.0-22.0 Ft. Silty clay (CL). Dusky yellowish brown (10YR2/2) to brownish black (5YR2/1), some grayish orange pink (5YR7/2) and moderate reddish brown (10R4/6). Moderate moisture content, moderately plastic. Trace of organics. | |
| SS | 2.0 | 1.6 | | | | | | | | | | |
| SS | 2.0 | 1.3 | | | | | | 10 | | | | |
| SS | 2.0 | 1.6 | | | | | | | | | | |
| SS | 2.0 | 1.3 | | | | | | | | | | |
| SS | 2.0 | 1.4 | | | | | | 15 | | | | |
| SS | 2.0 | 1.5 | | | | | | | | | | |
| SS | 2.0 | 1.3 | | | | | | 20 | | | | Top of undisturbed material at >22.0 ft. |
| | | | | | | | 406.0 | | | | Bottom of borehole at 22.0 Ft. Borehole backfilled with bentonite cement, 11/9/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 11/9/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R141

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R142 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,635 E 3,230 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-2-88 | 11-2-88 | Layne-Western, Co. | CME-550 | 6" | 14.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 423.0 | ▽ / ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | S. Beck |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 423.0 | | | | | |
| SS | 2.0 | 1.5 | | | | | 422.5 | | | | 0.0 - 0.5 Ft. TOPSOIL. | |
| | | | | | | | | | | | 0.5 - 14.0 Ft. FILL. Crushed granular fill, including red brick, slag, concrete, coal, and clay. | 0-16.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.7 | | | | | | | | | | |
| SS | 2.0 | 1.5 | | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 1.9 | | | | | | | | | | |
| SS | 2.0 | 1.5 | | | | | | | | | | |
| SS | 2.0 | 1.0 | | | | | | 10 | | | | |
| SS | 2.0 | 1.7 | | | | | | | | | | |
| | | | | | | | 409.0 | | | | | |
| SS | 2.0 | 1.4 | | | | | | 15 | | | 14.0 - 16.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moist at 16.0 Ft. | Top of undisturbed material at 14.0 ft. |
| | | | | | | | 407.0 | | | | Bottom of borehole at 16.0 Ft. Borehole backfilled with bentonite cement, 11/9/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 11/9/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R142

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R143 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,601 E 3,395 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 10-26-88 | 10-27-88 | Layne-Western, Co. | CME-550 | 6" | 18.0 | | 18.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 428.0 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | S. Beck |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.5 | | | | | 428.0 | | | | 0.0 - 18.0 Ft. FILL. Crushed fill material, including concrete, red brick, slag, metal, sand, gravel, and clay. | 0-16.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.5 | | | | | | | | | | |
| SS | 2.0 | 0.7 | | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline |
| SS | 2.0 | 1.5 | | | | | | | | | | |
| SS | 2.0 | 1.7 | | | | | | | | | | |
| SS | 2.0 | 1.4 | | | | | | 10 | | | | |
| SS | 2.0 | 1.5 | | | | | | | | | | |
| SS | 2.0 | 1.5 | | | | | | 15 | | | | |
| SS | 2.0 | 0.6 | | | | | | | | | | |
| | | | | | | | 410.0 | | | | Bottom of borehole at 18.0 Ft. Borehole backfilled with bentonite cement, 11/9/88. | Top of undisturbed material at >18.0 ft. |
| | | | | | | | | | | | | Gases detected 16.0-18.0 ft. sample. |
| | | | | | | | | | | | | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 11/9/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R143

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 2 | R144 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,610 E 3,590 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 10-26-88 | 10-27-88 | Layne-Western, Co. | CME-750 | 6" | 48.0 | | 48.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 24 | | 427.0 | ▽ / / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. 427.0 | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.2 | 3-6-9 10 | | | | | | | | 0.0 - 45.5 Ft. Silty CLAY (CL) and RUBBLE. Dark yellowish brown (10YR4/2). Moist, soft. Rubble consists of brick, gravel, concrete, sand, and wood. | 0-48.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 1.3 | 0.9 | 9-48-50- | | | | | | | | | |
| SS | 2.0 | 1.3 | 4-4-5 6 | | | | | 5 | | | | |
| SS | 2.0 | 1.2 | 2-3-3 5 | | | | | | | | | |
| SS | 2.0 | 1.3 | 2-2-2 6 | | | | | | | | | |
| SS | 2.0 | 1.1 | 43-5-5 3 | | | | | 10 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 1.6 | 1-2-2 3 | | | | | | | | | |
| SS | 2.0 | 1.4 | 1-2-2 3 | | | | | 15 | | | | |
| SS | 2.0 | 1.2 | 1-3-2 4 | | | | | | | | | |
| SS | 2.0 | 1.8 | 1-2-3 3 | | | | | | | | | |
| SS | 2.0 | 1.8 | 2-2-3 4 | | | | | 20 | | | | |
| SS | 2.0 | 1.8 | 1-3-3 4 | | | | | | | | | |
| SS | 2.0 | 2.0 | 1-3-4 4 | | | | | 25 | | | | |
| SS | 2.0 | 2.0 | 2-3-4 5 | | | | | | | | | |
| SS | 2.0 | 2.0 | 2-3-3 5 | | | | | 30 | | | | |
| SS | 2.0 | 1.4 | 4-7-14 17 | | | | | | | | | |
| SS | 2.0 | 1.0 | 11-5-9 8 | | | | | | | | | |
| SS | 2.0 | 0.6 | 5-6-7 8 | | | | | | | | | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R144

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 2 OF 2 | R144 |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 0.7 | 8-9-5<br>7 | | | | | | | | | |
| SS | 2.0 | 1.2 | 5-5-7<br>8 | | | | | | | | | |
| SS | 2.0 | 0.6 | 5-8-13<br>19 | | | | | 40 | | | | |
| SS | 2.0 | 0.5 | 9-9-9<br>10 | | | | | | | | | |
| SS | 2.0 | 1.3 | 7-4-3<br>5 | | | | | 45 | | | | |
| | | | | | | | 381.5 | | | | 45.5 - 48.0 Ft. Silty SAND (SM). Olive gray (5Y4/1). Very fine-grained sand. Moist, soft, slightly cohesive. | Top of undisturbed material at 45.5 ft. |
| SS | 2.0 | 1.6 | 2-6-9<br>9 | | | | 379.0 | | | | Bottom of borehole at 48.0 Ft. Borehole backfilled with bentonite cement, 11/8/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 11/8/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. R144

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R145 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,500 E 3,500 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-8-88 | 11-8-88 | Layne-Western, Co. | CME-550 | 6" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 427.8 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.5 | | | | | 427.8 | | | | 0.0 - 2.0 Ft. GRAVEL. Pinkish gray (5YR8/1). Low moisture content, loose. Carbonaceous material, some brick fragments. | 0-20.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.8 | | | | | 425.8 | | | | 2.0 - 20.0 Ft. Silty CLAY (CL). Dark reddish brown (10R3/4). Moderate moisture content. Silty, sandy in places; some gravel, bricks, pebbles. | |
| SS | 2.0 | 1.8 | | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 1.9 | | | | | | | | | | |
| SS | 2.0 | 1.9 | | | | | | | | | | |
| SS | 2.0 | 1.6 | | | | | | 10 | | | 10.0-16.0 Ft. Dusky yellowish brown (10YR2/2). Moderate moisture content, moderately plastic. Trace of organics and slag. | |
| SS | 2.0 | 2.0 | | | | | | | | | | |
| SS | 2.0 | 1.4 | | | | | | 15 | | | | |
| SS | 2.0 | 2.0 | | | | | | | | | 16.0-20.0 Ft. Pale brown (5YR5/2). Moderate moisture content, slightly to moderately plastic. Trace of organics, gravel in places, some pebbles and bricks. | |
| SS | 2.0 | 2.0 | | | | | | | | | | |
| | | | | | | | 407.8 | 20 | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 11/9/88. | Top of undisturbed material at >20.0 ft. |
| | | | | | | | | | | | | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 11/9/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. R145

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R146 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,400 E 3,205 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-3-88 | 11-3-88 | Layne-Western, Co. | CME-550 | 6" | 14.0 | | 14.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 423.0 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | S. Beck |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 423.0 | | | | | |
| SS | 2.0 | 1.5 | | | | | 422.5 | | | | 0.0 - 0.5 Ft. TOPSOIL. | |
| | | | | | | | | | | | 0.5 - 11.0 Ft. FILL. Crushed granular fill material including slag, concrete, red brick, and clay. | 0-14.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.2 | | | | | | | | | | |
| SS | 2.0 | 1.4 | | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 0.9 | | | | | | | | | | |
| SS | 2.0 | 0.7 | | | | | | | | | | |
| SS | 2.0 | 1.3 | | | | | | 10 | | | | |
| | | | | | | | 412.0 | | | | 11.0 - 14.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). | Top of undisturbed material at 11.0 ft. |
| SS | 2.0 | 1.4 | | | | | | | | | | |
| | | | | | | | 409.0 | | | | Bottom of borehole at 14.0 Ft. Borehole backfilled with bentonite cement, 11/9/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 11/9/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R146

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R147 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,400 E 3,600 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 10-31-88 | 10-31-88 | Layne-Western, Co. | CME-750 | 6" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 427.0 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.6 | 2-4-9 27 | | | | 427.0 | | | | 0.0 - 20.0 Ft. Silty CLAY (CL) and RUBBLE. Brownish gray (5YR4/1). Dry, loose. Rubble consists of brick, gravel, sand, and glass; Fe staining. | 0-20.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.7 | 8-21-21 22 | | | | | | | | | |
| SS | 2.0 | 1.2 | 4-3-3 2 | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 0.7 | 4-5-5 5 | | | | | | | | | |
| SS | 2.0 | 0.4 | 2-5-3 4 | | | | | | | | | |
| SS | 2.0 | 1.0 | 3-2-4 5 | | | | | 10 | | | | 10.0 ft. LEL=3%. |
| SS | 2.0 | 1.0 | 3-3-3 2 | | | | | | | | | |
| SS | 2.0 | 0.9 | 1-1-2 5 | | | | | 15 | | | | |
| SS | 2.0 | 1.2 | 2-2-1 3 | | | | | | | | | |
| SS | 2.0 | 1.3 | 2-2-2 2 | | | | | | | | | |
| | | | | | | | 407.0 | 20 | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 11/15/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 11/15/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R147

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R148 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,300 E 3,214 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-3-88 | 11-3-88 | Layne-Western, Co. | CME-550 | 6" | 14.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 425.0 | ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | S. Beck |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.8 | | | | | 425.0 | | | | 0.0 - 14.0 Ft. FILL. Crushed granular fill material including concrete, red brick, and clay. | 0-16.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.5 | | | | | | | | | | |
| SS | 2.0 | 1.8 | | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 1.8 | | | | | | | | | | |
| SS | 2.0 | 1.4 | | | | | | | | | | |
| SS | 2.0 | 1.5 | | | | | | 10 | | | | |
| SS | 2.0 | 1.9 | | | | | | | | | | |
| SS | 2.0 | 1.8 | | | | | 411.0 | | | | | |
| | | | | | | | | 15 | | | 14.0 - 16.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). | Top of undisturbed material at 14.0 ft. |
| | | | | | | | 409.0 | | | | Bottom of borehole at 16.0 Ft. Borehole backfilled with bentonite cement, 11/9/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 11/9/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R148

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R149 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,199 E 3,560 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 10-28-88 | 10-28-88 | Layne-Western, Co. | CME-550 | 6" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 422.0 | / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | S. Beck |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 422.0 | | | | | |
| SS | 2.0 | 1.6 | | | | | 421.5 | | | | 0.0 - 0.5 Ft. TOPSOIL. | |
| SS | 2.0 | 1.5 | | | | | | | | | 0.5 - 20.0 Ft. FILL. Crushed fill material including red brick, concrete, and slag. | 0-20.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.1 | | | | | | 5 | | | | |
| SS | 2.0 | 0.9 | | | | | | | | | | Sampled and gamma logged by TMA/Eberline |
| SS | 2.0 | 0.8 | | | | | | | | | | |
| SS | 2.0 | 1.5 | | | | | | 10 | | | | |
| SS | 2.0 | 1.3 | | | | | | | | | | |
| SS | 2.0 | 1.3 | | | | | | 15 | | | | |
| SS | 2.0 | 1.3 | | | | | | | | | | |
| SS | 2.0 | 0.7 | | | | | | | | | | |
| | | | | | | | 402.0 | 20 | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 11/9/88. | Top of undisturbed material at >20.0 ft. |
| | | | | | | | | | | | | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 11/9/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R149

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R150 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,250 E 3,360 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-8-88 | 11-8-88 | Layne-Western, Co. | CME-550 | 6" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 423.8 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.8 | | | | | 423.8 | | | | 0.0 - 20.0 Ft. RUBBLE and silty CLAY (CL). Grayish black (N2). Low moisture content. Carbonaceous material, sandy in places, trace of organics. | 0-20.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 2.0 | | | | | | | | | | |
| SS | 2.0 | 1.6 | | | | | | 5 | | | 4.0-14.0 Ft. Silty clay (CL). Moderate reddish brown (10R4/6) to dark reddish brown (1DR3/4), some very dark red (5R2/6). Low to moderate moisture content. Trace of organics; bricks, some carbonaceous material, dessication cracks. | Sampled and gamma logged by TMA/Eberline |
| SS | 2.0 | 1.6 | | | | | | | | | | |
| SS | 2.0 | 1.1 | | | | | | | | | | |
| SS | 2.0 | 0.6 | | | | | | 10 | | | | |
| SS | 2.0 | 0.5 | | | | | | | | | | |
| SS | 2.0 | 1.3 | | | | | | 15 | | | 14.0-20.0 Ft. Silty clay (CL) and coal. Black (N1), grayish black (N2), and very dusky red (10R2/2). Moderate moisture content, moderately plastic. Slag, organics, trace of bricks, glass. | |
| SS | 2.0 | 1.8 | | | | | | | | | | |
| SS | 2.0 | 1.4 | | | | | | | | | | |
| | | | | | | | 403.8 | 20 | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 11/10/88. | Top of undisturbed material at >20.0 ft. |
| | | | | | | | | | | | | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 11/10/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R150

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R151 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,200 E 3,180 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-6-88 | 11-7-88 | Layne-Western, Co. | CME-550 | 6" | 18.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | 421.6 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.5 | | | | | 421.6 | | | | 0.0 - 10.2 Ft. FILL. Crushed granular fill including red brick, slag, and clay. | 0-16.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.3 | | | | | | | | | | |
| SS | 2.0 | 1.6 | | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 1.0 | | | | | | | | | | |
| | | | | | | | 411.4 | 10 | | | 10.2 - 20.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Low moisture content, soft, slightly plastic. Trace of black (N1) organics. | Top of undisturbed material at 10.2 ft. |
| | | | | | | | | 15 | | | | Description and classification by visual examination. |
| | | | | | | | 401.6 | 20 | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 11/9/88. | No ground water observed, 11/9/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R151

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R152 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,200 E 3,400 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-7-88 | 11-7-88 | Layne-Western, Co. | CME-750 | 6" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 425.0 | ▽ / ▼ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Cherry |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 425.0 | | | | | |
| SS | 2.0 | 1.2 | 3-8-11 9 | | | | | | | | 0.0 - 20.0 Ft. Silty CLAY (CL) and RUBBLE. Grayish brown (5YR3/2) to brownish black (5YR2/1). Dry, loose. Rubble consists of brick, gravel, carbonaceous material, and slag. Patches of moderate yellowish brown (10YR5/4) to light olive gray (5Y6/1) silty clay. | 0-20.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.4 | 3-3-3 3 | | | | | | | | | |
| SS | 2.0 | 1.2 | 2-2-3 2 | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 1.1 | 1-1-2 2 | | | | | | | | | |
| SS | 2.0 | 1.1 | 2-3-2 3 | | | | | | | | | 6.0 ft. OVA reading 5ppm (inside augers). |
| SS | 2.0 | 1.1 | 2-5-3 4 | | | | | 10 | | | | |
| SS | 2.0 | 1.7 | 1-3-3 4 | | | | | | | | | |
| SS | 2.0 | 1.8 | 1-4-4 4 | | | | | 15 | | | | |
| SS | 2.0 | 1.7 | 2-3-4 5 | | | | | | | | | |
| SS | 2.0 | 1.8 | 2-2-5 3 | | | | | | | | | |
| | | | | | | | 405.0 | 20 | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 11/10/88. | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 11/10/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; O = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. R152

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R153 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,101 E 3,527 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 10-27-88 | 10-28-88 | Layne-Western, Co. | CME-550 | 6" | 20.0 | | 20.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 10 | | 424.0 | ▽ / ▽ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | S. Beck |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 424.0 | | | | | |
| SS | 2.0 | 1.2 | | | | | | | | | 0.0 - 20.0 Ft. FILL. Crushed fill material including red brick, concrete, slag, glass, and clay. | 0-20.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.4 | | | | | | | | | | |
| SS | 2.0 | 1.6 | | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline |
| SS | 2.0 | 1.6 | | | | | | | | | | |
| SS | 2.0 | 1.2 | | | | | | | | | | |
| SS | 2.0 | 1.5 | | | | | | 10 | | | | |
| SS | 2.0 | 1.8 | | | | | | | | | | |
| SS | 2.0 | 0.5 | | | | | | 15 | | | | |
| SS | 2.0 | 1.8 | | | | | | | | | | |
| SS | 2.0 | 1.9 | | | | | | | | | | |
| | | | | | | | 404.0 | 20 | | | Bottom of borehole at 20.0 Ft. Borehole backfilled with bentonite cement, 11/9/88. | Top of undisturbed material at >20.0 ft. |
| | | | | | | | | | | | | Description and classification by visual examination. |
| | | | | | | | | | | | | No ground water observed, 11/9/88. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R153

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R154 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,032 E 3,140 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-7-88 | 11-7-88 | Layne-Western, Co. | CME-550 | 6" | 16.0 | | 16.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 8 | | 421.1 | ▽ 12.0/409.1 11/9/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 421.1 | | | | | |
| SS | 2.0 | 1.6 | | | | | | | | | 0.0 - 10.3 Ft. RUBBLE and silty CLAY (CL). Moderate reddish brown (10R4/6) to light brown (5YR5/6) and brownish black (5YR2/1). Moderate moisture content. Rubble consists of slag, bricks, coal, and gravel. | 0-16.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.8 | | | | | | | | | | |
| SS | 2.0 | 1.2 | | | | | | 5 | | | | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 2.0 | | | | | | | | | | |
| SS | 2.0 | 1.2 | | | | | | | | | | |
| | | | | | | | 410.8 | 10 | | | | |
| SS | 2.0 | 1.9 | | | | | | | | | 10.3 - 16 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moderate moisture content, moderately plastic. Trace of organics, slightly silty. | Top of undisturbed material at 10.2 ft. |
| SS | 2.0 | 1.8 | | | | | | | | | | |
| SS | 2.0 | 1.5 | | | | | | 15 | | | | |
| | | | | | | | 405.1 | | | | | |
| | | | | | | | | | | | Bottom of borehole at 16.0 Ft. Borehole backfilled with bentonite cement, 11/9/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: R154

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501-116 | 1 OF 1 | R155 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | N 1,720 E 1,810 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 11-29-88 | 11-29-88 | Layne-Western, Co. | CME-550 | 6" | 14.0 | | 14.0 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 7 | | 419.0 | ▽ 5.9/413.1 12/1/88 / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs/30 in | none | G. Pais |

| SAMP. TYPE AND DIAM. | SAMP. ADV. / LEN CORE | SAMPLE REC. / CORE REC. | SAMPLE "N" BLOWS / % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.6 | | | | | 419.0 | | | | 0.0 - 10.5 Ft. RUBBLE. Dusky yellowish brown (10YR2/2). Low moisture content, slightly plastic. Organics, trace of coal, slag. | 0-14.0 ft. advanced with 6-inch O.D. hollow stem auger. |
| SS | 2.0 | 1.1 | | | | | | | | | | |
| SS | 2.0 | 1.6 | | | | | | 5 | | | 4.3-10.5 Ft. Silty clay (CL) and rubble. Olive black (5Y2/1). High moisture content, moderately plastic. Wood chips, organics, trace of coal. | Sampled and gamma logged by TMA/Eberline. |
| SS | 2.0 | 1.6 | | | | | | | | | | |
| SS | 2.0 | 1.4 | | | | | | 10 | | | | |
| SS | 2.0 | 1.5 | | | | | 408.5 | | | | 10.5 - 14.0 Ft. Silty CLAY (CL). Olive gray (5Y4/1). Moderate moisture content, moderately plastic. Trace of organics, rootlets. | Top of undisturbed material at 10.5 ft. |
| SS | 2.0 | 1.5 | | | | | | | | | | |
| | | | | | | | 405.0 | | | | Bottom of borehole at 14.0 Ft. Borehole backfilled with bentonite cement, 12/1/88. | Description and classification by visual examination. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO. R155

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| | | 1 OF 2 | B16W01S |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| SLDS - W. of Plant 8 | N 2,076 E 1,080 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-23-88 | 3-30-88 | Layne-Western, Co. | Mobile B-53 | 8 1/4" | 19.5 | 0.0 | 24.5 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| 0.0/0 | 0 | 9 | 426.45 | 426.7 | ▽ 11.4/415.3 ▽ / | 19.5/407.2 |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs./ 30 in. | 10 in./14.3 in. | C.A. Clark |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 426.7 | | | | | |
| SS | 2.0 | 1.1 | 8-9-4-3 | | | | 426.3 | | | | 0.0-0.4 FT. GRAVEL (GP). Very light grey (N8) to pinkish gray (5YR8/1). Fine gravel size angular fill. | 0-24.5 ft. advanced using 8 1/4" hollow stem augers. |
| | | | | | | | 425.6 | | | | | |
| SS | 2.0 | 1.1 | 3-1-2-1 | | | | | | | | 0.4-1.1 FT. ASPHALT Black (N1). Slightly weathered, little to no fractures. Impervious top shield. | Sampled and gamma logged by TMA/Eberline to a depth of 12 ft. |
| SS | 2.0 | 1.0 | 3-1-1-2 | | | | | 5 | | | 1.1-8.8 FT. Silty SAND (SM) with gravel as FILL material. Dusky yellowish brown (5YR2/1). Dry to 7.2' where material becomes moist. Little cohesion, loose density. Moderate compaction, lacks an adequate moisture content. 3.4' Introduction of abundant debris as coal slag, brick and concrete fragments, broken glass and decomposed organics. Loose compaction, with some particles slightly cemented and coated with silt. Low dry strength, breaks easily in fingers. Quickly absorbs moisture when wetted, becoming soft. 7.2' Material becomes moist with introduction of abundant clayey silt, light olive gray (5Y5/2). Increase plasticity and shearing resistance. Consistency becomes soft-slightly friable. Water content is in the lower range of plasticity chart. 8.2' Limestone boulder. Possibly advanced by auger. Absence of other debris. Contact of clay with boulder shows dissolution and weathering of limestone boundaries. | |
| SS | 2.0 | 1.1 | 0-12-4-1 | | | | | | | | | |
| SS | 2.0 | 1.9 | 1-2-4-3 | | | | 417.9 | | | | | |
| SS | 2.0 | 1.8 | 2-3-4-3 | | | | | 10 | | | | Top of undisturbed material at 8.8 ft. |
| SS | 2.0 | 1.7 | 2-2-2-4 | | | | 414.9 ▽ 414.9 | | | | | |
| SS | 2.0 | 2.0 | 0-0-2-3 | | | | | 15 | | | | |
| | | | | | | | | | | | 8.8-11.8 FT. CLAY (CL). Light olive gray (5Y5/2) mottled with Light brown (5YR5/6). Slightly moist, low moisture content. Cohesive, slighty sticky. Pliable, moderate thread which ruptures easily. Firm without cementation, moderate shear strength. 11.2' Distinct increase in silt percent. Silt is mafic and biotite flakes. Color darkens slightly. Increase dilatancy to rapid, plasticity decrease and becomes stiff. | |
| SS | 2.0 | 1.0 | 15-11 4-5 | | | | 407.5 | | | | | Top of weathered bedrock encountered at a depth of 19.5 ft. Top of casing elevation is top of riser pipe. |
| | | | | | | | 402.2 | | | | 11.8-19.2 FT. Sandy SILT (ML-SC) w/ CLAY (CL). Moderate yellowish brown (10YR5/4), becoming olive gray (5Y4/1) by 14.4'. Slightly moist to moist. Sand is v. fine grain, well sorted, mature quartz & chert. Trace clay. Slight plasticity, moderate compaction, medium firm consistency. Clean, little to no organics. Interbedded layers of variable thickness (1/2"-4") clayey silts, which show a distinct absence of dark silt size flakes. Moisture content, plasticity, compaction and consistency tend to increase in the clay layers. Mostly homogenous, with some stratifications at boundaries where particle size changes abruptly. Stratifications are horizontal micro-laminations generally undisturbed. | Borehole completed as monitoring well, 3/31/88. |
| | | | | | | | | | | | Bottom of borehole at 19.5 ft. | Description & classification of soils by visual examination of split spoon samples. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

| SITE | HOLE NO. |
|---|---|
| SLDS - W. of Plant 8 | B16W01S |

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| | | 2 OF 2 | B16W01S |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | TOP OF WEATHERED BEDROCK ENCOUNTERED @ 19.5' | |

SS = SPLIT SPOON; ST = SHELBY TUBE;
D = DENNISON; P = PITCHER; O = OTHER

SITE: SLDS - W. of Plant 8

HOLE NO.: B16W01S

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| | | 1 OF 2 | B16W02S |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| SLDS-Plant 1 Bldg. K1E | N 2,111 E 1,536 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-23-88 | 3-31-88 | Layne-Western, Co. | Mobile B-53 | 8 1/4" | 32.4 | 0.0 | 33.1 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| 0.0/0 | 0 | 10 | 419.61 | 420.2 | ▽ 5.2/415.0 ▽ / | 32.4/387.8 |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs. / 30 in. | 10 in. / 12.0 ft. | C.A. Clark |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 420.2 | | | | | |
| | | | | | | | 419.6 | | | | 0.0-0.6 FT. CONCRETE with Aggregate | 0-33.1 ft. advanced using 8 1/4" hollow stem auger. |
| SS | 1.5 | 1.5 | 8-2-2 | | | | 418.8 | | | | 0.6-1.3 FT. Silty SAND (SM) and RUBBLE. Pale yellowish brown (10YR6/2) to moderate brown (5YR4/4). Dry. Mod. graded medium & coarse grain, subangular sand. Abundant debris as coal slag, bricks & concrete frag., broken glass, decomposed carbonates. Some cementation due to low moist. content. Loose compaction, soft-med. stiff consistency. | |
| SS | 2.0 | 1.4 | 2-1-3-4 | | | | 417.1 | | | | | |
| SS | 2.0 | 0.9 | 2-2-1-3 | | | | 416.6 | | | | | Sampled and gamma logged by TMA/Eberline to a depth of 15 ft. Top of undisturbed soil encountered at a depth of 8.2 ft.(?) |
| | | | | | | | 414.6 ▽ | 5 | | | 1.3-3.1 FT. Clayey SILT (ML-CL). Moderate brown (5YR4/4) mottled with grayish brown (5YR3/2). Slightly moist, lower range of plasticity chart. Interbedded laminations (3cm) of clay layers. Random in distribution. Clay is firm, shows little plasticity, a weak thread and ruptures with little resistence. Layers with higher silt percent show rapid dilatancy, higher moisture content and darker color. Generally, the structure is homogenous with some micro laminations orientated normal to split spoon sample. Contacts are normal to ss, sharp and distinct. | |
| SS | 2.0 | 2.0 | 1-3-2-3 | | | | 413.1 | | | | | |
| SS | 2.0 | 1.3 | 1-2-3-5 | | | | 412.0 | | | | | |
| SS | 2.0 | 1.6 | 2-3-3-5 | | | | 409.9 | 10 | | | | |
| SS | 2.0 | 2.0 | 2-2-3-2 | | | | | | | | | |
| | | | | | | | | 15 | | | 3.1-3.2 FT. SAND (SP) with trace silt. Grayish pink (5GY4/1). Dry. V.well sorted fine grain quartz with trace silt. No cohesion, plasticity or shear strength. Clean, very permeable. | Borehole completed as monitoring well, 3/31/88. |
| | | | | | | | | | | | 3.2-5.6 FT. Silty SAND (SM) Dark greenish grey (5GY4/1), becoming olive gray (5Y4/1) by 6.8'. Slightly moist, soft to medium stiff consistency. Mostly gap graded medium and coarse grain quartz & chert. Little plasticity, low range of liquid limit. Some debris as brick & concrete fragments, coal slag and broken glass. Variable zones with moderate cementation, broken easily with sampling tool. | |
| SS | 2.0 | 2.0 | 9-2-2-5 | | | | 400.5 | 20 | | | | Elevation at top of casing is top of riser pipe. |
| | | | | | | | | | | | 5.6-7.1 FT. Silty CLAY (CL). Dark greenish gray (5GY4/1). Moist, moderately dense, well compacted. Low water content, stiff & slightly sticky. Weak thread, ruptures easily - little plasticity. No structure, clean with some mafic/biotite flakes as silt. Trace of fibrous organics. Sample can be indented with moderate pressure with fingers. | |
| SS | 2.0 | 2.0 | 3-4-4-5 | | | | 394.9 | 25 | | | | |
| | | | | | | | | | | | 7.1-8.2 FT. Sandy SILT (ML). Medium dark gray (N4). Slightly moist, medium stiff consistency, moderate cohesion with slight plasticity. Weak thread, ruptures with little resistence. Low moisture content, some slight cementation of particles. Mostly subangular medium & fine grain, with trace coarse grain sand. Some debris as brick & concrete fragments. | Description & classification of soils by visual examination of split spoon samples. |
| SS | 2.0 | | 5-4-3-3 | | | | | 30 | | | | |
| | | | | | | | 387.8 | | | | | |
| | | | | | | | 387.1 | | | | 8.2-10.3 FT. Clayey SILT (ML). Olive black (5Y2/1). Slightly moist to moist. Moisture content increases in layers with increase silt percent. Trace v.fine grain | Top of weathered bedrock encountered at a depth of 32.4'. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: SLDS-Plant 1 Bldg. K1E

HOLE NO.: B16W02S

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| | | 2 OF 2 | B16W02S |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | sand. Moderate cohesion, soft to medium stiff consistency. Good thread, rupture with some pressure.<br>Random stratifications as horizontal micro laminations. Trace of fibrous organics. Appears dirty. | |
| | | | | | | | | | | | 10.3-19.7 FT. SILT (SM) with interbedded Sandy SILTS and Clayey SILTS. Olive gray (5Y4/1). Moist, becoming saturated by 12.4'. Layers are random in alternation, thinnly bedded (10-3cm), with variable physical properties.<br>Sandy SILT layers show moderate cohesion, slight plasticity with weak thread. Moisture content is moderate with rapid dilatancy. Well graded, fine to coarse grain subangular sand.<br>SILT layers show high moisture content, little to no shear strength, slight plasticity with a soft to medium stiff thread. No stratification or structure.<br>Clayey SILT layers are generally thin, with increased cohesion, stiff consistency and medium plasticity. No structure, appears clean with decrease of dark silt particles. | |
| | | | | | | | | | | | 19.7-25.3 FT. Sandy SILT (SM).<br>Moderate yellowish brown (10YR5/4). Moist to saturated. Mostly fine and medium grain subangular to subrounded quartz & chert. Moderate cohesion, medium stiff consistency.<br>Abundant reduction spots (1-2cm) in zones with higher moisture content. Zones show increase of mafic/biotite silt flakes.<br>Generally: low dry strength, rapid dilatancy, slightly plastic, thread is weak with moderate resistence to rupture. | |
| | | | | | | | | | | | 25.3-32.4 FT. Clayey SILT (ML) with interbedded SILTS and Sandy SILTS. Mostly Olive gray (5Y4/1) mottled with dark gray (N3). Moist to saturated, medium stiff consistency. Variable alternations of layers 1-4" thick.<br>Clayey SILT layers are moderately plastic, good thread with little resistence to rupture. Low moisture content, slow dilatancy. Clean with earthy odor. No structure, trace fine fibrous organic blebs.<br>SILT layers show increased moisture content and plasticity, slightly darker color, rapid dilatancy and biotite/mafic silt flakes. Resistence to rupture of weak thread is slight.<br>Sandy SILT layers are as above with increased gritty feeling. Sand is well sorted, v.fine to fine grain rounded quartz. Cohesion is moderate, consistency is medium stiff.<br>Slight plasticity, soft thread with little resistence to rupture.<br>Generally structure is homogenous, with trace of micro laminated varves-mostly biotite/mafic flakes. Orientation is normal to sample axis. | |
| | | | | | | | | | | | Bottom of borehole at 32.4 ft.<br>TOP OF WEATHERED BEDROCK ENCOUNTERED @ 32.4' | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: SLDS-Plant 1 Bldg. K1E

HOLE NO.: B16W02S

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| | | 1 OF 2 | B16W03S |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| SLDS-Plant 2 | N 1,646 E 1,746 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-5-88 | 4-8-88 | Layne-Western, Co. | Mobile B-53 | 8 1/4" | 34.4 | 0.0 | 35.7 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| 0.0/0 | 0 | 12 | 418.12 | 418.8 | ▽ 8.6/410.2 | 34.6/384.2 |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs. / 30 in. | 10 in. / 16 ft. | C.A. Clark |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 418.8 | | | | | |
| SS | 1.6 | 1.4 | 5-12-10 | | | | 418.4 | | | | 0.0-0.4 FT. CONCRETE with AGGREGATES. | 0-34.6 ft. advanced using 8 1/4 in. hollow stem augers. |
| SS | 2.0 | 1.3 | 5-2-2-2 | | | | | | | | 0.4-6.2 FT. Silty SAND (SM) and RUBBLE. Mostly dark yellowish brown (10YR2/2) to brownish blallck (5YR2/1). Dry to 3.7' becoming moist to saturated. With increase in moisture content, increased cohesion and plasticity. Rubble is coarse size oxidized coal slag, broken glass, brick & concrete fragments. Silt and sand coat particles. Some are slightly cemented. 3.7' Moisture content increases to saturated. | Sampled and gamma logged by TMA/Eberline, Inc. to a depth of 15.5 ft. |
| SS | 2.0 | 1.2 | 10-5-2-2 | | | | | 5 | | | | Top of undisturbed material at 11.6 ft. |
| SS | 2.0 | 0.3 | 0-0-0-0 | | | | | | | | | |
| SS | 2.0 | 0.6 | 1-0-0-3 | | | | | | | | 6.2-9.8 FT. GRAVEL FILL w/SILT (GM). Brownish black (5YR2/1). Saturated, loose compaction, dense due to particle size. No cohesion. Silt & viscous black liuid coat particles. Gap graded, mostly coarse gravel, coarse sand and silt size angulars. Gravel lithologies are indeterminate, tending to be elongate and flat, with rough concoidal fractures on the surface. Penetration resistance is little to none. 8.0 ft. Hammer penetrates 6-12" on seating. Split spoon recovery is poor. High void ratio; high capacity to conduct subsurface flow. | |
| SS | 2.0 | 1.5 | 0-0-2-3 | | | | | 10 | | | | Elevation of the top of casing is measured at the top of riser pipe. |
| | | | | | | | 407.2 | | | | | |
| SS | 2.0 | 0.7 | 1-2-3-3 | | | | | | | | | |
| SS | 2.0 | 1.7 | 2-1-1-2 | | | | | 15 | | | 9.8-11.6 FT. Clayey SILT (ML). Brownish black (5YR2/1) becoming olive black (5Y2/1). Moist; distinct loss of moisture at 10.2 ft. Medium stiff consistency, firm cohesion, soft with a strong thread. 9.8 to 10.8 ft. shows abundant fibrous(?) debris; does not appear to be organic. | Borehole completed as monitoring well, 4/8/88. |
| | | | | | | | | | | | | |
| SS | 2.0 | 2.0 | 0-2-2-3 | | | | | 20 | | | 11.6-31.3 FT. Silty CLAY (CH). Olive black (5Y2/1). With interbedded CLAYS and SILTS. Moist, medium stiff consistency, moderate to highly plastic, excellent thread wit moderate resistence to rupture. Soft, pliable, deforms with little finger pressure. 19.0 FT. Thinly bedded layers with increased silt percent and moisture content. Increased cohesion, dilatancy becomes rapid. Shear strength decreases. Layers are random in alternation, 2-8" in thickness, with micro-laminated stratifications normal to split spoon axis. Increase of organic decomposed stringers as sticks, grass, and bark. | |
| | | | | | | | | | | | | |
| SS | 2.0 | 2.0 | 0-1-0-1 | | | | | 25 | | | | |
| | | | | | | | | | | | | |
| SS | 2.0 | 1.8 | 1-3-4-3 | | | | | 30 | | | | Description & classification of samples by visual examination of split spoon samples. |
| | | | | | | | 387.5 | | | | 31.3-34.5 FT. Silty SAND (SM). Olive black (5Y2/1). Moist with saturated zones. Well sorted, v. fine & fine grain subrounded quartz and chert. Medium stiff consistency, little plasticity. Moderate resistence to rupture. Dilatancy becomes rapid. Silt particles are biotite and | |
| SS | 0.0 | 0.6 | 2/6" | | | | 384.3 | | | | | top of weathered bedrock encountered |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: SLDS-Plant 2

HOLE NO.: B16W03S

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| | | 2 OF 2 | B16W03S |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 383.1 | | | | mafic(?) flakes. Homogenous structure, no stratification.<br>34.2 FT. Coarse pebble and gravel angular limestone fragments. Highly fractured and moderately weathered.<br><br>Bottom of borehole at 34.6 ft.<br>**TOP OF WEATHERED BEDROCK ENCOUNTERED AT 34.5 FT.** | at 34.5 t. |

SS = SPLIT SPOON; ST = SHELBY TUBE;
D = DENNISON; P = PITCHER; O = OTHER

SITE: SLDS-Plant 2

HOLE NO. B16W03S

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| | | 1 OF 2 | B16W04S |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| SLDS-Plant 10 E. Bldg 82 | N 1,089 E 1,313 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-22-88 | 3-28-88 | Layne-Western Co. | Mobile B-53 | 8 1/4" | 27.5 | 0.0 | 31.3 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| 0.0/0 | 0 | 11 | 424.78 | 425.5 | ▽ 6.6/418.9 / | 27.5/398.0 |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs. / 30 in. | 10 in. / 16 ft. | C.A. Clark |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 425.5 | | | | | |
| SS | 2.0 | 1.7 | 3-4-7-7 | | | | 425.0 | | | | 0.0-0.4 FT. GRAVEL with Sandy LOAM. Brownish black (5YR2/1). Dry, no cohesion, loose compaction. Coarse gravel 1/4-1/2" angular, flat & elongate. Abundant debris as broken glass & ceramics. | 0-27.5 ft. advanced using 8 1/4" hollow stem auger. |
| | | | | | | | 424.3 | | | | | |
| SS | 2.0 | 1.6 | 4-4-4-4 | | | | | | | | | Sampled and gamma logged by TMA/Eberline to a depth of 15.5 ft. |
| SS | 2.0 | 1.5 | 2-2-3-2 | | | | | 5 | | | 0.4-1.4 FT. Silt LOAM with Sand Brownish black (5YR2/1). Dry, little cohesion. Poorly graded fine & medium sand. Moderately compacted, low moisture content. Abundant organic debris as twigs, bark & fine grass. Abundant RUBBLE as broken glass & oxidized coal slag. | |
| SS | 2.0 | 1.2 | 1-0-1-1 | | | | | | | | | Top of undisturbed soil encountered at a depth of 11.7 ft. (?) |
| SS | 2.0 | 1.4 | 1-1-1-2 | | | | | | | | 1.4-2.3 FT. Silty SAND (SM). Brownish black (5YR2/1). Mosty dry, loose density & compaction. Slight cohesion, low moisture content. Slightly cemented in coarse gravel size articles, breaks easily in fingers. Abundant RUBBLE as coal slag, broken glass & ceramics, largely undecomposed organics as grass & twigs. | |
| SS | 2.0 | 1.7 | 1-2-2-3 | | | | | 10 | | | | |
| | | | | | | | 413.8 | | | | | |
| SS | 2.0 | 0.0 | 2-3-4-5 | | | | 413.8 | | | | 2.3' - 11.7' Sandy SILT (SM-ML) Light olive grey (5Y5/2). Moist, slight cohesion. Moderately compacted, soft to medium stiff. Little plasticity, rapid dilatancy. Weak thread, ruptures easily with slight finger pressure. Lower range on plasticity chart. 5.3 FT. Increase moisture content to saturated. Increase plasticity, & thread is strong. Intermittant shows of RUBBLE, mostly as brick & coal slag. Consistency becomes medium stiff. Variable zones, random in alternation with higher moisture content. Layers are 2-4" and tend to show higher percent of dark silt flakes. Appears washed. 6.6 FT. A 2" layer of chalky SAND, pinkish gray (5YR8/1). Saturated, medium & fine grain rounded quartz(?) sand. Slight cohesion, medium dense. Non-plastic, no thread. Clean. 7.2 FT. Increase in organics-fibrous & porous. Loss of compaction & density. No stratification or structure. 9.6 FT. Abundant organics-thoroughly decomposed black matter as leather(?) and bark. | |
| SS | 2.0 | 1.9 | 2-4-3-4 | | | | | 15 | | | | |
| | | | | | | | 406.8 | | | | | |
| SS | 2.0 | 1.6 | 1-2-3-3 | | | | 406.1 | 20 | | | | Borehole completed as monitoring well, 3/28/88. |
| SS | 2.0 | 1.0 | 0-1-1-2 | | | | | 25 | | | | Elevation top of casing is measured at top of riser pipe. |
| | | | | | | | 398.0 | | | | | |
| SS | 2.0 | 1.3 | 13-31 21-9 | | | | 398.0 | | | | 11.7-18.7 FT. Clayey SILT (SC). Mostly Olive black (5Y2/1), with some Olive gray (5Y4/1). Moist with some zones saturated. Moderate cohesion, slight plasticity. Slow dilatancy, thread is strong--soft & pliable. Resistance to rupture is moderate. Dense, firm compaction without cementation. Resistant to rupture, easily deformed. Slight sticky adhesion. | Top of weathered bedrock encountered at a depth of 27.5 ft. |
| | | | | | | | 394.2 | | | | 18.7-19.4 FT. CLAY (CL). Greenish black (5G2/1). Moist, medium stiff consistency. Slightly plastic, non sticky. Massive structure, no stratification. Compact, may be resistant to penetration. Clean. | Description classification of soils by visual examination of split spoon samples. |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: SLDS-Plant 10 E. Bldg 82

HOLE NO.: B16W04S

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| | | 2 OF 2 | B16W04S |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | significant absence of dark particles. Firm clay, resistant to deformation. Weak thread, pliable--ruptures with moderate finger pressure. | |
| | | | | | | | | | | | 19.4-27.5 FT. Sandy SILT (ML). Light olive gray (5Y5/2). Moist, slight cohesion. Mostly silt with v.fine & fine grain silica sands. Trace biotite/muscovite flakes as silt appears metallic. Rapid dilantancy, becomes saturated with few shakes. Little to no shear strength, resistant to deformation. No thread, ruptures with moderate finger pressure. Some decomposed organic material as fibrous stringers. Slight organic odor. 25.7 FT. Increase particle size to fine and medium grain silica sand. Some random reduction spots (1-2mm). | |
| | | | | | | | | | | | 27.5 FT. TOP OF WEATHERED BEDROCK. Light olive gray (5Y5/2). Coarse gravel size angular limestone fragments. Particles are coated with sand & silt. Highly fractured. Loss of shear strength. Moderate to high permeability. | |
| | | | | | | | | | | | Bottom of borehole at 27.5 FT. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: SLDS-Plant 10 E. Bldg 82

HOLE NO. B16W04S

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| | | 1 OF 3 | B16W05D |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| SLDS-Plnt 6E E. Bldg 116 | N 1,601 E 2,900 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 4-11-88 | 4-14-88 | Layne-Western, Co. | Mobile B-53 | 8 1/4" | 74.8 | 0.0 | 74.8 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| 0.0/0 | 0 | 20 | 422.41 | 423.0 | ▽ 30.6/392.4 ▽ / | 74.8/348.2 |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs. / 30 in. | 10 in. / 18 ft. | C.A. Clark |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.1 | 15-18-12 12 | | | | 423.0 | | | | | |
| SS | 2.0 | 1.7 | 10-30-18 14 | | | | 422.5 | | | | 0.0-0.4 FT. GRAVEL (GM). Light olive gray (5Y6/1). Dry, no cohesion. Loose compaction. Trace silt coating on particles. Gravel is coarse angular, flat limestone fragments. | 0-74.8 t. advanced using 8 1/4" hollow stem augers. |
| SS | 2.0 | 0.3 | 7-7-10 15 | | | | | 5 | | | 0.4-3.1 FT. Silty SAND (SM). Brownish black (5YR2/1). Dry, slight cohesion with some cementation of silt with coarse grain sand. Mostly fine & medium grain subangular sand, abundant dark mafics, biotite as silt. | Sampled and gamma logged by TMA/Eberline to a depth of 18 ft. |
| SS | 2.0 | 1.1 | 4-3-4-5 | | | | | | | | 0.4-0.7 FT. High CPM (>700) in black silty sand. Abundant fine & medium grain shiny black angulars coated with black viscous liquid. | Top of undisturbed soil encountered at a depth of 17.6 ft. |
| SS | 2.0 | 1.5 | 2-3-4-2 | | | | | | | | Moderate cohesion, medium stiff consistency. Lower range of plasticity chart. Rapid dilantancy, weak thread, ruptures easily. Little resistance to deformation. | |
| SS | 2.0 | 1.2 | 2-2-3-4 | | | | | 10 | | | 2.5 FT. A 6" layer of gravelly sand. Light gray (N7). Dry, slight cohesion. Gravel is fine grain, subangular with silt & chalk coating particles. | Elevation at top of casing measured from top of riser pipe. |
| SS | 2.0 | 1.4 | 2-4-6-9 | | | | 410.7 | | | | 3.1-6.5 FT. Sandy SILT (SM-ML). Brownish black (5YR2/1). Dry to 4.4', becoming moist. Slight cohesion, moderate compaction. Medium stiff consistency, slightly sticky. Sand is fine grain with trace medium grain, mostly silica as quartz & chert. Silt as abundant dark mafics (?) and biotite. | |
| SS | 2.0 | 1.6 | 4-6-4-4 | | | | | 15 | | | 4.4 FT. Increase moisture content, cohesion & density. Rapid dilatancy, weak thread with little resistance to deformation & rupture. | |
| SS | 2.0 | 2.0 | 1-0-0-3 | | | | 405.4 | | | | 6.5-8.4 FT. Clayey SILT (ML) Olive gray (5Y4/1). Moist, moderate cohesion, medium stiff. Good compaction. Rapid dilantancy after few shakes. Slight plasticity, weak thread, rupture easily. Moderate resistance to deformation. Lower range on plasticity chart. No stratification, massive structure. Random stringers of micro laminated black silt. | |
| | | | | | | | 403.3 | 20 | | | 7.6 FT. Brick & concrete fragments. Trace coarse sand size rounded coal slag. | Borehole completed as monitor well, 4/14/88. |
| SS | 2.0 | 2.0 | 4-4-3-4 | | | | | | | | 8.4-12.3 FT. CLAY (ML-CL). Olive gray (5Y4/1). Moist, moderate cohesion, slighty sticky. Medium stiff consistency, soft, pliable with good to excellent thread. Easily deformed with slight finger pressure, but moderate to high resistance to rupture. Bends under own weight. Dilantancy is slow to none. Moisture content is middle range between plastic and liquid limit. | |
| | | | | | | | 396.8 | 25 | | | Homogenous with no stratification. Clean, absent of dark silt. Low organic content. | |
| | | | | | | | 396.8 | | | | 11.3-14.8 FT. Abundant RUBBLE as brick & concrete fragments, coal slag and silty sand. Slightly cemented, breaks easily with fingers. | |
| SS | 2.0 | 2.0 | 2-2-2-3 | | | | 393.3 | 30 | | | | Desciption & classification of soils by visual examination of split spoon samples. |
| | | | | | | | 390.2 | | | | 12.3-17.6 FT. Silty SAND (SM). Olive gray (5Y4/1). Moist, medium stiff, moderate cohesion. Little plasticity, ruptures & deforms with little finger pressure. Slow to rapid dilatancy, zones with rapid | |
| SS | 2.0 | 2.0 | 3-0-0-1 | | | | | | | | | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: SLDS-Plnt 6E E. Bldg 116

HOLE NO.: B16W05D

# GEOLOGIC DRILL LOG

PROJECT | JOB NO. | SHEET NO. 2 OF 3 | HOLE NO. B16W05D

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | dilatancy show dark silt flakes. Sand is v.fine & fine grain, mature, well sorted silica sand. Silt coats particles. Dense consistency.<br>14.5 FT. A 3-4" layer of fibrous dark organics. Mostly bark, with some light "fresh" bark--not decomposed, showing properties of recent deposition. Trace silty clay. | |
| SS | 2.0 | 2.0 | 3-2-3-4 | | | | | 40 | | | 17.6-19.7 FT. CLAY (CL) with trace SILT. Olive gray (5Y4/1). Moist, moderate cohesion, medium stiff consistency. Little plasticity, soft, pliable with weak thread. Ruptures easily, deforms with moderate finger pressure. Dilatancy is very slow.<br>Tight stratum, low permeability.<br>Compaction is resistant to penetration. | |
| SS | 2.0 | 2.0 | 2-2-1-3 | | | | | 45 | | | 19.7-26.2 FT. Silty CLAY (CL). Olive gray (5Y4/1). Wet, moderate cohesion, slightly sticky. Medium stiff consistency. Silt is mostly mafic (?) and biotite/muscovite flakes. Slow dilatancy, moderate resistant to deformation. Good thread with moderate resistance to rupture. Firm clay, ruptures in thin thread. Fairly rigid but cohesive.<br>24.7-25.6 FT. Interbedded layer of Silty SAND, well sorted, v.fine and fine grain silica sand. Increase in moisture content. Slight decrease in plasticity. Increase in density, consistency, dilatancy & strength. | |
| SS | 2.0 | 2.0 | 3-3-2-4 | | | | | 50 | | | 26.2-29.7 FT. SAND with Silt (SP-SM). Olive gray (5Y4/1). Saturated, slight cohesion. Adhesion due to moisture content. Well sorted, mature, v.fine & fine grain silica sand. Silt is mostly biotite/muscovite & mafic (?) flakes. Good to excellent permeabilty. | |
| SS | 2.0 | 2.0 | 2-0-3-3 | | | | | 55 | | | 29.7-32.8 FT. Silty SAND (SM). Olive gray (5Y4/1). Wet, with layers of higher sand percent saturated. Sand is mostly fine & medium grain, well sorted and sub rounded. Predominately silica sand with abundant dark biotite/muscovite and mafic flakes. Interbedded layers, 1-4" of randomly alternating SILT, SAND and Silty Sand.<br>Clean, trace organics as dark bark fibers.<br>Homogeneous, no structure. Stratifications as changes in particle sizes. | |
| SS | 2.0 | 2.0 | 1-1-1-2 | | | | | 60 | | | | |
| SS | 2.0 | 1.1 | 13-14<br>20-26 | | | | | 65 | | | 32.8-74.8 FT. SAND (SP). Olive gray (5Y4/1). Wet, close packed, little cohesion-adhesion due to moisture content. Mostly fine & medium with some v.fine & coarse grain sand. Gap graded in alternating zones. Trace silt as biotite flakes. Excellent permeabilty-vertical and horizontal. Water can be driven off sample with slight pressure.<br>Medium stiff consistency, no shear strength. Dense, non plastic, resistant to deformation. No thread.<br>38.2 FT. Sand particles coarsen to mostly medium & coarse grain. Random alternation of grading & particle size.<br>50.4 FT. Color changes to Moderate yellowish brown (10YR5/4). Well sorted, sub rounded-rounded quartz (80%), chert/jasper and feldspars. Appears "clean" with loss of dark silt flakes.<br>59 FT. Increase in dark mafic, biotite/muscovite silt size flakes.<br>64.2-64.5 FT. V. coarse sand & fine gravel size rounded silica. Clean, trace dark | |
| SS | 2.0 | 1.7 | 6-10-14<br>12 | | | | | 70 | | | | |
| SS | 0.6 | 1.4 | 12-20/1" | | | | 348.2 | | | | | |

SS = SPLIT SPOON; ST = SHELBY TUBE; O = OENNISON; P = PITCHER; O = OTHER

SITE: SLDS-Plnt 6E E. Bldg 116

HOLE NO. B16W05D

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| | | 3 OF 3 | B16W05D |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 347.8 | | | | silt flakes. Well packed-close spaced. No cohesion or shear strength. Permeable.<br>65 FT. Mostly fine & medium grain rounded silica sand. Trace dark silt flakes.<br>69.6 FT. Mostly medium & coarse grain silica sands with trace of coarse gravel. Variable lithologies. Rounded, clean, mature.<br>71 FT. Increase silt percent. Mostly mafic & biotite flakes. Color becomes medium dark grey (N4), mottled with olive gray clay.<br><br>74.8 FT. **TOP OF WEATHERED BEDROCK**. Highly fractured angular limestone fragments. Silt & sand coat particles. Moderately weathered, trace decomposition of limestone. Permeable, fracture dominated.<br><br>Bottom of borehole at 74.8 ft. | Top of weathered bedrock encountered at a depth of 74.8 ft. |

SS = SPLIT SPOON; ST = SHELBY TUBE;
D = DENNISON; P = PITCHER; O = OTHER

SITE: SLDS-Plnt 6E E. Bldg 116

HOLE NO.: B16W05D

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| | | 1 OF 3 | B16W06D |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| SLDS-East of C,B&Q RR | N 1,629 E 3,273 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-9-88 | 3-16-88 | Layne-Western Co. | Mobile B-53 | 8 1/4" | 82.6 | 11.6 | 94.2 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| 11.3/97 | 2 | 23 | 423.02 | 423.5 | ▽ 31.3/392.2 ▼ / | 82.6/340.9 |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs. / 30 in. | 10 in. / 28.9 ft. | C.A. Clark |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 423.5 | | | | | |
| SS | 2.0 | 1.8 | 4-11-10 5 | | | | | | | | 0.0-1.8 FT. Silty Sand LOAM. Brownish black (5YR2/1). Dry, little to no cohesion, non plastic. Molds in hand, breaks easily. Sand is mostly fine & medium grain subangular quartz & feldspars. Silt coats particles, slightly cemented-due to low moisture content. Abundant organics as leaves, grass, bark, fine-medium roots. | 0-82.6 ft. advanced using 8 1/4" hollow stem augers. |
| | | | | | | | 421.7 | | | | | |
| SS | 2.0 | 1.4 | 3-5-7-8 | | | | | | | | | Drill hole advanced using NX diamond impregnated bit to a depth of 94.2'. |
| SS | 2.0 | 0.8 | 8-11-5 12 | | | | | 5 | | | 1.8-11.9 FT. Silty SAND (SM-ML). Brownish black (5YR2/1) mottled with moderate brown (5YR4/4). Dry to 4.6', becoming moist. Mostly fine & medium grain sub angular sand. Moderate cohesion, loose compaction, medium stiff consistency, moderate plasticity. Lower range on plasticity chart, slow dilatancy. Weak thread, ruptures easily. Moderate resistance to deformation. | Sampled and gamma logged by TMA/Eberline to a depth of 25 ft. |
| SS | 2.0 | 1.4 | 3-5-7-11 | | | | | | | | | |
| SS | 2.0 | 1.0 | 5-4-0-6 | | | | | | | | | Top of undisturbed soil encountered at a depth of 16.5 ft.(?) |
| SS | 2.0 | 0.4 | 28-13-8 18 | | | | | 10 | | | Abundant RUBBLE as oxidized coal slag, bricks & concrete fragments and broken glass. Dry decomposed organics as tree bark/limbs. Structure is homogenous, no stratification. Trace micro laminations of dark silt flakes. 5.8-6.2 FT. Decomposed limestone (?) boulder, highly weathered, soft with pale brown silt/clay coating. 11 FT. Broken glass, fragmented. Sand particle size and percent decreases. | |
| SS | 2.0 | 0.8 | 7-4-0-0 | | | | | | | | | |
| SS | 2.0 | 1.3 | 1-1-3-1 | | | | | 15 | | | | |
| SS | 2.0 | 1.6 | 1-0-0-0 | | | | 407.0 | | | | 11.9-14.2 FT. Sandy SILT (ML). Brownish black (5YR2/1). Moist, good cohesion, dense compaction. Fine and v.fine grain subrounded silica sand in silt. Slightly plastic, weak thread, breaks easily in fingers. Little resistance to deformation. 12.8 FT. Hammer seats 8-12" following 1st 6" advance. Some sharp angular coarse gravel size particles, saturated with viscous silt & water. Little resistance to hammer advance. Inclusions of fractured glass, fibrous organic stringers & slightly decomposed bark. | Top of casing elevation measured from top of riser pipe. |
| SS | 2.0 | 1.6 | 1-1-1-0 | | | | | | | | | |
| SS | 2.0 | 1.8 | 3-2-3-4 | | | | | 20 | | | | Borehole completed as monitoring well, 3/17/88. |
| SS | 2.0 | 1.8 | 4-8-6-5 | | | | | | | | | |
| | | | | | | | 399.4 | | | | 14.2-16.5 FT. SILT (ML). Olive black (5Y2/1). Moist, moderate compaction, medium stiff consistency, dense compaction. Moderate plasticity, pliable, slow dilatancy. Good thread, ruptures with little finger pressure. Stiff mold, resistant to deformation. 16 and 16.5 FT. Layers (1-2") of a highly viscous hydrocarbon (?) based goop coating particles. Some coarse gravel size flat angulars. Oil film visible. | |
| | | | | | | | | 25 | | | | |
| SS | 2.0 | 1.8 | 0-0-7-7 | | | | | | | | 16.5-24.1 FT. SILT with trace Sand (ML-MH). Olive black (5Y2/1). Moist with saturated zones. Sand >10%, is v.fine grain rounded mature quartz. Silt has abundant dark mafics/biotite flakes. Medium stiff consistancy, dense compaction. Slightly plastic, weak thread. Little resistance to deformation, weak mold. Zones with higher moisture content tend to have higher sand content. Dilatancy increases, plasticity decreases. | Description & classification of soils by visual examination of split spoon samples. |
| | | | | | | | | 30 | | | | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: SLDS-East of C,B&Q RR

HOLE NO.: B16W06D

# GEOLOGIC DRILL LOG

PROJECT | JOB NO. | SHEET NO. 2 OF 3 | HOLE NO. B16W06D

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 2.0 | 5-4-5-8 | | | | | | | | 24.1-40.4 FT. Sandy SILT (SM-ML). Olive gray (5Y4/1). Moist with saturated layers. Some v.fine grain, well sorted, mature quartz sand. Specks of dark organics. Slight cohesion, medium stiff consistency, slight plasticity. No thread, ruptures easily. Stiff mold, moderate resistance to deformation. 35.4-35.8 FT. CLAY, olive gray (5Y4/1). Moderate plasticity, soft, pliable. Good to strong thread, medium stiff consistency, breaks with moderate finger pressure. Little resistance to deformation. 36.3-36.7 FT. CLAY as above. | |
| SS | 2.0 | 2.0 | 1-3-3-4 | | | | 383.1 | 40 | | | 40.4-46.6 FT. CLAY (CL-OH). Olive gray (5Y4/1). Moist, soft-plastic clay. Bends under own weight on ejection from sampler, retaining shape. Resistant to deformation & rupture. 40 FT. Abundant decomposed organics as leaves & bark. Fibrous & permeable, trace dark silts. Appears dirty, organic odor. Trace Fe reduction spots/staining. | |
| SS | 2.0 | 2.0 | 3-3-4-12 | | | | 376.9 | 45 | | | 46.6-68.2 FT. SAND with trace Silt (SP). Medium gray (N4). Wet, stiff consistency, dense compaction. Close packed. Sand is predominately (80%) silica, mostly v.fine & fine grain with trace coarse & medium grain. Well graded, subrounded-rounded particles. Trace dark mafics/biotite flakes as silt. Clean. | |
| SS | 2.0 | 2.0 | 3-4-5-21 | | | | | 50 | | | | |
| SS | 2.0 | 2.0 | 5-7-9-14 | | | | | 55 | | | | |
| SS | 2.0 | 1.0 | 4-3-6-12 | | | | | 60 | | | | |
| SS | 2.0 | 1.8 | 9-14-20 32 | | | | | 65 | | | | |
| SS | 2.0 | 1.6 | 13-15 15-13 | | | | 355.3 | 70 | | | 68.2-72.4 FT. SILT and Clayey SILTS (OL). Medium gray (N5). Wet to saturated. Interbedded layers 2-6" of silts and clayey silts. Silts show higher moisture content, dilatancy & density. Clayey silt shows increase in plasticity, becoming soft & pliable. Moderate cohesion, medium stiff consistency. Weak thread, moderate resistance to deformation. Stiff mold, breaks with moderate finger pressure. Homogenous structure, clayey layers are dark grey. Stratification as particle size | |
| | | | | | | | 351.1 | | | | | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: SLDS-East of C,B&Q RR

HOLE NO. B16W06D

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| | | 3 OF 3 | B16W06D |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.7 | 5-6-14<br>23 | | | | | | | | changes are normal to ss.<br>76 FT. Increase particle size to v.fine & fine grain quartz sand. | |
| | | | | | | | 344.1 | 80 | | | 72.4-79.4 FT. Silty SAND (SM). Medium gray (N5) to medium dark gray (N4). Well graded, mostly fine to medium grain with trace coarse grain silica sands. Silt is dark mafics/biotite flakes, with trace decomposed organic fibers.<br><br>Random alternation of clean zones-with zones of abundant silt/clay particles. Good to excellent permeability. | |
| SS | 2.0 | 1.8 | 5-20<br>21-22 | | | | | | | | | |
| | | | | | | | 341.2 | | | | | |
| NQ | 1.6 | 1.6 | 97% | | | | | | | | 79.4-82.4 FT. SAND (SP). Medium gray (N4) mottled with pinkish gray (5YR8/1). Various lithologies, mostly silica with feldspars. Well graded, some layers become gap graded. Medium & coarse grain with some fine grain sands. Dense due to particle size & packing. Little to no cohesion. Non plastic, no shear strength. Permeable in vertical and horizontal directions. | Top of weathered bedrock encountered at a depth of 82.6'. |
| NQ | 0.0 | 9.7 | 97% | | | | | 85 | | | | |
| | | | | | | | | 90 | | | 82.4-94.2 FT. LIMESTONE.<br>82.4-82.6 FT. Abundant coarse gravel size angular limestone fragments. Highly fractured, moderately weathered-soft with little decompostion. Interface with sand is sharp & normal to split spoon.<br>82.6-94.2 FT. Pinkish gray (5YR8/1) to light olive gray (5Y6/1). Micro-crystalline, fossiliferous with discordant chert inclusions. Slight to moderate weathering. Some clay alterations.<br>Hard-difficult to scratch w/knife. Highly fractured. Jointing is normal to core axis, slightly undulating, & rough. Joint surfaces are moderately weathered, some mud coating, trace of hematite staining. Some joint surfaces show rough concoidal fracturing. Generally no coating/discolorations.<br>83.2 FT. A 1/4" chert inclusion.<br>83.4 FT. A 1" chert inclusion.<br>85.6 FT. A 1/2" chert inclusion. All the chert inclusions are discordant and asymmetrical.<br>Low porosity; good to excellent permeability dominated by parallel fracturing. Some closed fractures & traces are filled with silica(?). Fracture pattern dominated by styolites. | |
| | | | | | | | 329.3 | | | | Bottom of borehole at 94.2 ft. | |

SS = SPLIT SPOON; ST = SHELBY TUBE;
D = DENNISON; P = PITCHER; O = OTHER

SITE: SLDS-East of C,B&Q RR

HOLE NO. B16W06D

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| | | 1 OF 3 | B16W07D |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| SLDS-E. Building 705 | N 1,300 E 3,006 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 2-25-88 | 3-1-88 | Layne-Western, Co. | Mobile B-53 | 8 1/4" | 79.3 | 14.8 | 94.1 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| 15.0/93 | 2 | 20 | 421.34 | 421.9 | ▽ 29.9/392.0 / | 79.3/342.6 |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs. / 30 in. | 10 in. / 15.1 ft. | C.A. Clark |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 421.9 | | | | | |
| | | | | | | | 421.4 | | | | 0.0-0.5 FT. GRAVEL (GM). Light olive gray (5Y6/1) to pinkish gray (5YR8/1). Dry, silt & sand adhere to gravel. Coarse angular limestone & chert fragments. | 0-79.3 ft. advanced using 8 1/4" hollow stem augers. Sampled and gamma logged by TMA/Eberline to a depth of 15 ft. Drill hole advanced using NX diamond impregnated bit to a total depth of 94.1 Top of undisturbed soil encountered at a depth of 11.5 ft. |
| SS | 1.5 | 1.1 | 4-5-5 | | | | | | | | | |
| SS | 2.0 | 1.3 | 3-4-6-17 | | | | | | | | 0.5-3.1 FT. Silt LOAM. Moderate brown (5YR4/4). Slightly moist, little cohesion due to low moisture content. Trace fine & medium grain subangular sand. Low plasticity, weak thread, ruptures easily. Soft to medium stiff consistency, loose compaction. Some organics as leaves & bark. Trace to some fissle limestone (?). Appears clod-like, weakly cemented, breaks in fingers with little pressure. Trace of clay. | |
| SS | 2.0 | 1.5 | 7-5-7-10 | | | | | 5 | | | | |
| SS | 2.0 | 0.4 | 5-3-6-3 | | | | | | | | 3.1-11.5 Silty SAND (SM). Brownish black (5YR2/1). Moist to 5.6, becoming saturated in zones with higher sand percent. Sand is mostly medium grain with some fine & coarse grain subangular silica sand. Silt is 40%, mostly dark, with trace organic fibers. Moderate cohesion, medium stiff consistency, dense-moderate compaction. Abundant RUBBLE as brick & concrete fragments, oxidized coal slag, coal and broken glass. Slightly cemented, breaks in fingers easily. No to little plasticity, thread is weak & ruptures easily. | |
| SS | 2.0 | 1.6 | 5-4-3-3 | | | | | | | | | |
| SS | 2.0 | 1.5 | 3-2-3-2 | | | | | 10 | | | | |
| SS | 2.0 | 0.8 | 1-2-2-1 | | | | 410.4 | | | | | |
| SS | 2.0 | 1.6 | 3-1-2-1 | | | | | | | | 6 FT. decrease sand size to mostly medium & fine grain. Gap graded, with trace coarse grain. Density and consistency increase. | |
| SS | 2.0 | 1.6 | 1-0-0-3 | | | | | 15 | | | | Top of casing elevation measured from top of riser pipe. |
| | | | | | | | 404.7 | | | | 11.5-17.2 FT. Clayey SILT (ML). Olive black (5Y2/1). Moist, moderate cohesion, medium stiff consistency. Moderate plasticity, good thread--soft, pliable. Soft mold, moderate resistance to deformation and rupture. Generally homogenous in structure, some dark, decomposed organic stringers. 13.8 FT. A 2-3" layer with abundant brownish black silt particles. Loss of plasticity, increase moisture content and dilatancy. | |
| | | | | | | | 402.8 | | | | | |
| SS | 2.0 | 1.4 | 5-5-6-8 | | | | 401.7 | 20 | | | | Borehole completed as monitoring well, 3/18/88. |
| | | | | | | | | | | | 17.2-19.1 FT. CLAY (CL). Olive gray (5Y4/1). Moist to saturated, low range of liquid limit on plasticity chart. Moderate cohesion, medium stiff consistency. Soft, bends under own weight on ejection from split spoon. Easily molded and deformed, moderate resistance to rupture. Trace organics, largely decomposed as fibrous stringers. Slight organic odor. Structure is homogenous, no stratifications. | |
| SS | 2.0 | 1.9 | 2-2-2-4 | | | | 397.0 | 25 | | | | |
| | | | | | | | | | | | 19.1-20.2 FT. Silty SAND (SM). Olive gray (5Y4/1). Slightly moist, slight cohesion, well compacted-dense consistency. Close packed. Moderate in porosity & permeability. Sand is mostly v.fine & fine grain, mature, well sorted, rounded quartz sand. Silt is 35%, mostly dark mafic/biotite flakes. Rapid dilatancy, slight plasticity, weak thread ruptures easily. Stiff mold, resists deformation. | |
| SS | 2.0 | 1.4 | 6-5-4-5 | | | | | 30 | | | | |
| | | | | | | | 388.6 | | | | 20.2-24.9 FT. CLAY (CL). Olive gray | Description & classification of soil |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: SLDS-E. Building 705

HOLE NO.: B16W07D

# GEOLOGIC DRILL LOG

PROJECT | JOB NO. | SHEET NO. 2 OF 3 | HOLE NO. B16W07D

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.9 | 10-11-16 8 | | | | | | | | (5Y4/1) mottled with brownish black (5YR2/1). Moist, dense compaction, stiff consistency. Highly resistent to penetration. Rigid, but cohesive. Sample is indented slightly with moderate finger pressure. Slight plasticity, weak thread, stiff mold. | by visual examination of split spoon samples. |
| SS | 2.0 | 1.6 | 7-12-9 11 | | | | | 40 | | | 24.9-33.3 FT. SAND with SILT (SW-SP). Mostly medium dark gray (N4). Wet, slight cohesion, adhesion of particles due to moisture content. Gap graded, coarse and fine grain sand (80%) with trace medium grain (>3%). Silt is mostly mafic/biotite flakes. Medium dense, low-medium void ratio. Moderate permeability. 27.0 FT. Becomes well graded. Abundant silica sand. Appears washed. | |
| SS | 2.0 | 1.9 | 14-12-1- 15 | | | | | 45 | | | 33.3-71.4 FT. SAND (SP). Light brown (5YR5/6). Saturated. Well graded, mostly medium-fine grain w/ some coarse sand, fine to coarse gravel, and a trace pea-sized gravel. Sub-rounded to rounded, predominantly quartz, chert, and feldspars. 41.6-41.8 FT. Sand w/ silt. Light brown/pale yellowish brown (10YR6/2). Well sorted, v. fine grain sand w/silt. Dense, v. close spacing. Silt on top w/fibrous organic debris. | |
| SS | 2.0 | 1.8 | 11-14-23 18 | | | | | 50 | | | | |
| SS | 2.0 | 1.4 | 7-11-18 22 | | | | | 55 | | | 56.6 FT. Sand becomes well sorted, fine grain, sub-rounded/rounded quartz. Trace medium grain w/few (7-10%) black silt flakes. | |
| SS | 2.0 | 0.8 | 7-14-16 21 | | | | | 60 | | | 62.0 ft. V. coarse grain, rounded, gravel sized quartz sand. | |
| SS | 2.0 | 1.7 | 4-5-11 18 | | | | | 65 | | | | |
| SS | 2.0 | 1.9 | 4-2-4-15 | | | | 350.5 | 70 | | | 70.0 FT. Sand is v. well sorted, fine grain w/silt. Increased adhesion due to particle size & shape. Increase in silt percent. | |
| | | | | | | | | | | | 71.4-79.3 FT. Silty SAND (SM). Olive gray (5Y4/1). Wet, slight cohesion. Moderate grading, mostly fine & medium grain w/ few coarse sie. Silt is 20% as mafic/biotite flakes. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: SLDS-E. Building 705

HOLE NO. B16W07D

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| | | 3 OF 3 | B16W07D |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.7 | 4-3-9-14 | | | | | | | | Mostly as above (33.3-71.4') sand with distinct increase in silt percent. Appears dirty, increase in adhesion. | |
| NQ | 6.0 | 5.8 | 97% | | | | 342.6 | 80 | | | 79.3-94.1 FT. LIMESTONE. Light olive gray (5Y4/1) with interbedded chert (medium gray-N5) intrusions. Generally hard to very hard, difficult to scratch w/knife. Slightly weathered. Very highly fractured to 84.6 ft. then mod. fractured. Fractures are 99% normal to the axis of the core. Tend to be slightly weathered, no rough edges, but no loss of strength. Competemt rock. | Top of weathered bedrock encountered at a depth of 79.3 ft. |
| NQ | 5.1 | 4.2 | 82% | | | | | 85 | | | Fractures are 80% clean, some are discolored, hematite staining. Trace have clay/mud coating. Random zones (80.4-81.0; 84.7-85.0; & 88.6-89.1') where core shows higher weathering w/ medium sand size particles altering to clay. Little loss of strength. 83.6 FT. Chert inclusion. 84.7 FT. Introduction of abundant styolites, or sutures. Most are closed but influencing fracture pattern. Some are filled w/ clay & mud. May be cemented. Fractures in association with styolites have "karst" moon surfaces. V. rough w/high void ratio. Clay filled. The flow pattern is greatly affected by the fracture pattern. | |
| NQ | 5.0 | 5.0 | 100% | | | | | 90 | | | 89.1 FT. Core becomes massive, homogenous. Appears more competent, fresh, w/decrease in porosity/permeability. 90.3-90.5 FT. Chert inclusions. Medium gray (N2); may be dolomite(?). Shell (rogose coral) molds. | |
| | | | | | | | 327.8 | | | | Bottom of boring at 94.1 Ft. | |

SS = SPLIT SPOON; ST = SHELBY TUBE;
D = DENNISON; P = PITCHER; O = OTHER

SITE: SLDS-E. Building 705

HOLE NO. B16W07D

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| | | 1 OF 3 | B16W08D |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| SLDS-PLANT 7E | N 1,258 E 3,231 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 3-11-88 | 3-22-88 | Layne-Western, Co. | Mobile B-53 | 8 1/4" | 80.7 | 0.0 | 80.7 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| 0.0/0 | 0 | 23 | 423.73 | 423.5 | ▽ 29.7/393.8 / ▽ | 80.7/342.8 |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs. / 30 in. | 10 in. / 22.3 ft. | C.A. Clark |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TEST3 LOSS IN G.P.M | WATER PRESSURE TEST3 PRESS. P.S.I. | WATER PRESSURE TEST3 TIME IN MIN. | ELEV. | DEPTH | GRAPHICS SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 423.5 | | | | |
| SS | 2.0 | 1.0 | 10-5-15 14 | | | | | | | 0.0-2.8 FT. Sandy LOAM. Grayish black (N2). Dry, loose compaction. Medium dense, non-cohesive. Coarse gravel and limestone fragments. Some organics as leaves, twigs, and roots. 2.2-2.5 FT. Trace % of clay. | 0-80.7 ft. advanced using 8 1/4" hollow stem augers. |
| SS | 2.0 | 1.8 | 5-7-3-3 | | | | | | | 2.8-8.2 FT. SILTY SAND (SM). Brownish black (5YR2/1). Moist, moderate cohesion, moderate density, non-plastic, soft mold; ruptures easily. Abundant rubble as broken glass, concrete fragments, and coal. Sand (70%) is poorly graded fine and medium grain, subangulars. No structure - homogenous. Some organics, largely undecomposed, as bark, leaves, and roots. | Sampled and gamma logged by TMA/Eberline to a depth of 25 ft. |
| SS | 2.0 | 1.5 | 1-2-1-2 | | | | | 5 | | | |
| SS | 2.0 | 1.0 | 3-2-1-2 | | | | | | | | |
| SS | 2.0 | 1.1 | 1-2-1-2 | | | | | | | 8.2-8.8 FT. CLAY (CL). Dark yellowish brown (10YR4/2). Moist, moderate plasticity, good thread. Bends under own weight without rupture. Soft, strong resistance to rupture, deforms with slight pressure. Low permeability. | |
| SS | 2.0 | 1.5 | 2-3-4-5 | | | | | 10 | | 8.8-10.9 FT. SILTY SAND (SM). Brownish black (5YR2/1). As above with abundant rubble. Some slightly cemented particles; low dry strength. Some dark biotite/mafic(?) flakes as silt. | Top of casing elevation measured at top of riser pipe. |
| SS | 2.0 | 0.8 | 4-2-2-4 | | | | | | | | |
| SS | 2.0 | 1.0 | 3-0-0-0 | | | | | 15 | | 10.9-11.8 FT. CLAY (CL). Grayish olive (10Y4/2). Moist, moderate cohesion, dense, non-sticky, soft. Shiney when smooth. No organics, "clean". Reduction stained stringers. Good thread, resistant to rupture and deformation. | Rapid advance of auger, 14-16 ft. |
| SS | 2.0 | 1.0 | 2-3-5-8 | | | | 406.7 | | | 11.8-14.7 FT. Silty SAND (SM-SC). Brownish black (5YR2/1). Moist, moderate cohesion, cood compaction. Poorly graded, fine to medium grade sub-angulars. Silt is abundant dark biotite/mafic lakes. Some rubble as above. | Top of undisturbed soil encountered at a depth of 16.8 ft. |
| SS | 2.0 | 1.4 | 4-6-8-8 | | | | | | | | |
| SS | 2.0 | 1.6 | 2-4-7-12 | | | | | 20 | | 14.7-15.4 FT. SAND (SP-SM). Dar gray (N3) with a trace dar silt. Saturated. poorly graded fine (20%), medium (40%) and coarse (15%) with a trace v. fine grain sand. Little cohesion due to moisture content. No shear strength. Good to excellent permeability. Poorly packed, large void ratio. | |
| | | | | | | | 402.1 | | | | |
| | | | | | | | 402.1 | | | | |
| | | | | | | | 401.5 | | | 15.4-16.8 FT. Silty SAND (SM). As above. Decrease rubble. Trace of 1-2 mm round pods. | Borehole completed as monitoring well, 3/25/88. |
| SS | 2.0 | 1.4 | 8-7-6-4 | | | | | 25 | | 16.8-21.4 FT. Clayey SILT (ML). Olive black (5Y2/1). Moist, medium stiff consistency, little tendency to bend. crumbles when rolled. Indents slightly with moderate finger pressure. Slight plasticity, moderate resistance to deformation. Trace (>7%) v. fine grain mature silica sand. | |
| | | | | | | | | ▽ 30 | | | |
| SS | 2.0 | 2.0 | 4-3-4-4 | | | | | | | 21.4-21.8 FT. CLAY (CL). Olive black (5Y2/1). Moist, cohesive, med. stiff, mod. plasticity. (Organic clay?) No visible organics/clean clay. Soft, pliable, strong thread, high resist. to rupture. Soft mold, deforms with slight finger pressure. Low permeability. | Description & classificaton of soils by visual examinaton of split spoon samples. |
| | | | | | | | | | | 21.8-45.2 FT. Silty SAND (SM). Olive gray (5Y4/1). Saturated, well-graded. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: SLDS-PLANT 7E

HOLE NO.: B16W08D

# GEOLOGIC DRILL LOG

PROJECT | JOB NO. | SHEET NO. 2 of 3 | HOLE NO. B16W08D

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS / % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 2.0 | 3-3-3-3 | | | | | | | | mostly fine (52%) grain w/some v. fine and medium (13%) grain and a trace clay (>10%). Subrounded to rounded mature silica sands. Some dark mafics(?). Moderate to strong compaction, dense, slight plasticity, good thread, ruptures with moderate finger pressure, soft consistency. 27.0 FT. Moderately decayed organics, bark & tree branches, porous, fibrous. | Center plug removed from HSA after 30.0 ft. |
| SS | 2.0 | 2.0 | 5-0-0-0 | | | | | 40 | | | 40.9 FT. Distinct increase in clay %. Plasticity becomes moderate with good thread, stiff consistency. 41.1 FT. Begin increase in sand, v. fine & ine grain. plasticity decreases, weak thread, ruptures easily. Color becomes olive black (5Y2/1). Sand is silt size, not platey or flakey. Rapid dilatancy. | |
| SS | 2.0 | 2.0 | 20-24-6 6 | | | | 378.3 | 45 | | | 45.2-59.8 FT. SAND with Silt (SW). Mostly olive black (5Y2/1) with mottled gray (5Y6/1). Saturated, sand is well graded - fine gravel to fine sand. Mostly (70%) medium grain with few (10%) coarse & fine gravel. Larger particles tend to be angular; a trace are subrounded. Adhesion due to moisture, no cohesion or plasticity. | |
| SS | 2.0 | 2.0 | 14-13-11 11 | | | | | 50 | | | 49.0 FT. Gravelly sand, dense, well compacted, increase silt and clay %. Inclusions of layers (1/4-1/2") with low moisture content. Good compaction, close packed. Low-very low porosity/permeability. | |
| SS | 2.0 | 1.9 | 22-20-18 12 | | | | | 55 | | | 54.0 FT. Becomes mostly fine grain sand with trace gravel. 55.1 FT. Increase silt %, silty SAND. Olive gray (5Y4/1). Fine & medium grain (80%) with trace coarse subangular sand. 2% fine gravels, trace to 5% silt. Little cohesion, non-plastic. | |
| SS | 2.0 | 1.3 | 14-25-18 22 | | | | 363.7 | 60 | | | 59.8-79.9 FT. SAND (SW). Light olive gray (5Y6/1). Saturated, very well sorted, mature, medium & fine grain sand. V. close packed, low void ratio, good compaction. Little cohesion, adhesion due to moisture content. Mostly silica sand & chert. | |
| SS | 2.0 | 1.8 | 14-20-18 19 | | | | | 65 | | | 65.0 FT. Sand w/trace of silt. Sand as above. Dark mafic flakes. Increase silt %, slight to moderate cohesion. | |
| SS | 2.0 | 1.4 | 6-9-14 14 | | | | | 70 | | | 69.0 FT. Decrease silt %; clean sand. silts are >3%. Generally moderate compaction, closed space packing - low void ratio. | |
| SS | 2.0 | 1.8 | 12-12-9 20 | | | | | | | | 74.0 FT. Trace increase in silt. | |

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SITE: SLDS-PLANT 7E

HOLE NO. B16W08D

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| | | 3 OF 3 | B16W08D |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | 75.8 FT. Coal and decayed organics. | |
| SS | 0.8 | 1.4 | 4-11-14 20 | | | | 343.6 | 80 | | | | |
| | | | | | | | 342.8 | | | | 79.9-80.7 FT. Gravelly Silty SAND (GM). Light olive gray (5Y6/1). Saturated. Well graded - clay, silt, fine (20%), medium (35%), and coarse (20%) grain sand. Some gravel (1/4-1/2"). Moderate compaction. Low void ratio, decrease in permeability. | Top of weathered bedrock encountered at a depth of 80.7' |
| | | | | | | | 342.5 | | | | Bottom of borehole at 80.7 FT. | |

SS = SPLIT SPOON; ST = SHELBY TUBE;
D = DENNISON; P = PITCHER; O = OTHER

SITE: SLDS-PLANT 7E

HOLE NO.: B16W08D

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| | | 1 OF 2 | B16W09D |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown | N 1,836 E 2,245 | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 5-30-89 | 6-7-89 | Geotechnology | CME-75 | 7" | 58.5 | 3.5 | 61.7 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| 3.1/89 | 1 | 18 | | 421.9 | ▽ / 32.8 ▼ / | 58.2/ |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs. / 30-inch | 15'/10" | C.A. Clark |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.3 | 5-5-7 30 | | | | 421.9 | | | | 0.0 - 14.6 FT. Silty SAND with RUBBLE Greyish black (N2) to Brownish black (5YR2/1). Dry 0-2', becoimg slightly moist with interbedded zones with higher moisture content. Soft to medium stiff consistency, variable with rubble encountered. Some coarse sand size, slightly cemented soil agglomerates. | Borehole advanced using 6-1/4 inch hollow stem auger to a depthof 58.2 FT. Drill hole advanced using NQ Diamond imprenate bit to a totaldepth of 61.7 FT. Sampled & gamma logged by TMA/E to 18 FT. Top of undisturbed material encountered at 14.6 FT. Description & classification of soils by visual examination ofsplit soon samples. Soil classification is UNIFIED SOIL CLASSIFICATION, colordescriptions from the GSA Rock Color Chart (1948). Borehole completed as monitoring well 6-7-89. |
| SS | 2.0 | 1.3 | 5-7-6 2 | | | | | | | | | |
| SS | 2.0 | 1.7 | 1-1-1 3 | | | | | 5 | | | Top 0.5 ft. is 1/4-1/2" angular gravel fill, with trace fines. Sand and silt percent increase with depth. V. slight cohesion, slight adhesion, increasing with depth. | |
| SS | 2.0 | 1.2 | WH/4" 4-6-2 | | | | | | | | Abundant RUBBLE 0-10 FT., mostly as slag, brick and concrete fragments. Loose compaction. | |
| SS | 2.0 | 0.3 | 2-2-2 2 | | | | | | | | | |
| SS | 2.0 | 1.5 | 2-1-1 2 | | | | | 10 | | | Sand is mostly medium and coarse-grained, with trace fine-grained subangulars. Silt adheres to particles. at 4.8 ft., moisture content increases to moist, increase silt and sand percent and increase in cohesion. at 11.2 - 11.7 ft., interbedded clayey sand layer. Slight plasticity, moderate cohesion with soft consistency. Decrease moisture content, increase compaction. | |
| SS | 2.0 | 1.8 | 1-1-3 2 | | | | | | | | | |
| SS | 2.0 | 1.9 | 1-2-5 2 | | | | 407.3 | | | | | |
| SS | 2.0 | 1.8 | 1-2-3 3 | | | | | 15 | | | Sand is v.fine-grained rounded silica. Slight shine when smeared. 12 - 14 FT. thin to medium bedded layers, (3-10mm), of fine grain sand with trace clay (?). Increase moisture content, decrease density. Slight plasticity, thread ruptures at 2-4mm. | |
| | | | | | | | 402.5 | | | | 14.6 - 19.4 FT. CLAY (CL) Olive grey (5Y4/1) interbedded Olive black (5Y2/1). Moist, moderate cohesion, medium stiff consistency. Darker color tends to show higher organics content, slightly higher moisture content and less consolidated. | |
| | | | | | | | | 20 | | | Slight plasticity, non-sticky, moderate resistence to deformation. Crumbles when rolled into 7-9mm thread. | |
| SS | 2.0 | 0.2 | 17-19 10-8 | | | | | | | | | |
| | | | | | | | | 25 | | | Some v.fine-grained sand stringers, random in size and distribution. | |
| SS | 2.0 | 1.6 | 3/8" 4/8" 1 | | | | 395.7 | | | | 19.4 - 26.2 FT. Clayey Silt, Silt interbedded Silty Sand (SM-ML) Olive grey (5y4/1). Moist with sand zones saturated. Moderate cohesion of clayey silt and silt layers, v.stiff consistency, sand layers are dense. | |
| | | | | | | | | 30 | | | Layers are random in alternation, with thickness variable between 2-8 inches. | |
| SS | 2.0 | 1.8 | 2-2-2 9 | | | | | | | | Silt layers tend to be darker in color, olive black, with parallel laminae of biotite(?) flakes. High moisture content, rapid dilatancy. | |
| | | | | | | | | | | | Clayey silt layers increase plasticity, with thread rolling without rupture to 5-7mm. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown

HOLE NO.: B16W09D

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| | | 2 OF 2 | B16W09D |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 2.0 | 1.4 | WR/8" 2/4" 15-9 | | | | | | | | Silty sand layers are well sorted, fine-grained mature silica. Saturated, non-cohesive, rapid dilatancy. | |
| | | | | | | | | | | | 26.2 - 34.1 FT. Silty SAND (SM) Olive grey (5Y4/1). Saturated, slight to no cohesion, v.stiff consistency. Rapid dilatancy, Silt percent decreases with depth to <10% by 30 ft. Mostly v.fine-grained, well-sorted, rounded silica. | |
| SS | 2.0 | 0.0 | 7-9-9 7 | | | | | 40 | | | | |
| | | | | | | | | | | | 34.1 - 58.5 FT. SAND (SM-SP) Olive grey (5Y4/1) to light olive grey (5Y6/1). Wet, non-cohesive, adhesion due to moisture content, dense. Trace silt particles as mafic flakes, decreasing to <3% by 40 ft.. | |
| SS | 2.0 | 1.6 | 9-13-11 41 | | | | | 45 | | | Sand particle size is variable, unpredicatable gradation. 35-40 ft. is mostly fine and medium-grained, with some 7-9mm rounded pebbles. Sand at 40-45 ft. is coarse and v.coarse-grained subrounded to rounded. Particle size from 45 - 55 ft. is fine and medium-grained with trace rounded pebbles. Trace silt as black specs. | |
| SS | 2.0 | 2.0 | 6-6-10 10 | | | | | 50 | | | Random, thin (5-7mm) silt lenses, some parallel with bedding, some as rounded blobs: Generally lower in moisture content. | |
| | | | | | | | | | | | | |
| SS | 2.0 | 0.8 | 2-4-8 12 | | | | | 55 | | | | |
| | | | | | | | | | | | | |
| NQ | 3.5 | 3.1 | 89 | | | | 363.4 | | | | | |
| | | | | | | | | 60 | | | 58.5 - 61.7 FT. LIMESTONE Light olive grey (5Y6/1). Fresh to slightly weathered, little discoloration. Moderately hard, moderate pressure to scratch with knife. Strong reaction to HCl. | |
| | | | | | | | 360.2 | | | | Massive structure, trace 1-2mm calcite concretions, slightly darker color. Some light hematite staining. Jointing is normal to core ais, planar and smooth. Joint surfaces are mostly fresh to slightly weathered. Some open micro-fractures, mostly parallel with jointing, few dipping 5-7 degrees. | |
| | | | | | | | | | | | Bottom of borehole at 61.7 Ft. Monitor well installed in borehole, 2/89. | |

SS = SPLIT SPOON; ST = SHELBY TUBE;
D = DENNISON; P = PITCHER; O = OTHER

SITE: **St. Louis Downtown**

HOLE NO. **B16W09D**

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 1 OF 2 | B16G01 |

| SITE | COORDINATES | ANGLE FROM HORIZ | BEARING |
|---|---|---|---|
| St. Louis Downtown Site | | Vertical | ------ |

| BEGUN | COMPLETED | DRILLER | DRILL MAKE AND MODEL | SIZE | OVERBURDEN | ROCK (FT.) | TOTAL DEPTH |
|---|---|---|---|---|---|---|---|
| 6-1-89 | 6-9-89 | Geotechnology | CME-75 | 7" | 35.5 | | 35.5 |

| CORE RECOVERY (FT./%) | CORE BOXES | SAMPLES | EL. TOP CASING | GROUND EL. | DEPTH/EL. GROUND WATER | DEPTH/EL. TOP OF ROCK |
|---|---|---|---|---|---|---|
| / | | 9 | | | ▽ 10.2/ / | / |

| SAMPLE HAMMER WEIGHT/FALL | CASING LEFT IN HOLE: DIA./LENGTH | LOGGED BY: |
|---|---|---|
| 140 lbs. / 30 inch | 14.8'/ 10" | C. A. Clark |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS "N" % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 5 | | 0.0 - 11.4 Ft. ASPHALT, CONCRETE, and RUBBLE.<br><br>0.0-0.3 Ft. Asphalt.<br><br>0.3-1.5 Ft. Reinforced concrete.<br><br>1.5-3.5 Ft. Silty SAND and rubble. Mostly brownish black (5YR2/1). Dry to very slightly moist. Abundant brick, decomposed concrete and slag. Noncohesive but fines adhere to rubble.<br><br>3.5-5.1 Ft. Concrete.<br><br>5.1-11.4 Ft. Sand, gravel and rubble. Brownish black (5YR2/1). Wet, viscous black material covers particles. Mostly unconsolidated sand and fine-grained gravels. Abundant fresh to moderately decomposed wood, leaves and roots. Spongy and porous. | Borehole advanced 0.0-35.5 Ft. with 6-1/4 inch hollow-stem auger.<br><br>Radiologically sampled and gamma-logged by TMA/Eberline to 15 Ft. |
| | | | | | | | | 10 ▽ | | | |
| | | | | | | | | 15 | | 11.4 - 25.5 Ft. Alternating layers of Clayey SAND, Silty SAND and SILT (ML-CL). Olive gray (5Y4/1) to olive black (5Y2/1). Moist with saturated zones at 20 to 25.5 Ft. Slightly to moderately cohesive, medium-stiff to stiff consistency. Dense, well compacted, difficult to break with sampling tool. Layers alternate with a variable thickness ranging from 2 to 8 inches.<br><br>Clayey sand layers are lean clay with fine- and very fine-grained mature silica sand. Slightly cohesive, slightly plastic, will not roll. Clay adheres to sand particles. Low moisture content.<br><br>Silt layers are generally dark colored, very slightly plastic, slightly cohesive. Slow dilatancy, dull shine. Abundant dark mafic flakes. Liquefies with little shaking.<br><br>Silty sand layers appear the same as silt layers, with the inclusion of 30 to 50% fine-grained silica sand. High moisture content, rapid dilatancy. | Top of undisturbed material at 11.4 Ft.<br><br>Borehole abandoned 6-9-89 due to explosive and toxic conditions encountered in the borehole. |
| | | | | | | | | 20 | | | |
| | | | | | | | | 25 | | 25.5 - 30.4 Ft. Silty SAND (SM). Light olive gray (5Y5/2). Moist with interbedded saturated zones. Fine-grained, well-sorted, mature silica sand. Very slightly cohesive and plastic. Thread ruptures at 5 mm roll. Massive structure. Laminae of single particle mafic flakes. Reduction rings, 10-15 cm, color banded. Interior zone is dark, surrounded by a hematite stained ring, 2 to 4 mm, bordering the outer light-colored zone. | Description and classification of soils by visual examination of split-spoon samples. Soil classification is Unified Soil Classification; color descriptions from the GSA Rock Color Chart (1948). |
| | | | | | | | | 30 | | Swirls of darker bands, single-grain laminations of biotite flakes.<br><br>30.4 - 35.5 Ft. SAND with Silt (SM). Light olive gray (5Y5/2) to olive gray (5Y3/2). Moist with saturated zones. Moderately cohesive, stiff | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

HOLE NO.: B16G01

# GEOLOGIC DRILL LOG

| PROJECT | JOB NO. | SHEET NO. | HOLE NO. |
|---|---|---|---|
| FUSRAP | 14501 | 2 OF 2 | B16G01 |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN CORE | SAMPLE REC. CORE REC. | SAMPLE "N" BLOWS % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME IN MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | to very-stiff consistency. Moderate pressure with tools to break sample. Sand is well-sorted, fine-grained, predominantly quartz. Little (20%) silt, mostly as dark flakes. Rapid dilatancy, nonplastic, will not roll. Structure is homogeneous, some random 2 to 3 mm laminations, mostly horizontal. Trace to few dark decomposed organic blebs.<br><br>32.0 Ft. Consistency softens slightly; interbedded lean clay (?). Inclusions of coarse-grained rounded sand, <5%.<br><br>33.0 Ft. Abundant organics, dark, mostly decomposed sticks, grass blades, bark. Porous and spongy, swampy odor.<br><br>33.5 Ft. Increased sand size to mostly medium-grained with some fine-grained rounded to subrounded quartz.<br><br>Borehole abandoned at 35.5 Ft. due to high LEL & Toxic levels.<br>Borehole backfilled with bentonite cement, 6/9/89. | |

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER

SITE: St. Louis Downtown Site

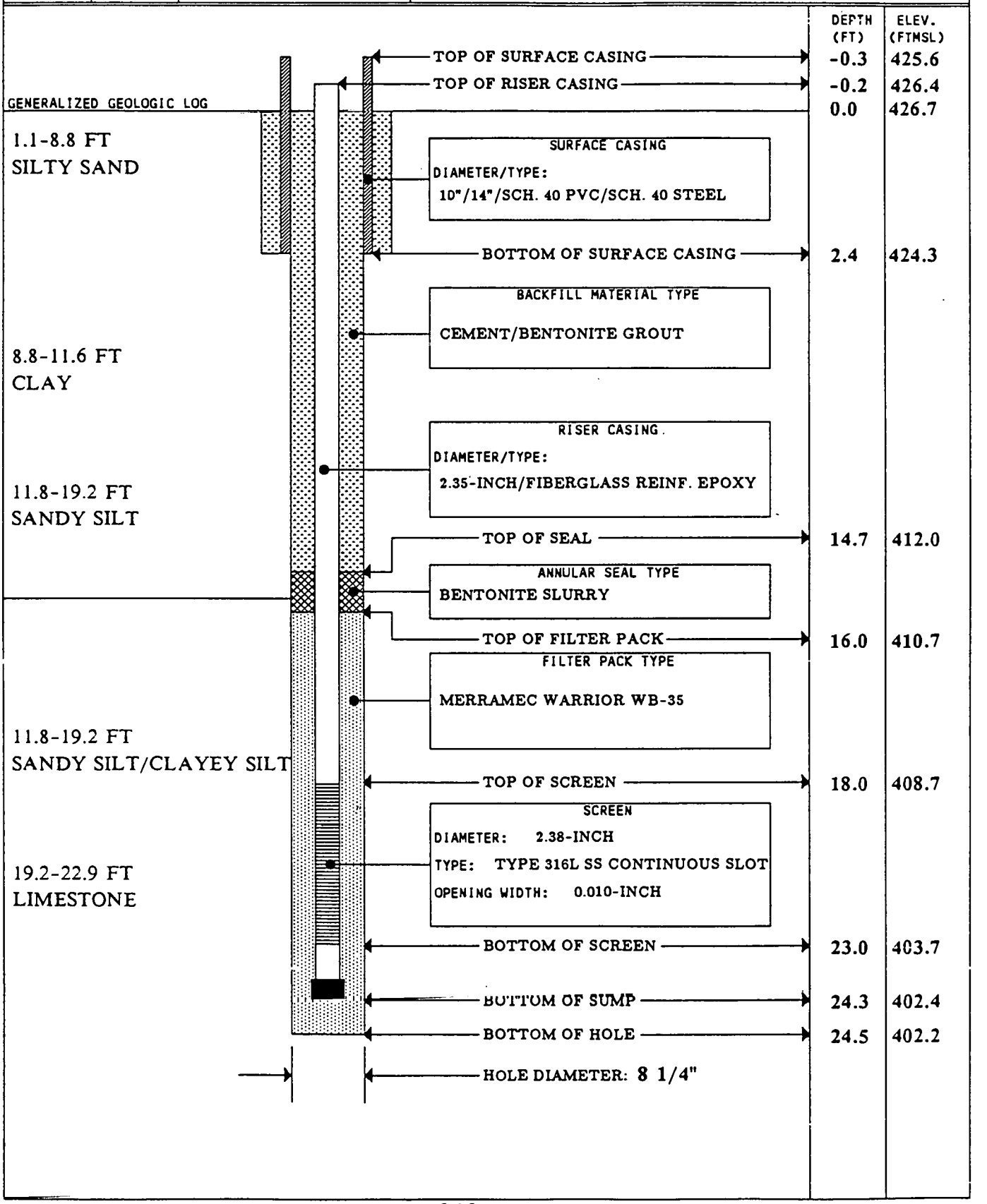
HOLE NO.: B16G01

# MONITORING WELL

| PROJECT | WELL NO. |
|---|---|
| FUSRAP | B16W01S |

| JOB NO. | SITE | COORDINATES |
|---|---|---|
| 14501 | SLDS - W. of Plant 8 | N 2076; E 1080 |

| BEGUN | COMPLETED | PREPARED BY | REFERENCE POINT FOR MEASUREMENTS |
|---|---|---|---|
| 3/23/88 | 3/31/88 | C.A. Clark | GROUND SURFACE |

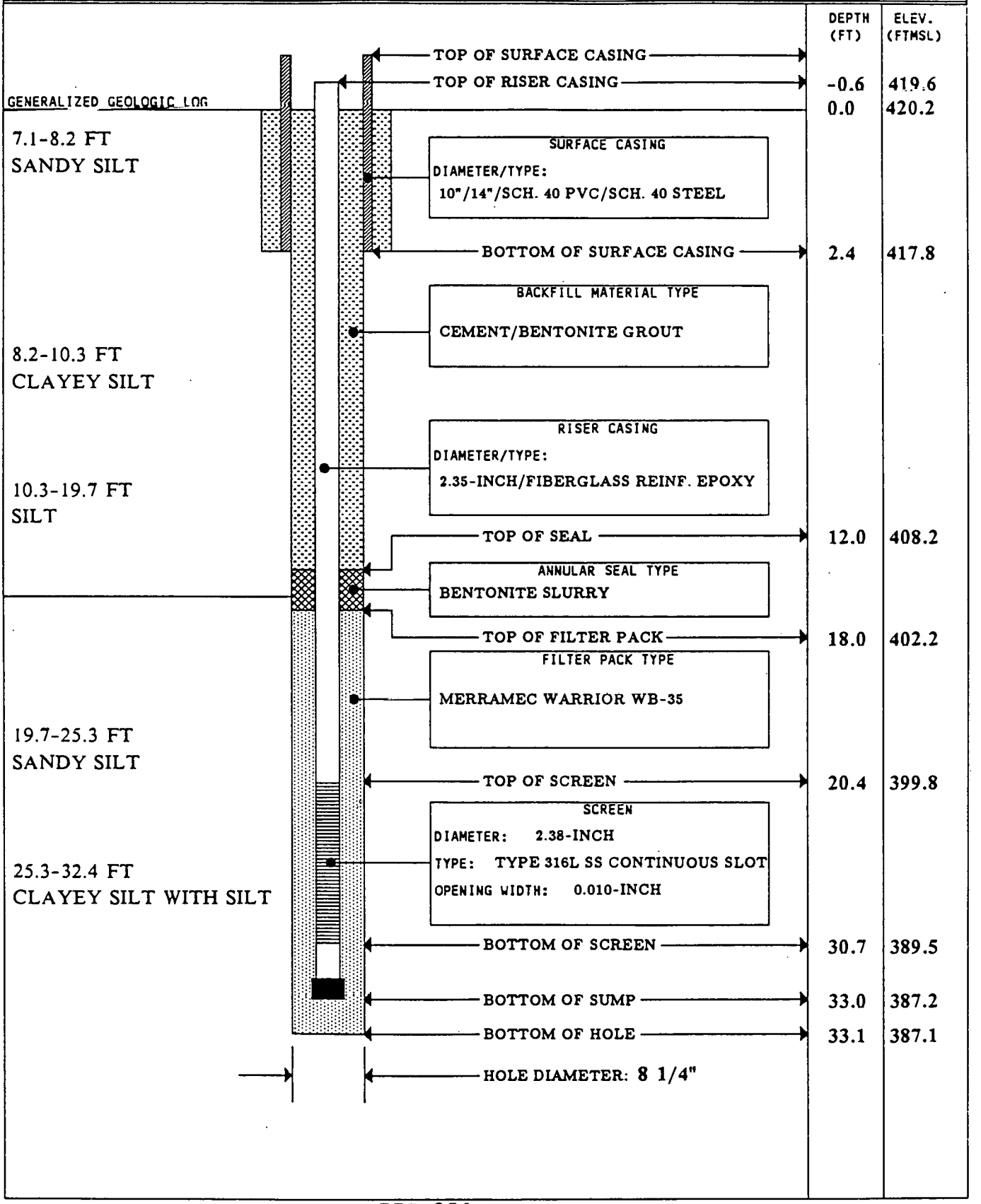


# MONITORING WELL

| PROJECT | WELL NO. |
|---|---|
| FUSRAP | B16W02S |

| JOB NO. | SITE | COORDINATES |
|---|---|---|
| 14501 | SLDS-Plant 1 Bldg. K1E | N 2111; E 1536 |

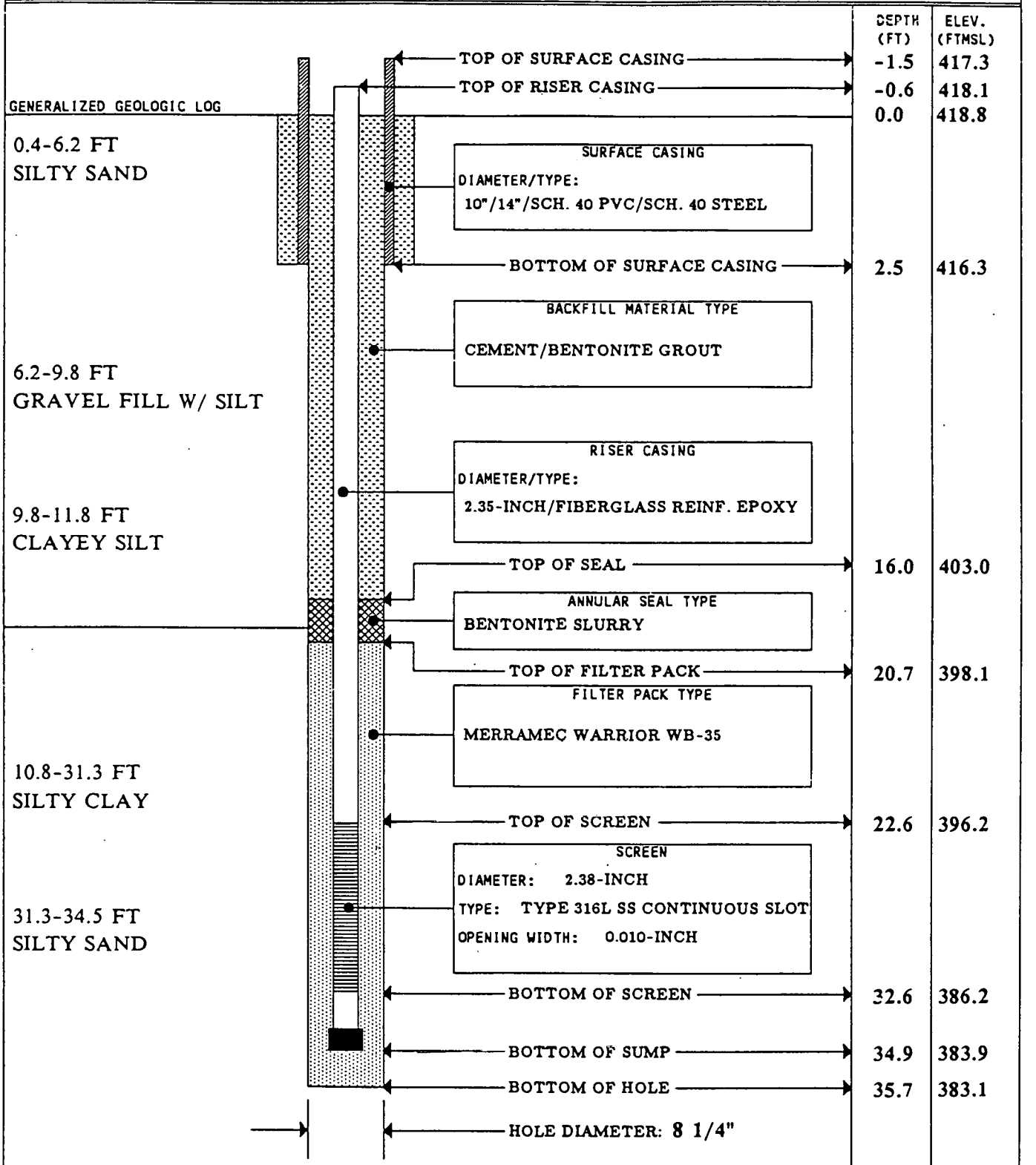
| BEGUN | COMPLETED | PREPARED BY | REFERENCE POINT FOR MEASUREMENTS |
|---|---|---|---|
| 3/28/88 | 4/1/88 | C.A. Clark | GROUND SURFACE |



| MONITORING WELL | PROJECT | WELL NO. |
|---|---|---|
| | FUSRAP | B16W03S |

| JOB NO. | SITE | COORDINATES |
|---|---|---|
| 14501 | SLDS-Plant 2 | N 1646; E 1746 |

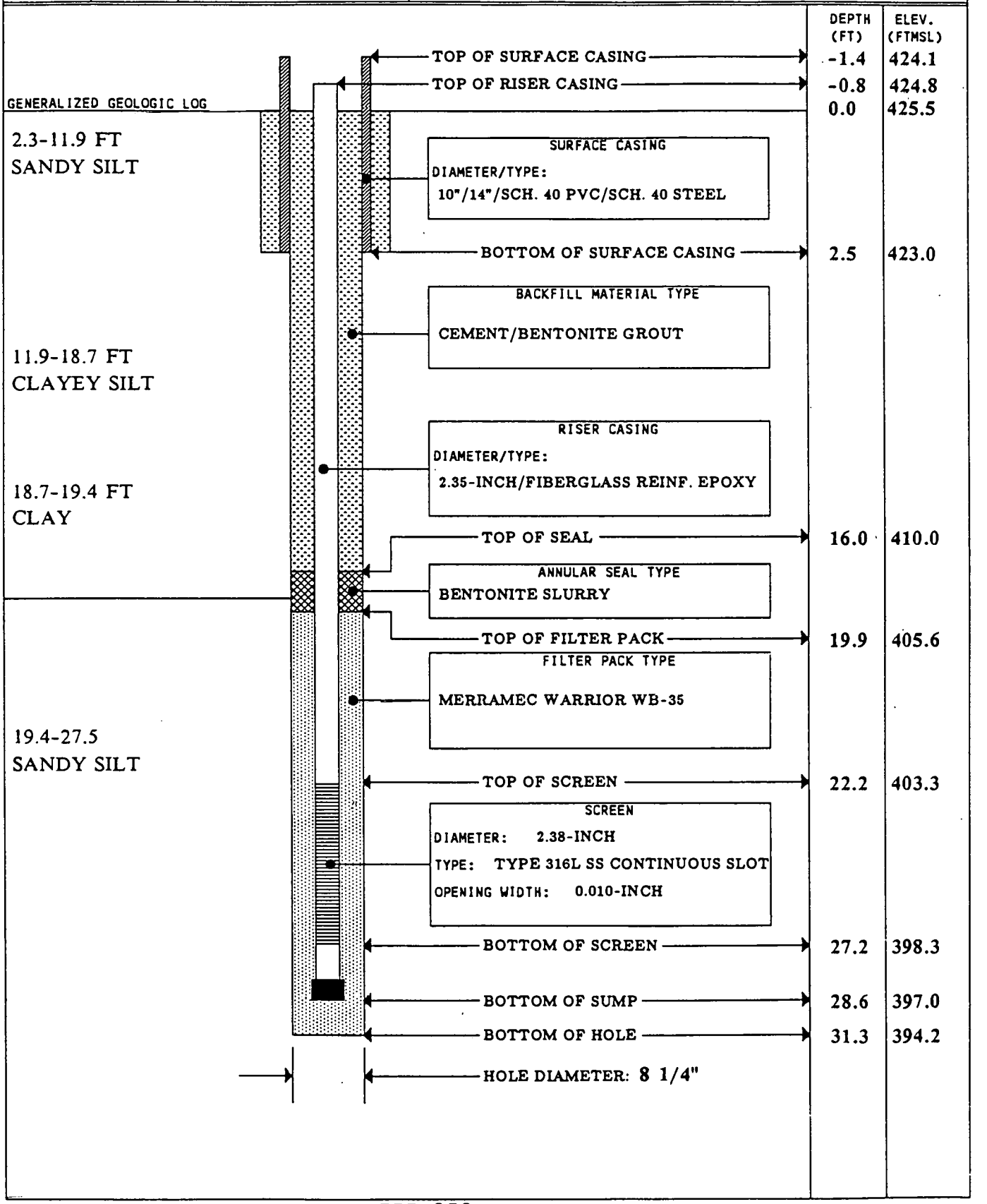
| BEGUN | COMPLETED | PREPARED BY | REFERENCE POINT FOR MEASUREMENTS |
|---|---|---|---|
| 4/5/88 | 4/8/88 | C.A. Clark | GROUND SURFACE |



| MONITORING WELL | PROJECT | WELL NO. |
|---|---|---|
| | FUSRAP | B16W04S |

| JOB NO. | SITE | COORDINATES |
|---|---|---|
| 14501 | SLDS-Plant 10 E. Bldg 82 | N 1089; E 1313 |

| BEGUN | COMPLETED | PREPARED BY | REFERENCE POINT FOR MEASUREMENTS |
|---|---|---|---|
| 3/22/88 | 3/28/88 | C.A. Clark | GROUND SURFACE |

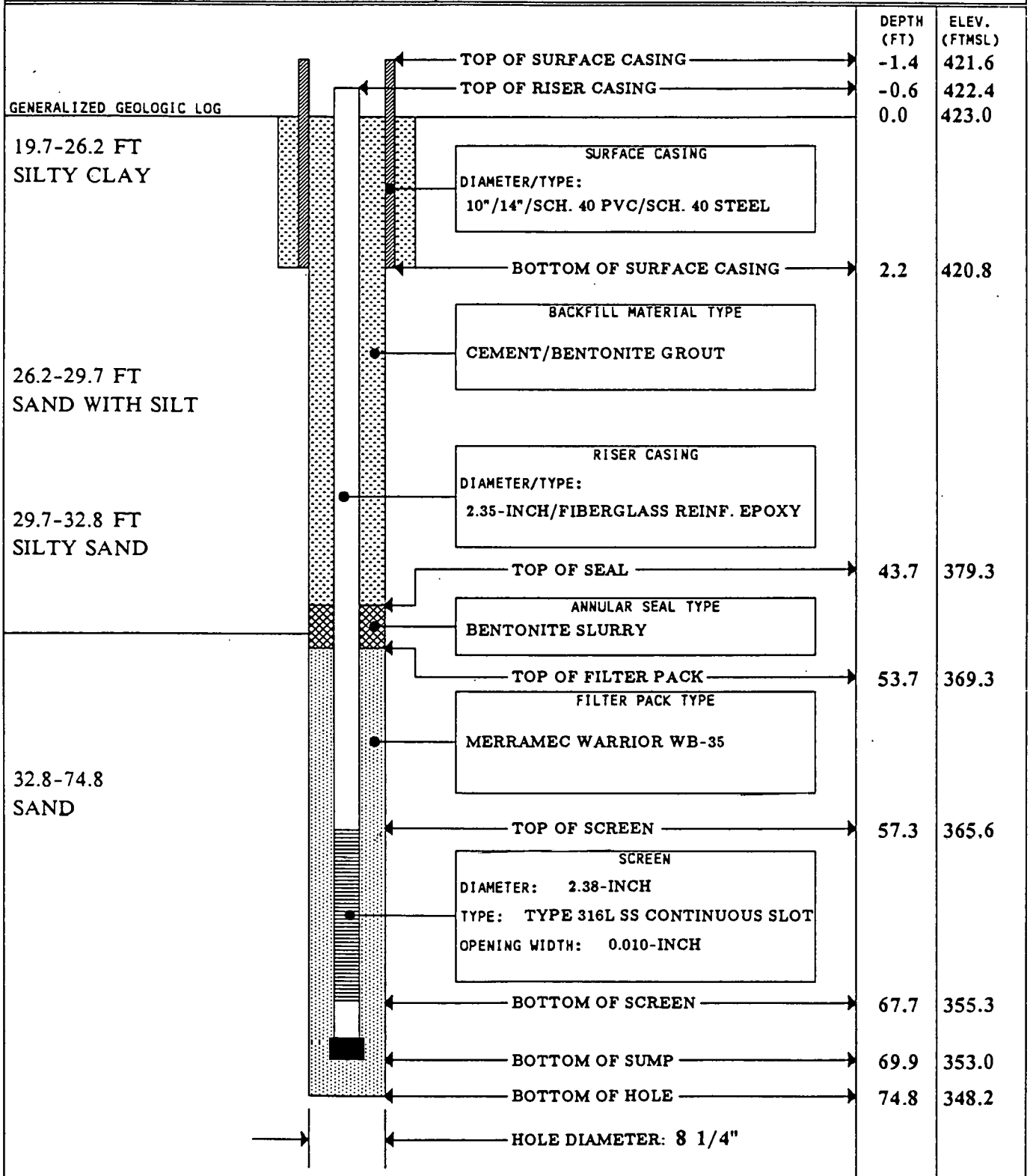


# MONITORING WELL

| PROJECT | WELL NO. |
|---|---|
| FUSRAP | B16W05D |

| JOB NO. | SITE | COORDINATES |
|---|---|---|
| 14501 | SLDS-Plnt 6E E. Bldg 116 | N 1601; E 2900 |

| BEGUN | COMPLETED | PREPARED BY | REFERENCE POINT FOR MEASUREMENTS |
|---|---|---|---|
| 4/11/88 | 4/14/88 | C.A. Clark | GROUND SURFACE |



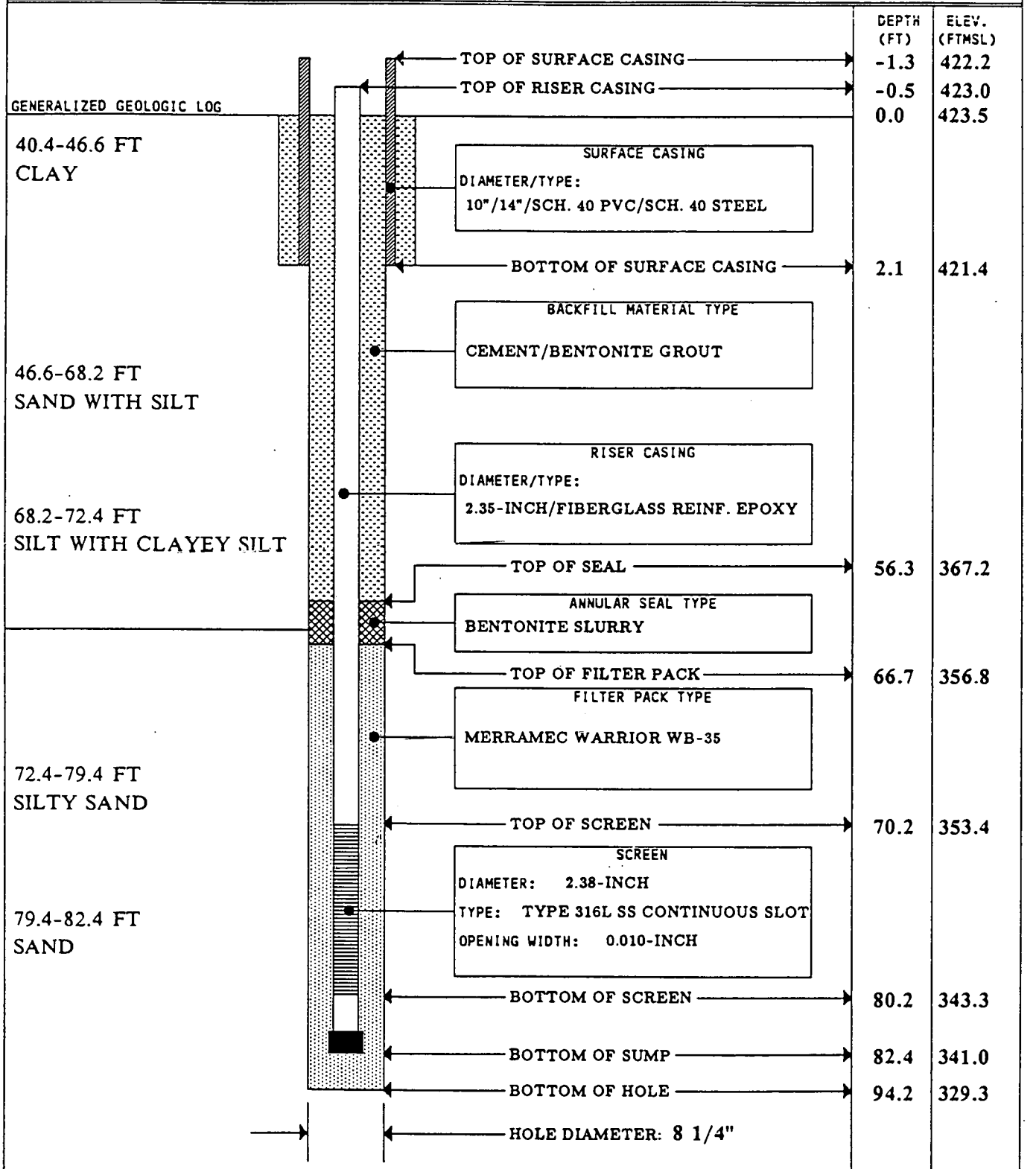

| | DEPTH (FT) | ELEV. (FTMSL) |
|---|---|---|
| TOP OF SURFACE CASING | -1.4 | 421.6 |
| TOP OF RISER CASING | -0.6 | 422.4 |
| | 0.0 | 423.0 |
| BOTTOM OF SURFACE CASING | 2.2 | 420.8 |
| TOP OF SEAL | 43.7 | 379.3 |
| TOP OF FILTER PACK | 53.7 | 369.3 |
| TOP OF SCREEN | 57.3 | 365.6 |
| BOTTOM OF SCREEN | 67.7 | 355.3 |
| BOTTOM OF SUMP | 69.9 | 353.0 |
| BOTTOM OF HOLE | 74.8 | 348.2 |
| HOLE DIAMETER: 8 1/4" | | |

# MONITORING WELL

| PROJECT | WELL NO. |
|---|---|
| FUSRAP | B16W06D |

| JOB NO. | SITE | COORDINATES |
|---|---|---|
| 14501 | SLDS-East of C,B & Q RR | N 1629; E 3273 |

| BEGUN | COMPLETED | PREPARED BY | REFERENCE POINT FOR MEASUREMENTS |
|---|---|---|---|
| 3/8/88 | 3/17/88 | C.A. Clark | GROUND SURFACE |

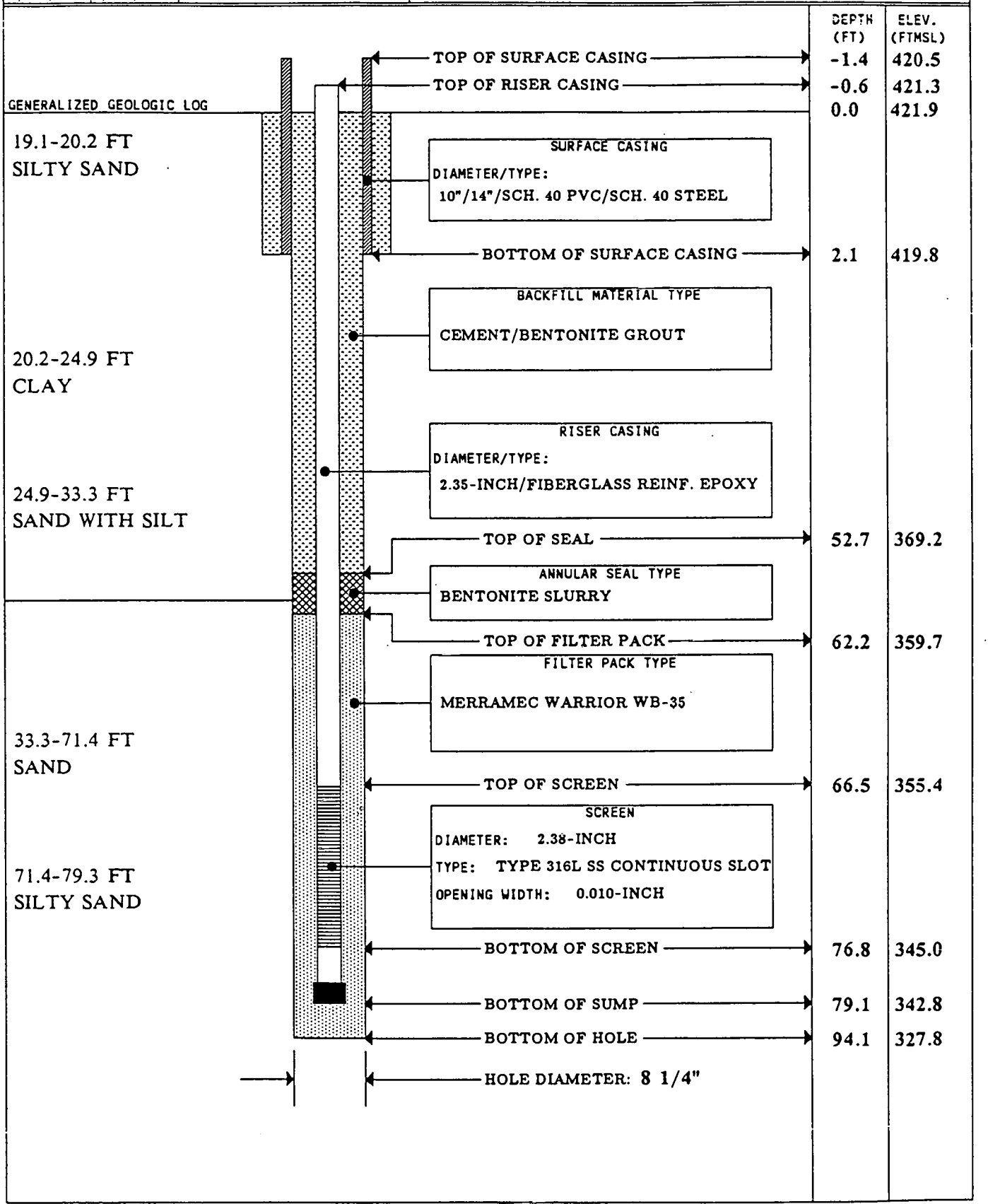


# MONITORING WELL

| PROJECT | WELL NO. |
|---|---|
| FUSRAP | B16W07D |

| JOB NO. | SITE | COORDINATES |
|---|---|---|
| 14501 | SLDS-E. Building 705 | N 1300; E 3006 |

| BEGUN | COMPLETED | PREPARED BY | REFERENCE POINT FOR MEASUREMENTS |
|---|---|---|---|
| 2/25/88 | 3/18/88 | C.A. Clark | GROUND SURFACE |



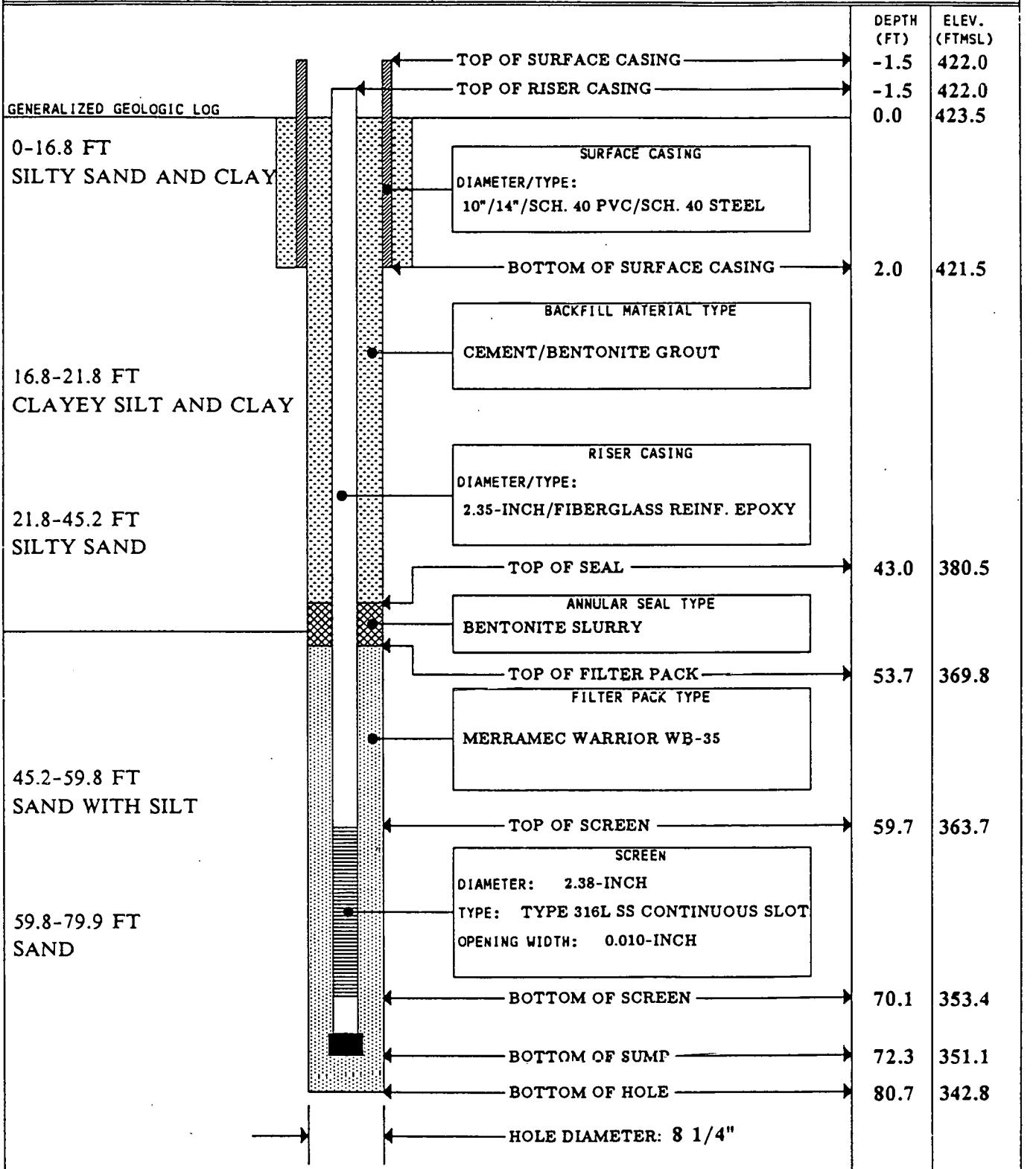

| | DEPTH (FT) | ELEV. (FTMSL) |
|---|---|---|
| TOP OF SURFACE CASING | -1.4 | 420.5 |
| TOP OF RISER CASING | -0.6 | 421.3 |
| | 0.0 | 421.9 |
| BOTTOM OF SURFACE CASING | 2.1 | 419.8 |
| TOP OF SEAL | 52.7 | 369.2 |
| TOP OF FILTER PACK | 62.2 | 359.7 |
| TOP OF SCREEN | 66.5 | 355.4 |
| BOTTOM OF SCREEN | 76.8 | 345.0 |
| BOTTOM OF SUMP | 79.1 | 342.8 |
| BOTTOM OF HOLE | 94.1 | 327.8 |

# MONITORING WELL

| PROJECT | WELL NO. |
|---|---|
| FUSRAP | B16W08D |

| JOB NO. | SITE | COORDINATES |
|---|---|---|
| 14501 | SLDS-PLANT 7E | N 1258; E 3231 |

| BEGUN | COMPLETED | PREPARED BY | REFERENCE POINT FOR MEASUREMENTS |
|---|---|---|---|
| 3/11/88 | 3/25/88 | C.A. Clark | GROUND SURFACE |



# MONITORING WELL

| PROJECT | WELL NO. |
|---|---|
| FUSRAP | B16W09D |

| JOB NO. | SITE | COORDINATES |
|---|---|---|
| 14501 | St. Louis Downtown Site | N 1836.3 E 2244.5 |

| BEGUN | COMPLETED | PREPARED BY | REFERENCE POINT FOR MEASUREMENTS |
|---|---|---|---|
| 6/7/89 | 6/7/89 | C. A. Clark | GROUND SURFACE. |