

# Boring Log

|  |                                    |  |                                |
|--|------------------------------------|--|--------------------------------|
| JOB NO. <u>853-3051</u>                | GA. INSP. <u>CFC</u>               | PROJECT <u>CWM/WELLS/MODEL CITY</u>                      | BORING NO. <u>P11-55</u>       |
| DEPTH HOLE <u>18.0 FT.</u>             | DEPTH WL. <u>1.26 FT.</u>          | DRILLING METHOD <u>HOLLOW STEEL AUGERS-4 1/4" ID</u>     | SHEET <u>1</u> OF <u>1</u>     |
| TEMP <u>58° E</u>                      | TIME WL. <u>9/22/86</u>            | DRILLING COMPANY <u>EMPRE SOILS INVESTIGATIONS, INC.</u> | SURFACE ELEV. <u>317.4 FT.</u> |
| WEATHER <u>PARTLY CLOUDY</u>           | DRILL RIG <u>CME 45</u>            | DRILLER <u>K. SWINICH</u>                                | DATUM <u>MSL</u>               |
| COORDINATES <u>N10772.02 E12550.27</u> | WT. SAMPLER HAMMER <u>140 LBS.</u> | DROP <u>30 IN.</u>                                       | STARTED <u>2:20 / 5-1-86</u>   |
| LOCATION <u>-</u>                      | WT. CASING HAMMER <u>300 LBS.</u>  | DROP <u>30 IN.</u>                                       | COMPLETED <u>4:15 / 5-1-86</u> |

| ELEV. DEPTH (FT.) | DESCRIPTION   | UNIFIED CLASS | BLOW/FOOT   | SAMPLES |      |                                 | REMARKS        |  |
|-------------------|---|---------------|---|---------|------|---------------------------------|----------------|--|
|                   |   |               |   | NUMBER  | TYPE | HAMMER BLOWS PER 6 IN. REC./ATT |                |  |
| 317.4             | GROUND SURFACE  |               |   |         |      |                                 | GROUND SURFACE |  |
| 0.0               | FIRM TO VERY STIFF, BROWN TO DARK BROWN, CLAYEY SILT, LITTLE TO SOME F-C SAND, TRACE TO LITTLE GRAVEL AS GRAY SUBROUNDED CLASTS | CL            | 20  | 1       | DO   | 7-10-10-12                      | 19/24          | UPPER CLAY TILL<br><br>OCCASIONAL THIN F-M SAND LENSE FROM 6.0 FT.           |
|                   |   |               | 27  | 2       | DO   | 9-12-15-16                      | 24/24          |  |
|                   |   |               | 55  | 3       | DO   | 8-15-40-43                      | 19/24          |  |
|                   |   |               | 64  | 4       | DO   | 23-34-30-25                     | 24/24          |  |
|                   |   |               | 18  | 6       | DO   | 3-8-10-7                        | 13/27          |  |
|                   |   |               | 9   | 7       | DO   | 3-4-5-8                         | 20/24          |  |
| 305.4             |   |               | COMPACT, BROWN, SILT, AND F-M SAND, LITTLE F GRAVEL, TRACE CLAY | ML      | 15   | 8                               | DO             |  |
| 12.0              | VERY SOFT, GRAY, CLAY, TRACE F-M SAND   | CH            | 0   | 9       | DO   | WE-WE-WH-2                      | 24/24          | GLACIOAUSTRINE CLAY  |
| 303.4             |   |               | 8   | 10      | DO   | 2-3-5-9                         | 18/24          |  |
| 14.0              |   |               |   |         |      |                                 |                |  |
| 299.4             | END OF SAMPLING AUGERED TO 16.0 FT.   |               |   |         |      |                                 |                | END OF SAMPLING  |
| 18.0              |   |               |   |         |      |                                 |                | INSTALLED P11-55<br>SEE ACCOMPANYING<br>MONITORING WELL<br>INSTALLATION LOG. |

**MONITORING WELL INSTALLATION LOG**

JOB NO. B53-3051 PROJECT CWM / WELLS / MODEL CITY WELL NO. P11-55 SHEET 1 OF 1  
 SA INSP. CEC DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" ID GROUND ELEV. 317.4 FT. WATER DEPTH 1.26 FT.  
 WEATHER CLOUDY DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS INC. COLLAR ELEV. 320.16 FT. DATE/TIME 9-22-86  
 TEMP. 60° F DRILL RIG CME 45 DRILLER K. SWINNICH STARTED 4:15 5/1/86 COMPLETED 5:15 5/1/86  
 LOCATION / COORDINATES \_\_\_\_\_

**MATERIALS INVENTORY**

WELL CASING 2 1/2 IN. DIA. 8.0 FT. WELL SCREEN 2.0 IN. DIA. 10.6 FT. BENTONITE SEAL PELLETS 3.8' DEEP  
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD THROUGH AUGERS  
 JOINT TYPE THREADED SLOT SIZE 0.006 INCH FILTER PACK QTY 11.2 L.F.  
 GROUT QUANTITY NA CENTRALIZERS NONE FILTER PACK TYPE #1-0 SAND  
 GROUT TYPE NA DRILLING MUD TYPE NONE INSTALLATION METHOD THROUGH AUGERS

| ELEV./DEPTH (FT.) | SOIL/ROCK DESCRIPTION  | WELL SKETCH  | INSTALLATION NOTES  |  |
|-------------------|--|--|---|--|
| 317.4<br>0.0      | GROUND SURFACE<br><br>UPPER CLAY TILL<br>FIRM TO VERY STIFF,<br>BROWN TO DARK<br>BROWN, CLAYEY SILT,<br>LITTLE TO SOME<br>F-C SAND. OCCASION-<br>AL THIN SILT LENSE<br>FROM 6.0-12.0 FT. | <p>WELL SKETCH</p> <p>Labels in sketch: 8" Ø ALUMINUM CASING WITH WELL 2.4 FT. STICKUP, 4" Ø SAND, CEMENT GROUT, 3/8" Ø BENTONITE PELLET SEAL, 2" Ø TYPE 304 SS RISER PIPE, #1-0 SAND, 2" Ø TYPE 304 SS SCREEN, 15.8 1.00, 8.0</p> | AUGERED TO 16.0 FT.; ADDED #1-0 SAND TO 5.8 FT. BELOW GROUND SURFACE. INSTALLED WELL PIPE (1-10' SCREEN 1-3' RISER 1-5' RISER) 2.8 FT. STICKUP; ADDED #1-0 SAND TO 4.8 FT. BELOW GROUND SURFACE (TOOK SAMPLE); ADDED PELLETS TO 1.0 FT. BELOW GROUND SURFACE; REMOVED AUGERS; MIXED CEMENT GROUT, FILLED TO GROUND SURFACE; PUT ON 8" Ø ALUMINUM PROTECTIVE CASING; FILLED INTERIOR OF CASING WITH #4-0 SAND; WEED HOLES WERE PUT IN CASING FOR DRAINAGE; A CONCRETE PAD WAS LATER PUT AROUND WELL BY THE SITE AND NEW WEED HOLES WERE PUT IN CASING. A DEDICATED STAINLESS STEEL BAILER WAS INSTALLED SUBSEQUENT TO DEVELOPMENT. |  |
| 305.4<br>12.0     | UPPER SILT TILL<br>COMPACT, BROWN, SILT AND<br>FINE SAND, LITTLE F-GRAVEL.   |  |   |  |
| 303.4<br>14.0     | GLAUCOUS-GREEN CLAY<br>VERY SOFT, GRAY, CLAY,<br>TRACE F-M SAND  |  |   |  |
| 299.4<br>18.0     | END OF SAMPLING<br>AUGERED TO 16.0 FT.   |  |   |  |
|                   |  |  |   |  |
|                   |  |  | <b>WELL DEVELOPMENT NOTES</b>   |  |
|                   |  |  | DATE DEVELOPED: 5-2-86 TO 6-10-86   |  |
|                   |  |  | DEVELOPMENT METHOD: AIR LIFT  |  |
|                   |  |  | VOLUME PURGED: 30.8 GAL   |  |
|                   |  |  | FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE.  |  |
|                   |  |  |   |  |
|                   |  |  | NOTE: A 0.5 FT. END CAP WAS PLACED AT THE BOTTOM OF THE SCREEN SECTION. 2, 5, AND 10 FT. SCREEN SECTIONS ARE ACTUALLY 2.95, 9.325, 10.325 FT IN LENGTH, RESPECTIVELY.   |  |



Goldier Associates Inc.

# SOIL BOREHOLE LOG

SITE NAME AND LOCATION  
CWM Chemical Services, Model City, NY

DATUM MSL ELEVATION ~316 FT

|   |  |                          |                 |
|---|--|--------------------------|-----------------|
| DRILLING METHOD: <u>Hollow Stem Auger - 4 1/4" ID</u> |  | BORING NO. <u>GZR-1S</u> |                 |
| SAMPLING METHOD: <u>24" Split Spoon</u>               |  | SHEET <u>1 OF 1</u>      |                 |
| WATER LEVEL   |  | START TIME               | FINISH TIME     |
| TIME  |  | <u>1027</u>              | <u>1242</u>     |
| DATE  |  | DATE                     | DATE            |
| CASING DEPTH  |  | <u>09/25/89</u>          | <u>09/25/89</u> |

DRILL RIG Track CME 55

ANGLE Vertical BEARING

SAMPLE HAMMER TORQUE

SURFACE CONDITIONS: GRASS

| DEPTH IN FEET | BLOWS/ 6 IN. ON SAMPLER (RECOVERY) | SYMBOL | SAMPLE NUMBER AND DESCRIPTION OF MATERIAL   | SAMPLER AND BIT | CASING TYPE | BLOWS/FOOT ON CASING | TEST RESULTS    |                |                 |               |            |  |  |  |  |  |  |  |
|---------------|------------------------------------|--------|---|-----------------|-------------|----------------------|-----------------|----------------|-----------------|---------------|------------|--|--|--|--|--|--|--|
|               |                                    |        |   |                 |             |                      | WATER CONTENT % | LIQUID LIMIT % | PLASTIC LIMIT % | PLASTIC INDEX | WANE (TSF) |  |  |  |  |  |  |  |
| 0.0           |                                    |        | 318.00<br>1 FILL<br>Stiff, brown, SILTY CLAY, some fine to coarse sand, trace gravel. (CL)  |                 |             |                      |                 |                |                 |               |            |  |  |  |  |  |  |  |
| 2.0           |                                    |        | 2 314.00<br>UPPER CLAY TILL<br>Very stiff to stiff, brown, SILTY CLAY, some f-c sand, trace gravel. (CL) Silt lenses, little f-m sand lenses at 5.3' to 6.5' and 14.3' to 14.9'.<br>Brown, f-c sand at 9.3' to 9.5' and 12' to 12.7'. |                 |             |                      |                 |                |                 |               |            |  |  |  |  |  |  |  |
| 4.0           |                                    |        | 3   |                 |             |                      |                 |                |                 |               |            |  |  |  |  |  |  |  |
| 5.0           |                                    |        | 4   |                 |             |                      |                 |                |                 |               |            |  |  |  |  |  |  |  |
| 10.0          |                                    |        | 5   |                 |             |                      |                 |                |                 |               |            |  |  |  |  |  |  |  |
| 15.0          |                                    |        | 6 300.00<br>7<br>8<br>UPPER SILT TILL<br>Very dense, dark brown, CLAYEY SILT, some fine to coarse sand, trace gravel. (ML)  |                 |             |                      |                 |                |                 |               |            |  |  |  |  |  |  |  |
| 17.0          |                                    |        | 9 298.00  |                 |             |                      |                 |                |                 |               |            |  |  |  |  |  |  |  |
| 20.0          |                                    |        | 10 296.00<br>GLACIOLACUSTRINE CLAY<br>Very soft, gray, CLAY, little fine to coarse sand, trace gravel. (CH)   |                 |             |                      |                 |                |                 |               |            |  |  |  |  |  |  |  |
| 20.0          |                                    |        | END OF SAMPLING   |                 |             |                      |                 |                |                 |               |            |  |  |  |  |  |  |  |

DRILLING CONTR Empire Soils Investigations, Inc.  
Art Koske

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LOGGED BY A. L. GRASSO DATE 09/25/89 CHKD BY \_\_\_\_\_

# MONITORING WELL INSTALLATION LOG

NYSDOCS O&MS Document No. 201469232-00048

|                         |   |                              |   |
|-------------------------|---|------------------------------|---|
| JOB NO. <u>893-3805</u> | PROJECT <u>CWM/REI/MODEL CITY</u>         | WELL NO. <u>GZR-15</u>       | SHEET <u>1</u> OF <u>1</u>                                    |
| GA INSP. <u>ALG</u>     | DRILLING METHOD <u>HSA 4 1/4" ID</u>      | GROUND ELEV. <u>~316 FT.</u> | WATER DEPTH <u>7.94' BMP</u>                                  |
| WEATHER <u>CLOUDY</u>   | DRILLING COMPANY <u>EMPIRE SOILS INV.</u> | COLLAR ELEV. <u>~313 FT.</u> | DATE/TIME <u>10.7.89 1100Z</u>                                |
| TEMP <u>55°F</u>        | DRILL RIG <u>TRACK CME 55</u>             | DRILLER <u>ART KOSKE</u>     | STARTED <u>1310 / 19.26.89</u> COMPLETED <u>1650 19.26.89</u> |

| MATERIALS INVENTORY                            |  |  |  |
|--|--|--|--|
| WELL CASING <u>2.0</u> in dia. <u>10.0</u> ft. | WELL SCREEN <u>2.0</u> in dia. <u>12.0</u> ft. | BENTONITE SEAL <u>1.0 BUCKET BENTONITE PELLETS</u>     | INSTALLATION METHOD <u>GRAVITY POUR THROUGH AUGERS</u> |
| CASING TYPE <u>STAINLESS STEEL</u>             | SCREEN TYPE <u>STAINLESS STEEL</u>             | FILTER PACK QTY <u>4.5 100LB. BAG #10 SAND</u>         | FILTER PACK TYPE <u>#10 SAND</u>                       |
| JOINT TYPE <u>FLUSH THREADED W/ "O" RING</u>   | SLOT SIZE <u>0.006"</u>                        | INSTALLATION METHOD <u>GRAVITY POUR THROUGH AUGERS</u> |  |
| GROUT QUANTITY <u>NONE</u>                     | CENTRALIZERS <u>NONE</u>                       |  |  |
| GROUT TYPE <u>NONE</u>                         | DRILLING MUD TYPE <u>NONE</u>                  |  |  |
| <u>N~10816 E~11098</u>                         |  |  |  |

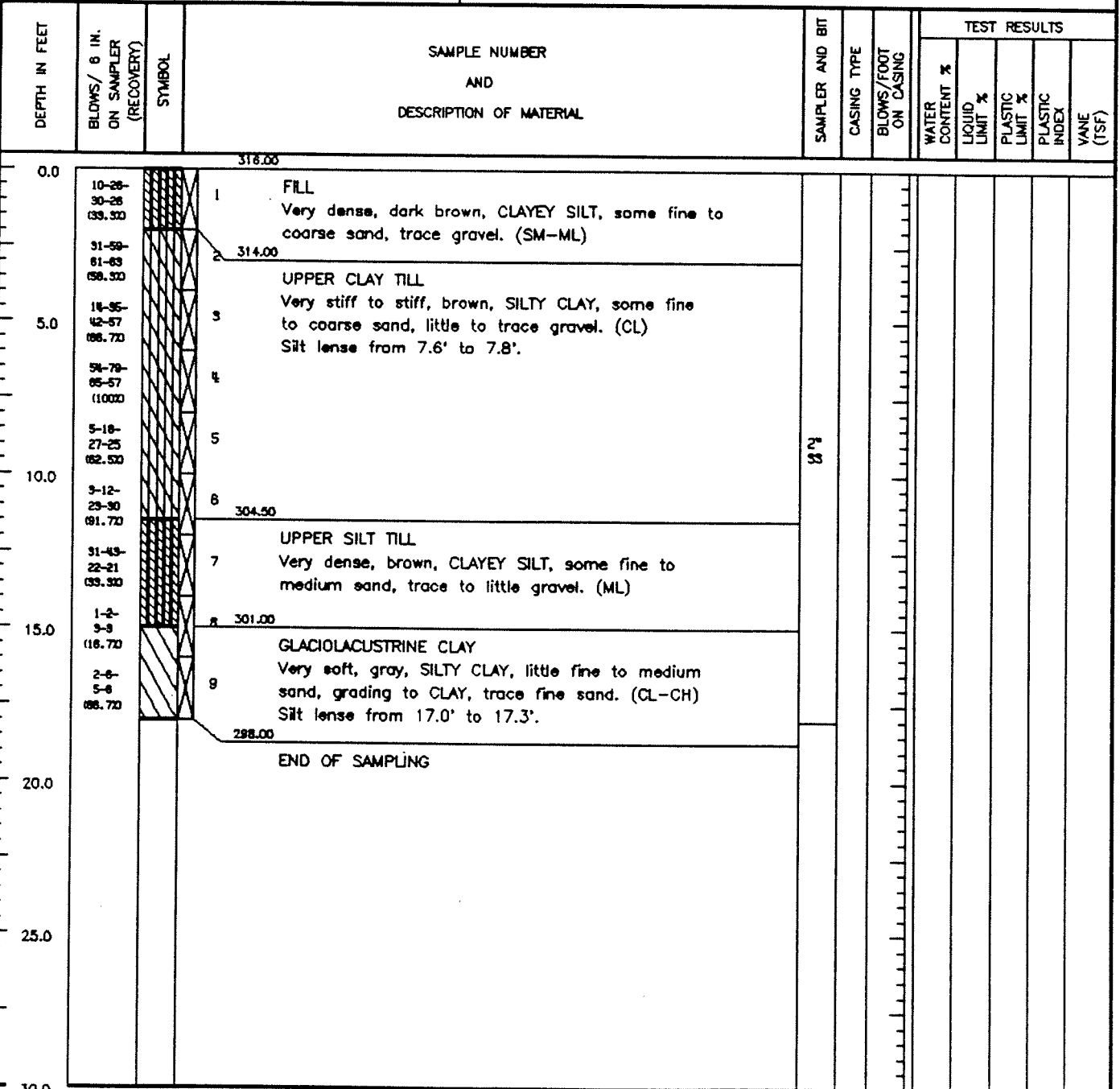
| ELEV./DEPTH | SOIL/ROCK DESCRIPTION  | WELL SKETCH | INSTALLATION NOTES   |  |
|-------------|------------------------|-------------|--|--|
| 316.00      | GROUND SURFACE         |             | <p>AUGERED AND SPLIT-SPOON SAMPLED TO 20.0' BELOW GROUND SURFACE (BGS)</p> <p>INSTALLED WELL (ONE 10.0' SCREEN, ONE 2.0' SCREEN, ONE 10.0' RISER) THROUGH AUGERS. THE WELL SETTLED TO 19.7' BGS. PLACED #10 SAND TO 6.0' BGS.</p> <p>PLACED BENTONITE PELLETS TO 3.0' BGS. PLACED CEMENT TO GROUND SURFACE. PUSHED 8" DIA. LOCKING PROTECTIVE COVER OVER WELL. PLACED #40 SAND IN ANNULUS BETWEEN WELL AND PROTECTIVE COVER TO WITHIN 6.0" OF TOP OF WELL.</p> <p>NOTE: LENGTH OF 10.0' AND 2.0' SCREEN TOGETHER WITH ENDCAP IS ACTUALLY 12.7'</p> |  |
| 0.0         | FILL                   |             |  |  |
| 31.00       | STIFF, BRN. SILTY CLAY |             |  |  |
| 2.0         | UPPER CLAY TILL        |             |  |  |
| 16.0        | UPPER SILT TILL        |             |  |  |
| 18.0        | GLACIOLACUSTRINE CLAY  |             |  |  |
| 20.0        | END OF SAMPLING        |             |  |  |

Golden Associates Inc.

# SOIL BOREHOLE LOG

|   |  |                           |                      |                     |
|---|--|---------------------------|----------------------|---------------------|
| SITE NAME AND LOCATION<br>CWM Chemical Services, Model City, NY | DRILLING METHOD: Hollow Stem Auger - 4 1/4" ID |                           | BORING NO.<br>GZR-2S |                     |
|   | SAMPLING METHOD: 24" Split Spoon               |                           | SHEET<br>1 OF 1      |                     |
|   | WATER LEVEL                                    |                           | DRILLING             |                     |
|   | TIME   |                           | START TIME<br>0835   | FINISH TIME<br>1050 |
| DATE  |  | DATE                      |                      |                     |
| DATUM MSL   |  | ELEVATION ~316 ft         |                      | CASING DEPTH        |
| DRILL RIG Track CME 55  |  | SURFACE CONDITIONS: GRASS |                      |                     |
| ANGLE Vertical  |  | BEARING                   |                      |                     |
| SAMPLE HAMMER TORQUE  |  |                           |                      |                     |

|               |                                    |        |   |                 |             |                      |                 |                |                 |               |            |  |  |  |  |
|---------------|------------------------------------|--------|---|-----------------|-------------|----------------------|-----------------|----------------|-----------------|---------------|------------|--|--|--|--|
| DEPTH IN FEET | BLOWS/ 6 IN. ON SAMPLER (RECOVERY) | SYMBOL | SAMPLE NUMBER AND DESCRIPTION OF MATERIAL | SAMPLER AND BIT | CASING TYPE | BLOWS/FOOT ON CASING | TEST RESULTS    |                |                 |               |            |  |  |  |  |
|               |                                    |        |   |                 |             |                      | WATER CONTENT % | LIQUID LIMIT % | PLASTIC LIMIT % | PLASTIC INDEX | VANE (TSF) |  |  |  |  |



DRILLING CONTR Empire Soils Investigations, Inc.  
Art Kaske

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LOGGED BY C. BROOKS  
DATE 09/26/89  
CHKD BY

# MONITORING WELL INSTALLATION LOG

NYSDPC OHMS Document No. 201469232-00043

|                        |  |                                |  |
|------------------------|--|--------------------------------|--|
| JOB NO <u>893-3805</u> | PROJECT <u>CWM/RFI/MODEL CITY</u>                  | WELL NO <u>GZR-2S</u>          | SHEET <u>1</u> OF <u>1</u>   |
| GA INSP <u>ALG</u>     | DRILLING METHOD <u>HOLLOW STEM AUGER 4 1/4" ID</u> | GROUND ELEV <u>~ 316 FT</u>    | WATER DEPTH <u>8.46' BMP</u>   |
| WEATHER <u>SUNNY</u>   | DRILLING COMPANY <u>EMPIRE SOILS INV.</u>          | COLLAR ELEV <u>~ 319.60 FT</u> | DATE/TIME <u>10-7-89 / 10:45</u>   |
| TEMP <u>62°F</u>       | DRILL RIG <u>TRACK CME 55</u>                      | DRILLER <u>ART KOSKE</u>       | STARTED <u>1:30</u> / <u>19-28-89</u> COMPLETED <u>15:48</u> / <u>19-28-89</u> |

## MATERIALS INVENTORY

|  |  |   |
|--|--|---|
| WELL CASING <u>2.0</u> in dia <u>10.0</u> in dia | WELL SCREEN <u>2.0</u> in dia <u>10.0</u> in dia | BENTONITE SEAL <u>1.75</u> BUCKETS OF BENTONITE PELLETS |
| CASING TYPE <u>STAINLESS STEEL</u>               | SCREEN TYPE <u>STAINLESS STEEL</u>               | INSTALLATION METHOD <u>THROUGH AUGER</u>                |
| JOINT TYPE <u>FLUSH THREADED W/O RING</u>        | SLOT SIZE <u>0.006"</u>                          | FILTER PACK QTY <u>3.25</u> 100 LB BAG #1Q SAND         |
| GROUT QUANTITY _____                             | CENTRALIZERS <u>NONE</u>                         | FILTER PACK TYPE <u>#1Q SAND</u>                        |
| GROUT TYPE <u>1</u>                              | DRILLING MUD TYPE <u>NONE</u>                    | INSTALLATION METHOD <u>THROUGH AUGER</u>                |
| N ~ 11022 E ~ 11266                              |  |   |

| ELEV./DEPTH    | SOIL/ROCK DESCRIPTION  | WELL SKETCH | INSTALLATION NOTES  |
|----------------|--|-------------|---|
|                |  |             |   |
| 316.00         | GROUND SURFACE   |             | AUGERED AND SPLIT-SPOON SAMPLED TO 18' BELOW GROUND SURFACE (BGS)   |
| 0.0            |  |             | PLACED #4Q SAND TO 17.4' BGS. INSTALLED WELL (ONE 10' SECTION) THROUGH AUGERS.  |
| 314.00<br>2.0  | FILL very dense, dark brn. CLAYEY SILT, some fine to coarse sand, trace gravel (sm. ml)  |             | THE WELL SETTLED TO 17.8' BGS. PLACED #1Q SAND TO 6.5' BGS. PLACED BENTONITE PELLETS TO 3.5' BGS. PLACED CEMENT TO GROUND SURFACE.  |
| 304.50<br>11.5 | UPPER CLAY TILL very stiff to stiff, orn. SILTY CLAY, some fine to coarse sand, little to trace gravel (CL)                                      |             | PUSHED 8" DIA. LOCKING PROTECTIVE COVER OVER WELL. PLACED #4Q SAND IN ANNULUS BETWEEN WELL AND PROTECTIVE CASING TO WITHIN 6" OF THE TOP OF THE WELL. WELL STICK-UP IS 2.6' |
| 301.00<br>15.0 | UPPER SILT TILL very dense, br. CLAYEY SILT, some fine to medium sand, trace to little gravel. (ML)  |             |   |
| 298.00<br>18.0 | GLACIOLACUSTRINE CLAY very soft, gray SILTY CLAY, little fine to med sand, grading to CLAY, trace fine sand. (CL-GH) Silt lense from 17.0'-17.3' |             | NOTE: ACTUAL LENGTH OF WELL SCREEN AND CAP IS 10.4'   |
|                | END OF SAMPLING  |             |   |
|                |  |             | <b>WELL DEVELOPMENT NOTES</b>   |
|                |  |             | SEE FORM "WELL DEVELOPMENT FIELD RECORD" FOR WELL DEVELOPMENT DETAILS   |

Golder Associates Inc.

# SOIL BOREHOLE LOG

|   |  |  |  |                      |  |
|---|--|--|--|----------------------|--|
| SITE NAME AND LOCATION<br>CWM Chemical Services, Model City, NY |  | DRILLING METHOD: Hollow Stem Auger - 4 1/4" ID |  | BORING NO.<br>GZR-3S |  |
|   |  | SAMPLING METHOD: 24" Split Spoon               |  | SHEET<br>1 OF 1      |  |
| DATUM MSL   |  | ELEVATION ~316.0 FT                            |  | CASSING DEPTH        |  |
| DRILL RIG Track CME 55  |  | SURFACE CONDITIONS: GRASS                      |  |                      |  |
| ANGLE Vertical  |  | BEARING  |  |                      |  |
| SAMPLE HAMMER TORQUE  |  |  |  |                      |  |
| WATER LEVEL   |  | START TIME                                     |  | FINISH TIME          |  |
| TIME  |  | 1017   |  | 1210                 |  |
| DATE  |  | 09/27/89                                       |  | 09/27/89             |  |

|               |                                   |        |   |                 |             |                      |   |
|---------------|-----------------------------------|--------|---|-----------------|-------------|----------------------|---|
| DEPTH IN FEET | BLOWS/6 IN. ON SAMPLER (RECOVERY) | SYMBOL | SAMPLE NUMBER AND DESCRIPTION OF MATERIAL | SAMPLER AND BIT | CASING TYPE | BLOWS/FOOT ON CASING | TEST RESULTS  |
|               |                                   |        |   |                 |             |                      | WATER CONTENT %<br>LIQUID LIMIT %<br>PLASTIC LIMIT %<br>PLASTIC INDEX<br>VANE (TSF) |

| DEPTH IN FEET | BLOWS/6 IN. ON SAMPLER (RECOVERY) | SYMBOL | SAMPLE NUMBER AND DESCRIPTION OF MATERIAL   | SAMPLER AND BIT | CASING TYPE | BLOWS/FOOT ON CASING | TEST RESULTS |
|---------------|-----------------------------------|--------|---|-----------------|-------------|----------------------|--------------|
| 0.0           |                                   |        | 316.00  |                 |             |                      |              |
| 0.0 - 3.0     | 3-10-20-37 (58.3020)              | 1      | UPPER CLAY TILL<br>Very stiff to very dense, brown, CLAYEY SILT to SILTY CLAY, grading to SILTY CLAY, some fine to coarse sand, trace gravel. (ML-CL)   |                 |             |                      |              |
| 3.0 - 6.0     | 30-80-100/4 (37.5020)             | 2      |   |                 |             |                      |              |
| 6.0 - 9.0     | 37-67-68-59 (7520)                | 3      |   |                 |             |                      |              |
| 9.0 - 10.0    | 30-100/2 (7520)                   | 4      | 308.00  |                 |             |                      |              |
| 10.0 - 11.0   | 13-24-23-22 (87.5020)             | 5      | UPPER SILT TILL<br>Very dense to dense, brown, CLAYEY SILT, some to little fine to coarse sand, little gravel. (ML)   |                 |             |                      |              |
| 11.0 - 12.0   | 4-9-27-36 (87.5020)               | 6      |   |                 |             |                      |              |
| 12.0 - 13.0   | 30-81-84-27 (82.5020)             | 7      |   |                 |             |                      |              |
| 13.0 - 14.0   | 22-22-17-18 (33.3320)             | 8      | 300.00  |                 |             |                      |              |
| 14.0 - 15.0   | 14-20-22-25 (10020)               | 9      | GLACIOLACUSTRINE CLAY<br>Soft, brown-gray, SILTY CLAY, little to some fine to coarse sand, little to trace gravel, grading to very soft, gray, CLAY, trace fine to coarse sand, occasional thin silt lense. (CL-CH) |                 |             |                      |              |
| 15.0 - 16.0   | 7-10-11-13 (12.5020)              | 10     |   |                 |             |                      |              |
| 16.0 - 17.0   | 104-7-14-18 (58.3320)             | 11     |   |                 |             |                      |              |
| 17.0 - 18.0   | 6-9-9-10 (58.3320)                | 12     | 292.00  |                 |             |                      |              |
| 18.0 - 25.0   |                                   |        | END OF SAMPLING   |                 |             |                      |              |

DRILLING CONTR Empire Soils Investigations, Inc.  
 Art Koske

**DRAFT**

LOGGED BY C. BROOKS  
 DATE 09/27/89  
 CHKD BY \_\_\_\_\_



# MONITORING WELL INSTALLATION LOG

|                         |   |                                |   |
|-------------------------|---|--------------------------------|---|
| JOB NO. <u>893-3805</u> | PROJECT <u>CMW / REI / MODEL CITY</u>     | WELL NO. <u>GZR-35</u>         | SHEET <u>1</u> OF <u>1</u>                                    |
| GA INSP. <u>CB</u>      | DRILLING METHOD <u>HSA 4.25" ID</u>       | GROUND ELEV. <u>~ 316 FT</u>   | WATER DEPTH <u>11.8' BMP</u>                                  |
| WEATHER <u>SUNNY</u>    | DRILLING COMPANY <u>EMPIRE SOILS INV.</u> | COLLAR ELEV. <u>~ 312.6 FT</u> | DATE/TIME <u>10-11-89 / 0830</u>                              |
| TEMP. <u>60°F</u>       | DRILL RIG <u>TRACK CME 55</u>             | DRILLER <u>ART KONISKE</u>     | STARTED <u>0855 / 9-29-89</u> COMPLETED <u>1035 / 9-29-89</u> |

| MATERIALS INVENTORY                           |   |  |  |
|---|---|--|--|
| WELL CASING <u>2.0</u> in dia. <u>10.0</u> ft | WELL SCREEN <u>2.0</u> in dia. <u>15.0</u> ft | BENTONITE SEAL <u>1.75 BUCKETS BENTONITE PELLETS</u> | INSTALLATION METHOD <u>GRAVITY POUR THROUGH AUGERS</u> |
| CASING TYPE <u>STAINLESS STEEL</u>            | SCREEN TYPE <u>STAINLESS STEEL</u>            | FILTER PACK QTY <u>5-100LB. BAGS #10 SAND</u>        | FILTER PACK TYPE <u>#10 SAND</u>                       |
| JOINT TYPE <u>ELUSHE THREADED W/O RING</u>    | SLOT SIZE <u>0.006"</u>                       | INSTALLATION METHOD <u>GRAVITY POUR</u>              | THROUGH AUGERS   |
| GROUT QUANTITY <u>NONE</u>                    | CENTRALIZERS <u>NONE</u>                      |  |  |
| GROUT TYPE <u>NONE</u>                        | DRILLING MUD TYPE <u>NONE</u>                 |  |  |
| <u>NM1030 E ~ 11470</u>                       |   |  |  |

| ELEV./DEPTH   | SOIL/ROCK DESCRIPTION  | WELL SKETCH | INSTALLATION NOTES  |
|---------------|--|-------------|---|
| 316.0         | GROUND SURFACE   |             | <p>AUGERED AND SPLIT-SPOON SAMPLED TO 24.0' BELOW GROUND SURFACE (BGS)</p> <p>RORING COLLAPSED TO 23.4' BGS. PLACED #4Q SAND TO 22.5' BGS. INSTALLED WELL (ONE 10.0' SCREEN, ONE 5.0' SCREEN, ONE 10.0' RISER PIPE) THROUGH AUGERS. THE WELL SETTLED TO 23.1' BGS. PLACED #1Q SAND TO 6.4' BGS. PLACED BENTONITE PELLETS TO 3.3' BGS. HYDRATED PELLETS WITH 3 GALLONS OF MUNICIPAL WATER. PLACED CEMENT TO GROUND SURFACE. PUSHED 8" DIA. LOCKING PROTECTIVE CASING OVER WELL. PLACED #4Q SAND IN ANNULUS BETWEEN WELL AND PROTECTIVE CASING TO WITHIN 6" OF TOP OF WELL.</p> <p>NOTE: LENGTH OF 10' AND 5' SCREEN TOGETHER WITH END CAP IS ACTUALLY 15.7'.</p> |
| 0.0           | UPPER CLAY TILL very stiff to very dense, brn, CLAYEY SILT to SILTY CLAY, grading to SILTY CLAY, some fine to coarse sand, trace gravel. (ML-CL)   |             |   |
| 308.0<br>8.0  | UPPER SILT TILL very dense to dense, brn, CLAYEY SILT, some to little fine to coarse sand, little gravel (ML)  |             |   |
| 300.0<br>16.0 | GLACIOLACUSTRINE CLAY soft, brn-gray, SILTY CLAY little to some fine to coarse sand, little to trace gravel, grading to very soft, gray, CLAY, trace fine to coarse sand, occasional thin silt lenses. (CL-CH) |             |   |
| 292.0<br>24.0 | END OF SAMPLING  |             |   |
|               |  |             | <p><b>WELL DEVELOPMENT NOTES</b></p> <p>SEE FORM "WELL DEVELOPMENT LOG" FOR WELL DEVELOPMENT DETAILS.</p>   |

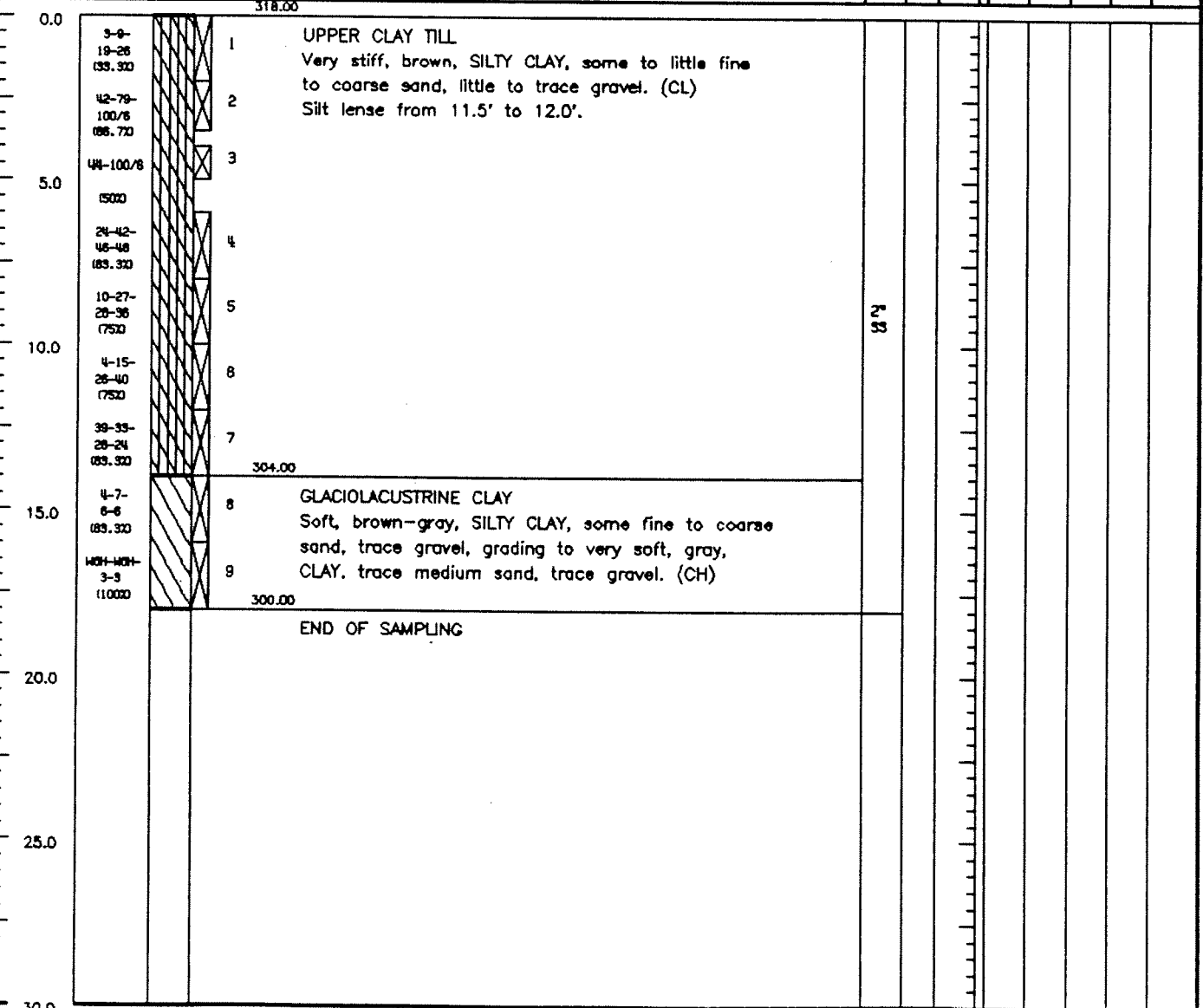
Golder Associates Inc.

# SOIL BOREHOLE LOG

|   |  |                      |
|---|--|----------------------|
| SITE NAME AND LOCATION<br>CWM Chemical Services, Model City, NY | DRILLING METHOD: Hollow Stem Auger - 4 1/4" ID | BORING NO.<br>GZR-4S |
|   | SAMPLING METHOD: 24" Split Spoon               | SHEET<br>1 OF 1      |
|   | DRILLING                                       |                      |
|   | START TIME<br>1445                             | FINISH TIME<br>1335  |
| DATE  | DATE   | DATE                 |
| DATUM MSL   | ELEVATION ~318 FT                              | CASING DEPTH         |
| 09/29/89  | 10/03/89                                       |                      |

|                        |                           |
|------------------------|---------------------------|
| DRILL RIG Track CME 55 | SURFACE CONDITIONS: GRASS |
| ANGLE Vertical         | BEARING                   |
| SAMPLE HAMMER TORQUE   |                           |

| DEPTH IN FEET | BLOWS/ 6 IN. ON SAMPLER (RECOVERY) | SYMBOL | SAMPLE NUMBER AND DESCRIPTION OF MATERIAL | SAMPLER AND BIT | CASING TYPE | BLOWS/FOOT ON CASING | TEST RESULTS    |                |                 |               |            |
|---------------|------------------------------------|--------|---|-----------------|-------------|----------------------|-----------------|----------------|-----------------|---------------|------------|
|               |                                    |        |   |                 |             |                      | WATER CONTENT % | LIQUID LIMIT % | PLASTIC LIMIT % | PLASTIC INDEX | VANE (TSF) |



DRILLING CONTR Empire Soils Investigations, Inc.  
 ACT Koske

DRAFT

LOGGED BY C. BROOKS  
 DATE 09/29/89  
 CHKD BY

# MONITORING WELL INSTALLATION LOG

|                         |   |                                |   |
|-------------------------|---|--------------------------------|---|
| JOB NO. <u>893-3805</u> | PROJECT <u>CMW/REL/MODEL CITY</u>         | WELL NO. <u>GZR-49</u>         | SHEET <u>1</u> OF <u>1</u>                                    |
| GA INSP. <u>CB</u>      | DRILLING METHOD <u>HSA 4 1/4" ID</u>      | GROUND ELEV. <u>~ 318.0 FT</u> | WATER DEPTH <u>15.85' BMP</u>                                 |
| WEATHER <u>CLOUDY</u>   | DRILLING COMPANY <u>EMPIRE SOILS INC.</u> | COLLAR ELEV. <u>~ 320.8 FT</u> | DATE/TIME <u>10-11-89/1020</u>                                |
| TEMP. <u>55</u>         | DRILL RIG <u>TRACK CME 55</u>             | DRILLER <u>ART KONSKE</u>      | STARTED <u>1345 / 10-3-89</u> COMPLETED <u>1454 / 10-3-89</u> |

## MATERIALS INVENTORY

|   |   |  |
|---|---|--|
| WELL CASING <u>2.0</u> in dia. <u>10.0</u> l.f. | WELL SCREEN <u>2.0</u> in dia. <u>10.0</u> l.f. | BENTONITE SEAL <u>1.5 BUCKETS BENTONITE PELLETS</u>    |
| CASING TYPE <u>STAINLESS STEEL</u>              | SCREEN TYPE <u>STAINLESS STEEL</u>              | INSTALLATION METHOD <u>GRAVITY POUR THROUGH AUGERS</u> |
| JOINT TYPE <u>FLUSHED THREADED W/O RING</u>     | SLOT SIZE <u>.006"</u>                          | FILTER PACK QTY <u>3.5 100LB. BAGS #1Q SAND</u>        |
| GROUT QUANTITY <u>NONE</u>                      | CENTRALIZERS <u>NONE</u>                        | FILTER PACK TYPE <u>#1Q SAND</u>                       |
| GROUT TYPE <u>NONE</u>                          | DRILLING MUD TYPE <u>NONE</u>                   | INSTALLATION METHOD <u>GRAVITY POUR THROUGH AUGERS</u> |
| <u>N ~ 11043 E ~ 11741</u>                      |   |  |

| ELEV./DEPTH | SOIL/ROCK DESCRIPTION   | WELL SKETCH | INSTALLATION NOTES   |   |
|-------------|---|-------------|--|---|
| 318.00      | GROUND SURFACE  |             | <b>AUGERED AND SPLIT-SPOON SAMPLED TO 18.3' BELOW GROUND SURFACE (BGS)</b><br>PLACED #4Q SAND TO 17.0' BGS. INSTALLED WELL (ONE 10.0' SCREEN, ONE 10.0' RISER SECTION) THROUGH AUGERS. THE WELL SETTLED TO 17.6' BGS. PLACED #1Q SAND TO 6.4' BGS. PLACED BENTONITE PELLETS TO 3.3' BGS. HYDRATED PELLETS WITH 2 GALLONS OF MUNICIPAL WATER. PLACED CEMENT TO GROUND SURFACE, PUSHED 8\"/> |   |
| 0.0         | UPPER CLAY TILL<br>Very stiff, brn., SILTY CLAY, some to little fine to coarse sand, little to trace gravel. (CCL) Silt lenses from 11.5'-12.0' |             | CEMENT 3.3'<br>#1Q SAND<br>6.4' TOP OF SAND<br>7.2' TOP OF SCREEN<br>17.0'<br>#4Q SAND   | 8\"/>   |
| 309.00      | 14.0  |             | GLACIOLACUSTRINE CLAY<br>Soft, brown-gray, SILTY CLAY, some fine to coarse sand, trace gravel, grading to very, gray, CLAY, trace med sand, trace gravel. (CH)   | 17.6' BOTTOM OF WELL<br>18.3' WELL                          |
| 300.00      | 18.0  |             | END OF SAMPLING  | NOTE: LENGTH OF 10.0' SCREEN AND END CAP IS ACTUALLY 10.4'. |
|             |   |             | <b>WELL DEVELOPMENT NOTES</b><br>SEE FORM "WELL DEVELOPMENT FIELD RECORD" FOR WELL DEVELOPMENT DETAILS   |   |

# Boring Log

JOB NO. 853-3051 GA. INSP. NYSD&G HMS Document No. 201169232-00943 PROJECT NEW YORK STATE TOLL CITY BORING NO. P12-25  
 DEPTH HOLE 20.0 FT DEPTH WL. - DRILLING METHOD HOLLOW STEM AUGERS-4 1/4" ID SHEET 1 OF 1  
 TEMP 80° F TIME WL. - DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. -313.5 FT  
 WEATHER SUNNY DRILL RIG CME 55 DRILLER M. GAUDY DATUM MSL  
 COORDINATES - WT. SAMPLER HAMMER 140 LBS DROP 30 IN. STARTED 4 05 / 8 13 86  
 LOCATION ~ 15 FT. WEST OF P12-25 WT. CASING HAMMER 300 LBS DROP 30 IN. COMPLETED 9 25 / 8 14 86

| ELEV. DEPTH (FT) | DESCRIPTION  | UNIFIED CLASS | BLOWS/FOOT | SAMPLES |            |                                 | REMARKS  |   |
|------------------|--|---------------|------------|---------|------------|---------------------------------|--|---|
|                  |  |               |            | NUMBER  | TYPE       | HAMMER BLOWS PER 8 IN. REC./ATT |  |   |
| 313.5            | GROUND SURFACE   |               |            |         |            |                                 | GROUND SURFACE                                       |   |
| 0.0              | COARSE GRAVEL (ROADFILL)   | GW            | -          | -       | AS         | -                               | ALGERED 0.0-2.0 FT., NO SAMPLE TAKEN DUE TO ROADFILL |   |
| 311.5            | VERY STIFF, BROWN MOTTLED, CLAYEY SILT, SOME F TO C SAND, TRACE F GRAVEL, GRAY WEATHERING ALONG VERTICAL FRACTURES AND JOINTS, CLASTS AS RED BROWN SHALE AND GRAY LIMESTONE. | CL            | 21         | 1       | DO         | 8-10-11-13                      | 15/24  | UPPER CLAY TILL   |
| 24               |  |               | 2          | DO      | 9-13-11-13 | 23/24                           |  |   |
| 308.5            |  |               | 2100       | 4       | DO         | 15-85-30-1                      | 15/13  | UPPER SILT TILL AUGERED 7.0 TO 8.0 FT., NO SAMPLE TAKEN. 8.0-8.5 FEET, LARGE PIECES OF SHALE, SATURATED, DILATANT. 8.5-8.8 FEET, SOFT GRAY BROWN SILTY CLAY, FOLLOWED BY DRY TAN SILT LENS. |
| 30               |  |               | 33         | 5       | DO         | 19-21-12-10                     | 10/24  |   |
| 297.5            | COMPACT TO VERY DENSE, BROWN TO GRAY BROWN, SILT TO CLAYEY SILT, AND TO SOME F TO C SAND, SOME C GRAVEL, CLASTS SUBROUNDED LIMESTONE FRAGMENTS.                              | ML            | 23         | 7       | DO         | 8-13-10-12                      | 9/24   | GLACIOLACUSTRINE CLAY 160-180 FT. OCCASIONAL TAN SILT LENS PRESENT. DRY CRUMBLY 18.0-20.0 FT. OCCASIONAL GRAY AND BROWN SAND LENSES PRESENT.  |
| 16.0             |  |               | 42         | 9       | DO         | 15-20-22-19                     | 4/24   |   |
| 293.5            |  |               | 19         | 10      | DO         | 4-8-11-13                       | 20/24  |   |
| 20.0             | SOFT TO FIRM, BROWN GRAY, SILTY CLAY, SOME F TO C SAND, SOME C GRAVEL, CLASTS PREDOMINANTLY GRAY SUBROUNDED DROPSTONES WITH OCCASIONAL RED BROWN SHALEY FRAGMENT.            | CL            | 24         | 11      | DO         | 5-12-12-15                      | 17/24  |   |
| 20.0             | END OF BORING  |               |            |         |            |                                 |  | END OF BORING   |
|                  |  |               |            |         |            |                                 |  | ORIGINAL P12-25 INSTALLED BUT LATER REMOVED AND BOREHOLE SEALED WITH BENTONITE GROUT. LOCATION FOR P12-25 MOVED ~ 15 FT. EAST.  |

# Boring Log

JOB NO. 853-3051 GA. INDIAN SDPMS Project No. 2014/09/23-500 MODEL CITY BORING NO. P12-25  
 DEPTH HOLE 19.0 FT. DEPTH WL. 4.80 FT. DRILLING METHOD HOLLOW STEM AUGERS-4 1/4" ID SHEET 1 OF 1  
 TEMP 65° F TIME WL. 9-23-86 DRILLING COMPANY EUROPE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 315.3 FT  
 WEATHER RAINY DRILL RIG CME 55 DRILLER M. GAUDY DATUM MSL  
 COORDINATES N10534.15 E9932.35 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 4:30 19-10-86  
 LOCATION - WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 9:00 19-11

| ELEV. DEPTH (FT.)              | DESCRIPTION   | UNIFIED CLASS. | BLOW/FOOT | SAMPLES |      |                                | REMARKS   |
|--------------------------------|---|----------------|-----------|---------|------|--------------------------------|---|
|                                |   |                |           | NUMBER  | TYPE | HAMMER BLOWS PER 6 IN. REC/ATT |   |
|                                | FOR COMPLETE SOILS DESCRIPTION AT THIS LOCATION ALSO SEE BORING LOG TB12-23 |                |           |         |      |                                | BORING LOCATED 15 FT. EAST OF TB12-25.<br><br>AUGERED TO 17.0 FT. NO SAMPLING                     |
| 298.3<br>17.0<br>296.3<br>19.0 | FIRM TO STIFF, BROWN AND GRAY MOTTLED, SILTY CLAY, SOME F TO C SAND         | CL             | 38        | 1       | DO   | 4-13-25-28                     | 13/24<br>GLACIOLACUSTRINE CLAY<br>GRAY GRAVEL FRAGMENTS IN<br>BOTTOM OF SPDN                      |
|                                | END OF BORING   |                |           |         |      |                                | END OF BORING<br><br>INSTALLED P12-25<br>SEE ACCOMPANYING<br>MONITORING WELL<br>INSTALLATION LOG. |

# MONITORING WELL INSTALLATION LOG

JOB NO. B53-3031 PROJECT CW/MYS/DEC 0/HMS/D/CUR/INT/NO. 201469232-00042 WELL NO. P12-25 SHEET 1 OF 2  
 SA WSP. PMS DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" I.D. GROUND ELEV. 319.3 FT. WATER DEPTH. 4.80 FT.  
 WEATHER RAIN DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS INC. COLLAR ELEV. 317.45 FT. DATE/TIME 9-23-86  
 TEMP. 65° F DRILL RIG CME 55 DRILLER A. GAUDY STARTED 9:00 9:11 86 COMPLETED 10:10 9:11 86  
 LOCATION/COORDINATES N 10534.15 E 9932.35 TIME / DATE TIME / DATE

## MATERIALS INVENTORY

|   |   |   |
|---|---|---|
| WELL CASING <u>2.0</u> W. dia. <u>10.0</u> I.D. | WELL SCREEN <u>2.0</u> W. dia. <u>10.4</u> I.D. | BENTONITE SEAL <u>PELLETS 4.0' DEEP</u>   |
| CASING TYPE <u>304 STAINLESS STEEL</u>          | SCREEN TYPE <u>304 STAINLESS STEEL</u>          | INSTALLATION METHOD <u>THROUGH AUGERS</u> |
| JOINT TYPE <u>INTEGRATED TAPE, U-RINGS</u>      | SLOT SIZE <u>0.006 INCH</u>                     | FILTER PACK QTY <u>13.0 L.F. 370 LBS</u>  |
| GROUT QUANTITY <u>NA</u>                        | CENTRALIZERS <u>NONE</u>                        | FILTER PACK TYPE <u>#1-Q SAND</u>         |
| GROUT TYPE <u>NA</u>                            | DRILLING MUD TYPE <u>NONE</u>                   | INSTALLATION METHOD <u>THROUGH AUGERS</u> |

| ELEV./DEPTH (FT.) | SOIL/ROCK DESCRIPTION  | WELL SKETCH | INSTALLATION NOTES   |   |
|-------------------|--|-------------|--|---|
|                   | NOTE: FOR COMPLETE SOIL DESCRIPTIONS, SEE BORING LOGS PYS-28 AND T812-28   |             | AUGERED TO 19.0 FT.; ADDED #4-Q SAND TO 18.0 FT. (SAMPLE TAKEN); INSTALLED WELL PIPE (1-10' SCREEN, 1-10' RISER) 2.4 FT. STICKUP, ADDED #1-Q SAND TO 6.0 FT. BELOW GROUND SURFACE; ADDED BENTONITE PELLETS TO 2.0 FT.; REMOVED AUGERS; MIXED CEMENT GROUT; FILLED TO GROUND SURFACE; PUT ON 8" Ø PROTECTIVE CASING; FILLED INTERIOR OF PROTECTIVE CASING WITH #4-Q SAND; WEEP HOLES WERE PUT IN PROTECTIVE CASING FOR DRAINAGE; PROTECTIVE POSTS WERE PLACED AROUND WELL; A CONCRETE PAD WAS LATER RAISED AROUND WELL BY THE SITE AND NEW WEEP HOLES WERE PUT IN CASING; A |   |
| 315.3             | GROUND SURFACE   |             |  | (CONTINUED ON NEXT PAGE)  |
| 0.0               | COARSE GRAVEL (ROADFILL)   |             |  | <b>WELL DEVELOPMENT NOTES</b>   |
| 313.3             |  |             |  | DATE DEVELOPED: 9-16-86 TO 9-23-86  |
| 2.0               | UPPER CLAY TILL<br>VERY STIFF BROWN MOTTLED CLAY. SOME F-C SAND TRACE & GRAVEL. SOME WEEDING ALONG VERTICAL FRACTURES AND JOINTS. CLASTS AS RED BROWN SHALE AND BROWN LIMESTONE  |             |  | DEVELOPMENT METHOD: AIR LIFT  |
| 5.0               | UPPER SILT TILL<br>CONSIST TO VERY DENSE BROWN TO DARK BROWN SILT TO SILTY SILT AND TO SOME F-OC SAND SOME C GRAVEL CLASTS AS BROWN SUBROUND DEBRIS. 8.0-8.5 FT. LARGE PIECES OF SHALE, SATURATED PLUANT 8.0-8.5 FT. SOFT DARK BROWN SILTY CLAY, FOLLOWED BY DEN TAN SILT LENSES |             |  | VOLUME PURGED: 30.7 GAL.  |
| 16.0              | GLACIOFLUVIAL CLAY<br>SOFT TO STIFF BROWN AND BROWN MOTTLED SILTY CLAY. SOME F-C SAND LITTLE SILT. BROWN GRAVEL FRAGMENTS IN BOTTOM OF SCREEN  |             |  | FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE.  |
| 299.3             |  |             |  |   |
| 296.3             |  |             |  |   |
| 19.0              | END OF BORING  |             |  | NOTE: A 8.1 FT. END CAP WAS PLACED AT THE BOTTOM OF THE SCREEN. 2, 8 AND 10 FT. SCREEN SECTIONS ARE ACTUALLY 2.35, 9.325, 10.325 FT. IN LENGTH, RESPECTIVELY. |

**Golder  
Associates**

NYS DEC OHMS Document No. 201469232,00043.

|                                     |                     |                            |
|-------------------------------------|---------------------|----------------------------|
| SUBJECT <b>CWM/WELLS/MODEL CITY</b> |                     | <b>P12-25</b>              |
| Job No. <b>853-3051</b>             | Made by <b>PMS</b>  | Date <b>9-11-86</b>        |
| Ref.                                | Checked <b>DJM</b>  | Sheet <b>2</b> of <b>2</b> |
|                                     | Reviewed <b>JFC</b> |                            |

DEDICATED STAINLESS STEEL BAILER WAS INSTALLED FOR DEVELOPMENT AND FOR SUBSEQUENT SAMPLING.







Golder Associates, Inc.

# SOIL BOREHOLE LOG

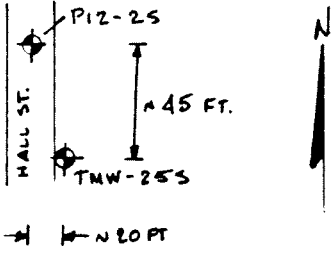
SITE NAME AND LOCATION  
CWM CHEMICAL SERVICES, MODEL CITY, N.Y.

DRILLING METHOD: 4 1/4 INCH HOLLOW STEM AUGER

BORING NO.

TMW-255

FUTURE  
SLF  
12



SAMPLING METHOD: 24 INCH SPLIT SPOON SAMPLER

SHEET

2 OF 2

DRILLING

WATER LEVEL

START

FINISH

TIME

TIME

10:30

14:50

DATE

DATE

10/04/88

10/04/88

DATUM MSL

ELEVATION 313.9 FT

CASING DEPTH

DRILL RIG TRACK CME 45

SURFACE CONDITIONS:

ANGLE VERTICAL

BEARING

SAMPLE HAMMER TORQUE

| DEPTH IN FEET | BLOWS/ 6 IN. ON SAMPLER (RECOVERY) | SYMBOL | SAMPLE NUMBER AND DESCRIPTION OF MATERIAL                    | SAMPLER AND BIT | CASING TYPE | BLOWS/FOOT ON CASING | TEST RESULTS    |                |                 |               |             |
|---------------|------------------------------------|--------|--|-----------------|-------------|----------------------|-----------------|----------------|-----------------|---------------|-------------|
|               |                                    |        |  |                 |             |                      | WATER CONTENT % | LIQUID LIMIT % | PLASTIC LIMIT % | PLASTIC INDEX | OTHER TESTS |
| 30.0          | 2-3-6-7 (100%)                     |        | 16<br>GLACIOLACUSTRINE CLAY<br>See discription sheet 1 of 2. | 24" SS          |             |                      |                 |                |                 |               |             |
|               |                                    |        | END OF SAMPLING  |                 |             |                      |                 |                |                 |               |             |

EMPIRE SOILS INVESTIGATIONS, INC. DRILLING CONTR DAN BIETZ

SL1070 C

A L GRASSO

CHKD BY

DATE 10/04/88

LOGGED BY A L GRASSO

DATE 10/04/88

SL1070 C

# MONITORING WELL INSTALLATION LOG

JOB NO. 853-30516 PROJECT CNM/WELL INV./MODEL CITY WELL NO. THW-255 SHEET 1 OF 1  
 GA INSP. ALG DRILLING METHOD HOLLOW STEM AUGERS-4 1/2" ID GROUND ELEV. 313.9 FT WATER DEPTH -  
 WEATHER OVERCAST DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS COLLAR ELEV. 316.43 FT DATE/TIME -  
 TEMP 72°C DRILL RIG TRACK DRILLER DAN BELTZ STARTED 5:05, 10/4/88 COMPLETED 12:35, 10/4/88

## MATERIALS INVENTORY

WELL CASING 2.0 in dia. 10.4 ft WELL SCREEN 2.0 in dia. 23.37 ft BENTONITE SEAL BENTONITE PELLETS  
 CASING TYPE PVC SCREEN TYPE PVC INSTALLATION METHOD POUR FROM SURFACE  
 JOINT TYPE FLUSH THREADED w/ 2" RISER SLOT SIZE 2.01" FILTER PACK QTY 65, 100 LBS BAGS  
 GROUT QUANTITY 2 GALS. CENTRALIZERS NONE FILTER PACK TYPE # 1 Q SAND  
 GROUT TYPE CEMENT-BENTONITE DRILLING MUD TYPE NONE INSTALLATION METHOD POUR THROUGH AUGER

| ELEV./DEPTH | SOIL/ROCK DESCRIPTION   | WELL SKETCH | INSTALLATION NOTES  |  |
|-------------|---|-------------|---|--|
| 313.9       | GROUND SURFACE  |             | <p>ALGERED AND SPIT SOILS SAMPLED TO 32.0 BELOW GROUND SURFACE (BGS). PLACED # 4 Q SAND TO 31.5' BGS. INSTALLED WELL (TWO 10' SCREENS, ONE 2' SCREEN, AND ONE 10' RISER) THROUGH THE AUGERS TO 31.5' BGS. PLACED # 1 Q SAND TO 6.0 BGS WHILE PULLING THE AUGERS OUT IN 1' TO 3' INCREMENTS DURING INSTALLATION. PLACED BENTONITE PELLETS TO 3.0' BGS. HYDRATED PELLETS WITH DEIONIZED WATER (5 GAL). PLACED CEMENT GROUT TO GROUND SURFACE. INSTALLED 8" Ø ALUMINUM PROTECTIVE CASING OVER WELL. PLACED # 4 Q SAND IN ANNULUS BETWEEN WELL AND PROTECTIVE CASING.</p> |  |
| 0.0         | <p>ALLUVIUM<br/>Compact to very dense, CLAYEY SILT to SILT, and FC SAND, little to trace gravel. (SM-ML)</p>      |             | <p>8.1'</p>   | <p>WELL DEVELOPMENT NOTES<br/>A 0.2 END CAP WAS PLACED AT THE BOTTOM OF THE SCREEN SECTION. THE 10' SCREEN AND 2' SCREEN SECTIONS ARE ACTUALLY 10.46' AND 2.47' IN LENGTH, RESPECTIVELY.</p> |
| 299.9       | <p>4.0' UPPER CLAY TILL<br/>Firm, grayish brown SILTY CLAY, some f-c sand, little to trace gravel. (CL)</p>       |             | <p>3.0'</p>   |  |
| 293.9       | <p>20.0' UPPER SILT TILL<br/>Firm, grayish brown CLAYEY SILT, little to some f-c sand, trace gravel. (SM-ML)</p>  |             | <p>6.0'</p>   |  |
| 285.9       | <p>28.0' GLACIOLACUSTRINE CLAY<br/>Soft to firm, gray CLAY to SILTY CLAY, little f-c sand, trace gravel. (CL)</p> |             | <p>2" Ø PVC 2.01" SLOT SCREEN</p>   |  |
| 281.9       | <p>32.0' END OF SAMPLING</p>  |             | <p>31.5' 32.0'</p>  |  |



Golder Associates, Inc.

# SOIL BOREHOLE LOG

SITE NAME AND LOCATION  
CWM CHEMICAL SERVICES, MODEL CITY, N.Y.

DRILLING METHOD: 4 1/4 INCH HOLLOW STEM AUGER

BORING NO.

TMW-26S

SAMPLING METHOD: 24 INCH SPLIT SPOON SAMPLER

SHEET

1 OF 2

DRILLING

WATER LEVEL

START

FINISH

TIME

TIME

TIME

DATE

10:10

12:45

CASING DEPTH

DATE

DATE

10/05/88

10/05/88

DATUM MSL

ELEVATION 313.4 FT

DRILL RIG TRACK CME 45

SURFACE CONDITIONS:

ANGLE VERTICAL BEARING

SAMPLE HAMMER TORQUE

| DEPTH IN FEET | BLOWS/ 6 IN. ON SAMPLER (RECOVERY) | SYMBOL | SAMPLE NUMBER AND DESCRIPTION OF MATERIAL   | SAMPLER AND BIT | CASING TYPE | BLOWS/FOOT ON CASING | TEST RESULTS    |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|---------------|------------------------------------|--------|---|-----------------|-------------|----------------------|-----------------|----------------|-----------------|---------------|-------------|--|--|--|--|--|--|--|--|--|
|               |                                    |        |   |                 |             |                      | WATER CONTENT % | LIQUID LIMIT % | PLASTIC LIMIT % | PLASTIC INDEX | OTHER TESTS |  |  |  |  |  |  |  |  |  |
| 0.0           | 7-14 (83%)                         |        | 1 ALLUVIUM<br>Compact, brown, CLAYEY SILT to SILT and F-C SAND, little to trace gravel. (SM-ML) |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|               | 14-14 (83%)                        |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|               | 20-22 (62%)                        |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|               | 30-36 (62%)                        |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
| 5.0           | 6-15 (100%)                        |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|               | 22-34 (100%)                       |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|               | 42-50 (66%)                        |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|               | 53-54 (66%)                        |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|               | 20-37 (100%)                       |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|               | 16-16 (100%)                       |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
| 10.0          | 4-14 (100%)                        |        | 9 UPPER CLAY TILL<br>Firm to stiff, gray-brown, SILTY CLAY, some f-c sand, trace gravel. (CL)   | 24"<br>SS       |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|               | 32-37 (100%)                       |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|               | 53-63 (83%)                        |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|               | 60-37 (83%)                        |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|               | 8-11 (100%)                        |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|               | 22-31 (100%)                       |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
| 15.0          | 24-22 (58%)                        |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|               | 26-28 (58%)                        |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|               | 12-31 (50%)                        |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|               | 21-14 (50%)                        |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
| 20.0          | 12-14 (50%)                        |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|               | 16-16 (50%)                        |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|               | 20-30 (66%)                        |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|               | 42-50 (66%)                        |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
| 25.0          | 7-9 (66%)                          |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|               | 13-10 (66%)                        |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|               | 34-28 (100%)                       |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|               | 38-48 (100%)                       |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|               | 36-52 (0%)                         |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |
|               | 36-38 (0%)                         |        |   |                 |             |                      |                 |                |                 |               |             |  |  |  |  |  |  |  |  |  |

DRILLING CONTR. EMPIRE SOILS INVESTIGATIONS, INC.  
 DAN BIEZ

LOGGED BY A. L. GRASSO  
 DATE 10/05/88  
 CHKD BY *WJH*  
 SL1071C



Golder Associates, Inc.

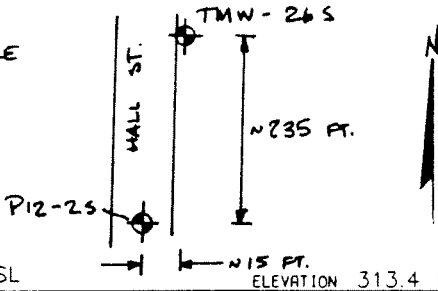
# SOIL BOREHOLE LOG

SITE NAME AND LOCATION  
CWM CHEMICAL SERVICES, MODEL CITY, N.Y.

DRILLING METHOD: 4 1/4 INCH HOLLOW STEM AUGER

BORING NO.  
TMW-26S

FUTURE  
SLF  
12



SAMPLING METHOD: 24 INCH SPLIT SPOON SAMPLER

SHEET  
2 OF 2

| DRILLING    |      |      |              |          | START    | FINISH |
|-------------|------|------|--------------|----------|----------|--------|
| WATER LEVEL | TIME | DATE | CASING DEPTH | TIME     | DATE     |        |
|             |      |      |              | 10:10    | 12:45    |        |
|             |      |      |              |          |          |        |
|             |      |      |              | 10/05/88 | 10/05/88 |        |

DATUM MSL ELEVATION 313.4 FT

DRILL RIG TRACK CME 45

SURFACE CONDITIONS:

ANGLE VERTICAL BEARING

SAMPLE HAMMER TORQUE

| DEPTH IN FEET | BLOWS/ 6 IN. ON SAMPLER (RECOVERY) | SYMBOL | SAMPLE NUMBER AND DESCRIPTION OF MATERIAL   | SAMPLER AND BIT | CASING TYPE | BLOWS/FOOT ON CASING | TEST RESULTS    |                |                 |               |             |  |
|---------------|------------------------------------|--------|---|-----------------|-------------|----------------------|-----------------|----------------|-----------------|---------------|-------------|--|
|               |                                    |        |   |                 |             |                      | WATER CONTENT % | LIQUID LIMIT % | PLASTIC LIMIT % | PLASTIC INDEX | OTHER TESTS |  |
| 30.0          | 8-10-13-11 (50%)                   | 16     | GLACIOLACUSTRINE CLAY<br>Soft to firm, gray, CLAY, some to trace f-c sand, trace gravel. (CL) | 24"             |             | 55                   |                 |                |                 |               |             |  |
| 35.0          | 11-15-20-20 (100%)                 | 17     | END OF SAMPLING   |                 |             |                      |                 |                |                 |               |             |  |
| 40.0          |                                    |        |   |                 |             |                      |                 |                |                 |               |             |  |
| 45.0          |                                    |        |   |                 |             |                      |                 |                |                 |               |             |  |
| 50.0          |                                    |        |   |                 |             |                      |                 |                |                 |               |             |  |
| 55.0          |                                    |        |   |                 |             |                      |                 |                |                 |               |             |  |
| 60.0          |                                    |        |   |                 |             |                      |                 |                |                 |               |             |  |

EMPIRE SOILS INVESTIGATIONS, INC  
DRILLING CONTR DAN BIETZ

SL10972 C

*[Signature]*

CHKD BY

A. L. GRASSO

DATE 10/05/88

LOGGED BY

# MONITORING WELL INSTALLATION LOG

JOB NO. 253 3090 PROJECT LWM / WELL INV / MODEL CITY WELL NO. JMW-265 SHEET 1 OF 1  
 GA INSP. ALG DRILLING METHOD HOLLOW STEM AUGERS - 4" ID GROUND ELEV. 313.4 FT. WATER DEPTH -  
 WEATHER SUNNY DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS COLLAR ELEV. 316.28 FT. DATE/TIME -  
 TEMP. 15°C DRILL RIG TRACK DRILLER DAN BEITZ STARTED 15:30 10/18/82 COMPLETED 16:30 10/18/82

## MATERIALS INVENTORY

WELL CASING 2.0 in dia. 10.15 ft. WELL SCREEN 2.0 in dia. 26 3/4 ft. BENTONITE SEAL BENTONITE PELLETS  
 CASING TYPE PVC SCREEN TYPE PVC INSTALLATION METHOD POUR FROM SURFACE  
 JOINT TYPE FLUSH THREADED W/ID RING SLOT SIZE 0.021" FILTER PACK QTY 65, 2210 BAGS  
 GROUT QUANTITY 15 GALS CENTRALIZERS NONE FILTER PACK TYPE #1 Q SAND  
 GROUT TYPE CEMENT-BENTONITE DRILLING MUD TYPE NONE INSTALLATION METHOD FOUR THROUGH AUGER

| ELEV./DEPTH   | SOIL/ROCK DESCRIPTION  | WELL SKETCH   | INSTALLATION NOTES  |  |
|---------------|--|---------------|---|--|
| 313.4         | GROUND SURFACE   |               | AUGERED AND SAMPLED TO<br>34.25' BELOW GROUND<br>SURFACE (P.C.S.). PLACED<br>#4 Q SAND TO 34.0'<br>BAGS INSTALLED WELL<br>(2" ID SCREENS, ONE<br>5' SCREEN, ONE 10' RISER)<br>PLACED #1 Q SAND<br>TO 62' BAGS, PULLING<br>THE AUGER OUT<br>DURING INSTALLATION.<br>POURED BENTONITE TO<br>32.0' BAGS HYDRATED<br>PELLETS WITH 5 GALS<br>OF DEIONIZED WATER.<br>PLACED CEMENT GROUT<br>TO GROUND SURFACE.<br>INSTALLED 8" Ø ALUMINUM<br>PROTECTIVE CASING OVER<br>WELL. PLACED #4 Q SAND<br>IN ANNULUS BETWEEN<br>WELL AND PROTECTIVE<br>CASING. |  |
| 0.0           | ALLUVIUM<br>Compact, brown,<br>CLAYEY SILT to<br>SILT and F.C.<br>SAND, little to<br>trace gravel.<br>(SM-ML)<br>1/3" silty clay<br>layer at -10.5'. |               |   |  |
| 297.4<br>16.0 | UPPER CLAY TILL<br>Firm to stiff, gray<br>brown, SILTY CLAY,<br>some f-c sand,<br>trace gravel. (CL)   |               |   |  |
| 283.4<br>30.0 | GLACIOLACUSTRINE CLAY<br>Soft to firm, gray, CLAY,<br>some to trace f-c<br>sand, trace gravel. (CL)  |               |   |  |
| 279.4<br>34.0 | END OF SAMPLING  | 34.0<br>34.25 | <b>WELL DEVELOPMENT NOTES</b><br>A 0.2' END CAP WAS<br>PLACED AT THE BOTTOM<br>OF THE SCREEN. THE 10'<br>SCREEN SECTIONS AND<br>THE 5' SCREEN SECTION<br>ACTUALLY ARE 10.45'<br>AND 5.46' IN LENGTH,<br>RESPECTIVELY.   |  |

# Boring Log

JOB NO. 893-3051 GA. INSP. NYS SPEC. OHMS Department NEW YORK STATE COUNTY OSWEGO CITY OSWEGO BORING NO. F58-15  
 DEPTH HOLE 18.0 FT DEPTH WL. 2.24 FT DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" ID SHEET 1 OF 1  
 TEMP 75° F TIME WL. 9-23-86 DRILLING COMPANY EMPIRE SOIL INVESTIGATIONS, INC SURFACE ELEV. 317.5 FT  
 WEATHER SUNNY DRILL RIG CME 45 DRILLER J. LAMM DATUM MSL  
 COORDINATES N 9342.70 E 9112.55 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 2:30 / 6-30-86  
 LOCATION 3.5 FT. WEST OF F58-1D WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 4:45 / 6-30-86

| ELEV. DEPTH (FT.) | DESCRIPTION   | UNIFIED CLASS | BLOWS/FOOT | SAMPLES |      |                        |          | REMARKS   |
|-------------------|---|---------------|------------|---------|------|------------------------|----------|---|
|                   |   |               |            | NUMBER  | TYPE | HAMMER BLOWS PER 6 IN. | REC./ATT |   |
| 317.5             | GROUND SURFACE  |               |            |         |      |                        |          | GROUND SURFACE  |
| 0.0               | GRAVEL AND SAND AND COBBLES (FILL)  | GW            | -          | -       | AS   | -                      | -        | NO SAMPLE TAKEN FROM 0-2 FT BECAUSE OF LARGE GRAVEL FILL  |
| 2.0               | FIRM TO STIFF, BROWN AND GRAY, CLAYEY SILT, AND F AND M SAND.                                     | CL            | 11         | 2       | DO   | 7-5-6-8                | 18/24    | FILL MOTTLED FROM 2.0-3.2 FT., ODOOR PRESENT IN BOTTOM 2 FT.  |
| 313.5             |   |               |            |         |      |                        |          | UPPER ALLUVIUM  |
| 4.0               | LOOSE TO COMPACT, BROWN TO TAN MOTTLED, F SAND, AND SILT, WET DILATANT.                           | SM            | 12         | 3       | DO   | 4-5-7-9                | 19/24    | SLIGHT ORGANIC CHEMICAL ODOOR THROUGH 4.0-7.3 FT. GRAY WEATHERING ALONG VERTICAL FRACTURES, 2 IN. BELOW FINE SAND LENS AT 7.3 FT. |
| 310.2             |   |               |            |         |      |                        |          | UPPER CLAY TILL   |
| 7.3               | STIFF TO FIRM, BROWN TO GRAY BROWN, SILTY CLAY TO CLAYEY SILT, SOME F TO C SAND, LITTLE F GRAVEL. | CL            | 20         | 7       | DO   | 6-7-13-24              | 21/24    | 8.0-10.0 FT. GRAY WEATHERING ALONG VERTICAL FRACTURES MOTTLED TO 10.0 FT.   |
| 303.5             |   |               |            |         |      |                        |          | 13.8-14.0 FT. BROWN MOTTLED F SILT LENS   |
| 14.0              | VERY SOFT TO FIRM, BROWN TO GRAY BROWN SILTY CLAY, SOME F TO M SAND, WET.                         | CL            | 9          | 10      | DO   | 3-5-4-7                | 17/24    | GLACIOLACUSTRINE CLAY   |
| 301.0             |   |               |            |         |      |                        |          | UPPER SILT TILL   |
| 16.5              | COMPACT GRAY BROWN CLAYEY SILT AND TO SOME F-C SAND, CRUMBLY, LITTLE F GRAVEL, GRAY CLASTS.       | ML            | 20         | 11      | DO   | 7-10-10-13             | 24/24    |   |
| 299.0             |   |               |            |         |      |                        |          | GLACIOLACUSTRINE CLAY   |
| 18.5              | VERY SOFT TO SOFT, GRAY CLAY, SOME F TO C SAND, TRACE SILT, OCCASIONAL RED BROWN SILT LENSES.     | CH            | 11         | 13      | DO   | 4-6-5-20               | 24/24    | 20.5-20.8 FT. F TO C SAND LENS SATURATED  |
| 292.5             |   |               |            |         |      |                        |          | 22.0-24.0 FT. COMPACT GRAY F TO C SAND LAYER  |
| 25.0              | DENSE TO VERY DENSE, GRAY BROWN, F SAND AND SILT, SOME M TO C SAND, LITTLE F GRAVEL.              | SM            | 35         | 18      | DO   | 7-7-28-35              | 22/24    | SHALE FRAGMENTS   |
| 289.5             |   |               |            |         |      |                        |          | GLACIOLACUSTRINE SILT/SAND  |
| 28.0              | END OF SAMPLING   |               |            |         |      |                        |          | 25.0-25.9 FT. COMPACT GRAY BROWN CLAYEY SILT  |
|                   |   |               |            |         |      |                        |          | END OF SAMPLING   |
|                   |   |               |            |         |      |                        |          | INSTALLED F58-15<br>SEE ACCOMPANYING<br>MONITORING WELL<br>INSTALLATION LOG.  |

# MONITORING WELL INSTALLATION LOG

NYSDDEC FORMS Document No. 201409232-00043

JOB NO. 853-3031 PROJECT CWM / WELLS / MODEL CITY WELL NO. F58-15 SHEET 1 OF 1  
 GA INSP. LCL DRILLING METHOD HOLLOW STEEL AUGERS - 4 1/4" ID GROUND ELEV. 317.5 FT WATER DEPTH 2.24 FT  
 WEATHER SUNNY DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. COLLAR ELEV. 319.88 FT DATE/TIME 9-23-86  
 TEMP. 75 F DRILL RIG CME 45 DRILLER J. LAMM STARTED 10:20 7-2-86 COMPLETED 11:50 7-2-86  
 LOCATION/COORDINATES 3.9 FT WEST OF F58-10 / N9342.70 E 9112.55

## MATERIALS INVENTORY

|  |   |   |
|--|---|---|
| WELL CASING <u>2.0</u> M. DIA. <u>9.0</u> I.I. | WELL SCREEN <u>2.0</u> M. DIA. <u>10.6</u> I.I. | BENTONITE SEAL <u>PELLETS 4.0' DEEP</u>     |
| CASING TYPE <u>304 STAINLESS STEEL</u>         | SCREEN TYPE <u>304 STAINLESS STEEL</u>          | INSTALLATION METHOD <u>THROUGH AUGERS</u>   |
| JOINT TYPE <u>FLUSH THERMO TAPS 0-RINGS</u>    | SLOT SIZE <u>0.006 INCH</u>                     | FILTER PACK QTY <u>12.0 L.F. ; 330 LBS.</u> |
| GROUT QUANTITY <u>NA</u>                       | CENTRALIZERS <u>NONE</u>                        | FILTER PACK TYPE <u>1-Q SAND</u>            |
| GROUT TYPE <u>NA</u>                           | DRILLING MUD TYPE <u>NONE</u>                   | INSTALLATION METHOD <u>THROUGH AUGERS</u>   |

| ELEV./DEPTH (FT.) | SOIL/ROCK DESCRIPTION  | WELL SKETCH  | INSTALLATION NOTES                             |  |
|-------------------|--|--|--|--|
| (FT.)             | NOTE: FOR COMPLETE SOIL DESCRIPTIONS SEE BORING LOG F58-15   | <p style="font-size: x-small; text-align: center;">WELL CASING 2.4 FT STICLUP<br/>8" Ø ALUMINUM CASING WITH LOCK 3.2 FT STICLUP<br/>#4-Q SAND<br/>CEMENT GROUT<br/>2" Ø BENTONITE PELLET SEAL<br/>2" Ø TYPE 304 S.S. RISER PIPE<br/>#1-Q SAND<br/>2" Ø TYPE 304 S.S. SCREEN<br/>NONE 8" Ø BOREHOLE</p> | AUGERED TO 18.0 FT, ADDED #1-Q SAND TO 17.2 FT |  |
| 317.5             | GROUND SURFACE   |  |  | BELOW GROUND SURFACE (SAMPLE TAKEN); INSTALLED   |
| 0.0               | FILL   |  |  | WELL PIPE (1'-10" SCREEN 3-3' RISERS) 2.4 FT STICLUP,  |
| 315.5             | HEAVY SAND AND COBBLES   |  |  | ADDED #1-Q SAND (SLURRY) TO 6.0 FT. BELOW GROUND SURFACE; ADDED PELLETS TO 2.0 FT; REMOVED AUGERS  |
| 2.0               | FILL   |  |  | MIXED CEMENT GROUT, FILLED TO GROUND SURFACE; PUT ON 8" Ø ALUMINUM PROTECTIVE CASING; FILLED INTERIOR OF CASING WITH #4-Q SAND; WEED HOLES WERE PUT IN CASING FOR DRAINAGE; PROTECTIVE POSTS WERE PUT AROUND WELL; |
| 313.5             | FIRM TO STIFF, BROWN AND GRAY CLAYEY SILT, AND F.C. SAND   |  |  | A CONCRETE PAD WAS LATER PLACED AROUND WELL BY THE SITE AND NEW WEED HOLES WERE PUT IN CASING; A REDICATED STAINLESS STEEL RAILER WAS INSTALLED  |
| 4.0               | UPPER ALLUVIUM LOOSE TO COMPACT, BROWN TO TAN, MOTTLED F.C. SAND, AND SOME WET, PLATY, 2 INCH BROWN F.C. SAND LENS AT 4.5 FT.                                    |  |  | SUBSEQUENT TO DEVELOPMENT WELL DEVELOPMENT NOTES   |
| 310.2             | UPPER CLAY TILL STIFF TO FIRM, BROWN TO NEAR BROWN SILTY CLAY TO CLAYEY SILT, SOME F.C. SAND, LITTLE F. GRANUL. 15.8-14.0 FT. BROWN, MOTTLED F. SILT LENS        |  |  | DATE DEVELOPED: 7-25-86 TO 7-30-86   |
| 7.5               | UPPER CLAY TILL STIFF TO FIRM, BROWN TO NEAR BROWN SILTY CLAY TO CLAYEY SILT, SOME F.C. SAND, LITTLE F. GRANUL. 15.8-14.0 FT. BROWN, MOTTLED F. SILT LENS        |  |  | DEVELOPMENT METHOD: AIR LIFT   |
| 303.5             | GLACIOLACUSTRINE CLAY WEAK SOFT TO FIRM, BROWN TO GRAY BROWN SILTY CLAY; SOME F.C. SAND, WET   |  |  | VOLUME PURGED: 5.3 GAL.  |
| 14.0              | UPPER SILT TILL COMPACT, NEAR BROWN CLAYEY SILT, AND TO SOME F.C. SAND, CRUMBLY, LITTLE F. GRANUL. GRAY CLAYEY   |  |  | FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE.   |
| 301.0             | UPPER SILT TILL COMPACT, NEAR BROWN CLAYEY SILT, AND TO SOME F.C. SAND, CRUMBLY, LITTLE F. GRANUL. GRAY CLAYEY   |  |  |  |
| 16.5              | UPPER SILT TILL COMPACT, NEAR BROWN CLAYEY SILT, AND TO SOME F.C. SAND, CRUMBLY, LITTLE F. GRANUL. GRAY CLAYEY   |  |  |  |
| 299.5             | END OF BORING  |  |  |  |
| 18.0              | END OF BORING  |  |  |  |
|                   | NOTE: ORIGINAL BORING WAS SAMPLED AND AUGERED TO 28.0 FT. B.G.S.; THE BORING WAS GROUTED TO GROUND SURFACE AND MOVED APPROXIMATELY 5' EAST AND AUGERED TO 18.0'. |  |  |  |

JOB NO. B53-3051 GA. INSP. W.H. PROJECT CWM/WELLS/MODEL CITY BORING NO. F58-1D  
 DEPTH HOLE 43.0 FT. DEPTH WL. 4.47 ft. DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" ID SHEET 1 OF 1  
 TEMP 75° F TIME WL. 9-23-86 DRILLING COMPANY EMPRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 28.0 FT.  
 WEATHER SUNNY DRILL RIG ACKER AD-2 DRILLER J. GENOVESE DATUM MSL  
 COORDINATES N 9343.04 E 9116.12 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 8:00 / 7-10-86  
 LOCATION 25 FT. EAST OF F58-15 WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 3:30 / 7-11-86

| ELEV. DEPTH (FT.) | DESCRIPTION   | UNIFIED CLASS. | BLOWS/FOOT | SAMPLES |      |                        | REMARKS   |   |
|-------------------|---|----------------|------------|---------|------|------------------------|---|---|
|                   |   |                |            | NUMBER  | TYPE | HAMMER BLOWS PER 8 IN. |   |   |
|                   | FOR COMPLETE SOILS DESCRIPTION AT THIS LOCATION, SEE BORING LOG F58-13  |                |            |         |      |                        | INSTALLED 10 INCH DIAM. PVC SURFACE CASING TO 20.0 FT. AUGERED TO 28.0 FT NO SAMPLING   |   |
| 299.0<br>28.0     | VERY DENSE, RED BROWN F SAND, SOME TO LITTLE SILT, SOME TO SILT, SOME F-C SAND, GRAY SUBANGULAR TO SUBROUNDED CLASTS, DILATANT. | SM             | 2100       | 1       | DO   | 80-70 *                | 12/12   | GLACIOLACUSTRINE SILT/SAND AUGERED 29.0-30.0 FT, NO SAMPLING<br><br>AUGERED 32.9-34.0 FT, NO SAMPLING<br><br>AUGERED 36.5-38.0 FT, NO SAMPLING<br>36.2-38.4 FT, SILT LENSE<br>AUGERED 38.9-40.0 FT, NO SAMPLING |
|                   |   |                | 46         | 2       | DO   | 12-19-27-40 *          | 16/24   |   |
|                   |   |                | 2100       | 3       | DO   | 60-100/4 *             | 10/11   |   |
|                   |   |                | 66         | 4       | DO   | 23-25-41-53 *          | 22/24   |   |
|                   |   |                | 2100       | 5       | DO   | 100/3 *                | 16/16   |   |
|                   |   |                | 2100       | 6       | DO   | 55-100/4 *             | 11/11   |   |
| 278.0<br>40.0     | VERY DENSE, RED BROWN, CLAYEY SILT, SOME F-C SAND, LITTLE F GRAVEL AS GRAY SHALEY LIMESTONE AND RED BROWN SHALE FRAGMENTS.      | ML             | 2100       | 7       | DO   | 60-100/4 *             | 11/11   | BASAL RED TILL  |
| 275.2<br>42.8     |   |                | 2100       | 8       | DO   | 45-100/3 *             | 10/10   | AUGERED 40.9-42.0 FT, NO SAMPLING   |
|                   | END OF SAMPLING AUGERED TO 43.0 FT.   |                |            |         |      |                        | END OF SAMPLING<br><br>* NOTE: 300 LB. HAMMER WAS USED.<br><br>INSTALLED F58-1D<br>SEE ACCOMPANYING MONITORING WELL INSTALLATION LOG. |   |



# MONITORING WELL INSTALLATION LOG

NYSDPFC O&MS Document No. 201469232-00043

|  |   |                                |                               |
|--|---|--------------------------------|-------------------------------|
| JOB NO. <u>B53-3051</u>  | PROJECT <u>CWM / WELLS / MODEL CITY</u>                 | WELL NO. <u>F58-10</u>         | SHEET <u>1</u> OF <u>2</u>    |
| SA WSP <u>WPH</u>  | DRILLING METHOD <u>HOLLOW STEM AUGERS - 4 1/4" I.D.</u> | GROUND ELEV. <u>318.0 FT.</u>  | WATER DEPTH <u>4.47 FT.</u>   |
| WEATHER <u>SUNNY</u>   | DRILLING COMPANY <u>EMPRE SOILS INVESTIGATIONS INC.</u> | COLLAR ELEV. <u>319.97 FT.</u> | DATE/TIME <u>9-23-86</u>      |
| TEMP. <u>75°F</u>  | DRILL RIG <u>ACKER AD-2</u>                             | DRILLER <u>J. RENOVESE</u>     | STARTED <u>9:00 7-10-86</u>   |
|  |   |                                | COMPLETED <u>3:10 7-11-86</u> |
| LOCATION/COORDINATES <u>3.5 FT. EAST OF F58-15 / 4 9343 04 E 2116-12</u> |   |                                |                               |

| MATERIALS INVENTORY                             |   |   |  |
|---|---|---|--|
| WELL CASING <u>2.0</u> M. DIA. <u>30.0</u> I.D. | WELL SCREEN <u>2.0</u> M. DIA. <u>12.9</u> I.D. | BENTONITE SEAL <u>PELLETS 4.0' DEEP</u>           |  |
| CASING TYPE <u>304 STAINLESS STEEL</u>          | SCREEN TYPE <u>304 STAINLESS STEEL</u>          | INSTALLATION METHOD <u>TREMIE TUBE &amp; WASH</u> |  |
| JOINT TYPE <u>FLUSH TIGHTEN WITH Q-RINGS</u>    | SLOT SIZE <u>0.006 INCH</u>                     | FILTER PACK QTY <u>14.9 L.F. ; 400 LBS.</u>       |  |
| GROUT QUANTITY _____                            | CENTRALIZERS <u>NONE</u>                        | FILTER PACK TYPE <u>#1-Q SAND</u>                 |  |
| GROUT TYPE <u>BENTONITE GROUT</u>               | DRILLING MUD TYPE <u>NONE</u>                   | INSTALLATION METHOD <u>TREMIE TUBE &amp; WASH</u> |  |

| ELEV./DEPTH (FT.) | SOIL/ROCK DESCRIPTION   | WELL SKETCH                                    | INSTALLATION NOTES   |
|-------------------|---|--|--|
| (FT.)             | NOTE: FOR COMPLETE SOIL DESCRIPTIONS SEE BORING LOG F58-10  | WELL SKETCH                                    |  |
| 318.0             | GROUND SURFACE  | WELL CASING 2.0 FT. STICKUP                    | AUGERED TO 20.0 FT WITH 12" (0.0) AUGERS   |
| 0.0               | FILL  | 8" Ø ALUMINUM CASING WITH LOCK 2.0 FT. STICKUP | GROUTED 10 INCH Ø PVC CASING 20.0 FT. BELOW GROUND SURFACE (TOOK GROUT SAMPLE); AUGERED TO 43.0 FT. WITH 4 1/4" I.D. AUGERS; PULLED AUGERS; INSTALLED 6" Ø TEMPORARY STEEL CASING; WASHED OUT OPEN TO 43.0 FT. #4-Q SAND TO 40.9 FT. BELOW GROUND SURFACE; INSTALLED WELL PIPE (1-2' SCREEN 1-10' SCREEN 3-10' RISERS) 2.0 FT. STICKUP; TREMIED (WITH WATER) #1-Q SAND TO 26.0 FT. BELOW GROUND SURFACE (DRY SAMPLE TAKEN); PELLETS TO 22.0 FT.; ADDED #4-Q SAND TO 21.5 FT. MIXED BENTONITE GROUT; GROUTED TO 1.5 FT. BELOW GROUND SURFACE; REMOVED |
| 316.0             | GRAVEL, SAND AND COBBLES  | 1.5'   |  |
| 2.0               | FILL  | #4-Q SAND                                      |  |
| 314.0             | FIRM TO STIFF, BROWN AND NEARLY UNIFORM, AND FINE SAND  | CEMENT GROUT                                   |  |
| 4.0               | UPPER ALLUVIUM  | 10" Ø PVC CASING                               |  |
| 310.7             | LOOSE TO COMPACT, BROWN TO TAN, MOTTLED S-SAND, AND SILT WET. DILATANT. 2 FEET BROWN FT. TO C SAND LENS AT 7.5 FT.  | 12" Ø AUGER OPENING                            |  |
| 7.3               | UPPER CLAY TILL   | BENTONITE GROUT                                |  |
| 304.0             | STIFF TO FIRM, BROWN TO GREEN BROWN, SUBANGULAR TO CLAYEY SILT, SOME FT. TO C SAND, LITTLE F GRAVEL   | 20.0'  |  |
| 14.0              | 15.0 - 14.0 FT. BROWN, MOTTLED S SILT LENS  | #4-Q SAND                                      |  |
| 301.5             | GLACIOLACUSTRINE CLAY   | 3/8" Ø BENTONITE PELLET SEAL                   |  |
| 16.5              | VERY SOFT TO FIRM, BROWN TO NEAR BROWN SAND, SOME SILT, M SAND, WET   | 2" Ø TUBE 304-SS RIGID PIPE                    |  |
| 299.5             | UPPER SILT TILL   | 21.5'  |  |
| 18.5              | COMPACT, NEAR BROWN CLAYEY SILT, AND TO SOME F-C SAND, LEUBULM, LITTLE F GRAVEL, GREEN CLAYS  | 22.0'  |  |
| 293.0             | GLACIOLACUSTRINE CLAY   | 24.0'  |  |
| 25.0              | VERY SOFT TO SOFT, NEAR CLAY, SOME F TO C SAND, TENS SILT, OCCASIONAL RED BROWN SILT LENSES - 20.5 - 20.8 FT. FT. TO C SAND LENS, SATURATED, 22.0 - 24.0 FT. COMPACT, NEAR F TO C SAND, LAYER SHALE FRAGMENTS | 26.0'  |  |
| 278.0             | GLACIOLACUSTRINE SILT/SAND  | 28.0'  |  |
| 40.0              | VERY DENSE, RED BROWN F SAND, SOME TO LITTLE SILT, TO SILT, SOME F SAND M TO C SAND NEAR SUBANGULAR CLAYS, DILATANT 25.0 - 25.9 FT. COMPACT, NEAR BROWN, CLAYEY SILT  | DRIVEN 6" Ø TEMPORARY CASING HOLE              |  |
| 275.2             | 35.2 - 38.4 FT. SILT LENS   | #1-Q SAND                                      |  |
| 42.8              | BASAL RED TILL  | 2" Ø TUBE 304-SS SCREEN                        |  |
|                   | VERY DENSE, RED BROWN CLAYEY SILT, SOME F-C SAND, LITTLE F GRAVEL AS NEAR SHALEY LIMESTONE AND RED BROWN SHALE FRAGMENTS  | #4-Q SAND                                      |  |
|                   | END OF SAMPLING AUGERED TO 43.0 FT.   | 40.9'  |  |
|                   |   | 43.0'  |  |

| WELL DEVELOPMENT NOTES   |           |
|--|-----------|
| DATE DEVELOPED: 7-25-86  | TO 8-1-86 |
| DEVELOPMENT METHOD: AIR LIFT   |           |
| VOLUME PURGED: 31.1 GAL.   |           |
| FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE.   |           |
| NOTE: A 0.3 FT. END CAP WAS PLACED AT THE BOTTOM OF THE SCREEN SECTION 2.9 AND 10 FT. SCREEN SECTIONS ARE ACTUALLY 2.35, 9.325, 10.325 FT. IN LENGTH RESPECTIVELY. |           |

JOB NO. B53-3051

Golder Associates

CHECKED DJM

SCALE 1 INCH = 5 FEET

DATE DRAWN 12-11-86

**Golder  
Associates**

NYS DEC OHMS Document No. 201469232-00043

|                                     |              |              |
|-------------------------------------|--------------|--------------|
| <b>SUBJECT</b> CWM/WELLS/MODEL CITY |              | F58-10       |
| Job No. 853-3051                    | Made by WFH  | Date 7.11.86 |
| Ref.                                | Checked DJM  | Sheet 2 of 2 |
|                                     | Reviewed JFC |              |

6"  $\Phi$  CASING; MIXED CEMENT GROUT; FILLED TO GROUND SURFACE; PUT ON 8"  $\Phi$  ALUMINUM PROTECTIVE CASING; FILLED INTERIOR OF PROTECTIVE CASING WITH # 4-Q SAND; WEED HOLES WERE PLACED IN CASING FOR DRAINAGE; PROTECTIVE POSTS WERE PLACED AROUND WELL; A CONCRETE PAD WAS LATER PLACED AROUND WELL BY THE SITE AND NEW WEED HOLES WERE PUT IN CASING; A WELL WIZARD WAS INSTALLED SUBSEQUENT TO DEVELOPMENT.

Blank lined area for additional notes or drawings.

# Boring Log

NYSDEC OHMS Document No. 201469232-00043

JOB NO. 853-3051 QA. INSP. PMS PROJECT CWM/WELLS/MODEL CITY BORING NO. F58-25  
 DEPTH HOLE 20.0 FT. DEPTH WL. 3.35 FT. DRILLING METHOD HOLLOW STEM AUGERS-4 1/4" ID SHEET 1 OF 1  
 TEMP 80° F TIME WL. 9:23:26 DRILLING COMPANY EMIRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 317.5 FT.  
 WEATHER SUNNY DRILL RIG CME 45 DRILLER J. LAMU DATUM MSL  
 COORDINATES N 9215.98 E 9085.75 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 2:00 / 7-15-86  
 LOCATION --- WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 3:40 / 7-15-86

| ELEV. DEPTH (FT.) | DESCRIPTION  | UNIFIED CLASS. | BLOWS/FOOT | SAMPLES |      |                        |         | REMARKS   |
|-------------------|--|----------------|------------|---------|------|------------------------|---------|---|
|                   |  |                |            | NUMBER  | TYPE | HAMMER BLOWS PER 6 IN. | REC/ATT |   |
| 317.5             | GROUND SURFACE   |                |            |         |      |                        |         | GROUND SURFACE  |
| 315.5             | COARSE GRAVEL, ASPHALT (FILL)  | GW             | -          | -       | AS   | -                      | -       | FILL  |
| 308.5             | VERY STIFF TO STIFF, TURNING FIRM, BROWN SILTY CLAY, SOME F TO C SAND.   | CL             | 19         | 1       | DO   | 6-11-8-6               | 24/24   | UPPER CLAY TILL SLIGHT ORGANIC 0.00E TO 6.0 FT. 4.5-6.0 FT. SILT POCKETS 8.0-8.1 FT. F-M SAND LENS 8.0-12.0 FT. SLIGHTLY MOTTLED AND GRAY WEATHERING ALONG VERTICAL FRACTURES<br>12.0-14.0 FT. SAND GRAVEL SILT POCKETS AND LAYERS SCATTERED THROUGHOUT COARSE SAND AS RED BROWN PARTINGS |
| 300.9             |  |                | 31         | 2       | DO   | 10-14-17-12            | 22/24   |   |
| 299.0             |  |                | 52         | 3       | DO   | 30-27-25-30            | 10/24   |   |
| 297.5             |  |                | 21         | 4       | DO   | 6-11-10-7              | 24/24   |   |
| 20.0              |  |                | 16         | 5       | DO   | 5-8-8-10               | 20/24   |   |
|                   |  |                | 22         | 6       | DO   | 10-11-11-8             | 17/24   |   |
| 14.0              | SOFT, GRAY BROWN CLAY TO SILTY CLAY, SOME F TO M SAND, TRACE C GRAVEL, TRACE C SAND, GRAY LIMESTONE FRAGMENTS. | CL             | 8          | 7       | DO   | 1-3-5-5                | 24/24   | GLACIOLACUSTRINE CLAY   |
| 16.6              | COMPACT TO DENSE, BROWN SILT AND F SAND TO E SAND, SOME SILT, DILATANT.  | ML             | 44         | 8       | DO   | 9-19-25-20             | 17/24   | UPPER SILT TILL   |
| 18.5              | VERY SOFT GRAY CLAY, TRACE F SAND.   | SH             | 7          | 10      | DO   | 7-4-3-3                | 20/24   | GLACIOLACUSTRINE CLAY   |
| 20.0              | END OF SAMPLING AUGERED TO 19.5 FT.  | CH             |            |         |      |                        |         | END OF SAMPLING<br><br>INSTALLED F58-25<br>SEE ACCOMPANYING<br>MONITORING WELL<br>INSTALLATION LOG.   |

## MONITORING WELL INSTALLATION LOG

JOB NO. B53-3051 PROJECT CWA / WELLS / MODEL CITY WELL NO. F58-25 SHEET 1 OF 1  
 GA INSP. PMS DRILLING METHOD HOLLOW STEEL AUGERS - 4 1/4" ID GROUND ELEV 317.5 WATER DEPTH 3.35  
 WEATHER CLEAR DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS INC. COLLAR ELEV 319.10 DATE/TIME 9.23.86  
 TEMP 75° F DRILL RIG GME 45 DRILLER J. LAMM STARTED 3:49 7:58 COMPLETED 4:34 7:15  
 LOCATION/COORDINATES N 9215.98 E 9089.75 TIME / DATE TIME / DATE

### MATERIALS INVENTORY

WELL CASING 2.0 W. DIA. 10.0 W. THICKNESS 1.1 WELL SCREEN 2.0 W. DIA. 10.6 W. THICKNESS 1.1 BENTONITE SEAL PELLETS 4' DEEP  
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD THROUGH AUGERS  
 JOINT TYPE FLUSH TEFLON VITON G-RINGS SLOT SIZE 0.006 INCH FILTER PACK QTY 13.5 L.F. 300 LBS  
 GROUT QUANTITY NA CENTRALIZERS NONE FILTER PACK TYPE #1-Q SAND  
 GROUT TYPE NA DRILLING MUD TYPE NONE INSTALLATION METHOD THROUGH AUGERS

| ELEV./DEPTH (FT.) | SOIL/ROCK DESCRIPTION  | WELL SKETCH   | INSTALLATION NOTES  |                        |
|-------------------|--|---|---|------------------------|
|                   | NOTE: FOR COMPLETE SOIL DESCRIPTIONS SEE BORING LOG #58-25   |   |   |                        |
| 317.5             | GROUND SURFACE   |   | AUGERED TO 19.5 FT. ADDED #1-Q SAND TO 19.0 FT. BELOW GROUND SURFACE (SAMPLE TAKEN). INSTALLED WELL   |                        |
| 0.0               | FILL   |   | PIPE (1-10' SCREEN 1-10' RISER) 1.6 FT. STICLUP; ADDED  |                        |
| 315.5             | COARSE GRAVEL, ASPHALT (PAV)   |   | PIPE (1-10' SCREEN 1-10' RISER) 1.6 FT. STICLUP; ADDED  |                        |
| 2.0               | UPPER CLAY TILL<br>VERY STIFF TO STIFF,<br>TURNING FIRM, BROWN SILTY<br>CLAY, SOME F TO C SAND,<br>LITTLE SILT<br>4.5 - 6.0 FT. Silt PEbbLES<br>8.0 - 8.1 FT. F-M SAND LENSE | <p style="font-size: small;">WELL CASING 1.6 FT. STICLUP</p> <p style="font-size: small;">8" Ø ALUMINUM CASING WITH LOCAL 2.5 FT. STICLUP</p> <p style="font-size: small;">#4-Q SAND</p> <p style="font-size: small;">CEMENT GROUT</p> <p style="font-size: small;">3/8" Ø BENTONITE PELLET SEAL</p> <p style="font-size: small;">2 1/2" TYPE 304 S.S. RISER PIPE</p> <p style="font-size: small;">2 1/2" TYPE 304 S.S. SCREEN</p> <p style="font-size: small;">#1-Q SAND</p> <p style="font-size: small;">NOM. 8" Ø BOREHOLE</p> | #1-Q SAND TO 6.0 FT. ADDED PELLETS TO 2.0 FT. BELOW GROUND SURFACE; REMOVED AUGERS; MIXED CEMENT GROUT; FILLED TO GROUND SURFACE; PUT ON 8" Ø ALUMINUM PROTECTIVE CASING; FILLED PROTECTIVE CASING INTERIOR WITH #4-Q SAND; WEED HOLES WERE PUT IN CASING FOR DRAINAGE; PROTECTIVE POSTS WERE PUT AROUND WELL; A CONCRETE PAD WAS LATER PLACED AROUND WELL BY THE SITE AND NEW WEED HOLES WERE PUT IN CASING; A DEDICATED STAINLESS STEEL BAILEE WAS INSTALLED SUBSEQUENT TO DEVELOPMENT. |                        |
| 303.5             | 12.0 - 14.0 FT. SAND GRAVEL<br>SILT PEbbLES AND LENSES<br>SCATTERED THROUGHOUT<br>COARSE SAND AS RED<br>BROWN PARTINGS   |   |   |                        |
| 14.0              | GLACIOLACUSTRINE CLAY<br>SOFT, GREY BROWN SILTY<br>CLAY, SOME F-M SAND;<br>TRACIL GRAVEL, C SAND WITH<br>LIMESTONE FRAGMENTS   |   |   |                        |
| 300.9             | UPPER SILT TILL<br>COMPACT TO DENSE, BROWN<br>SILT, AND F SAND TO # SAND;<br>SOME SILT, DUCTANT  |   |   |                        |
| 16.6              |  |   |   |                        |
| 299.0             |  |   |   |                        |
| 18.8              | GLACIOLACUSTRINE CLAY<br>VERY SOFT, GREY SILTY<br>CLAY   |   |   |                        |
| 297.5             |  |   |   |                        |
| 20.0              | END OF SAMPLING<br>AUGERED TO 19.5 FT.   |   |   |                        |
|                   |  |   |   | WELL DEVELOPMENT NOTES |
|                   |  |   | DATE DEVELOPED: 7-25-86 TO 7-30-86  |                        |
|                   |  |   | DEVELOPMENT METHOD: AIR LIFT  |                        |
|                   |  |   | VOLUME PURGED: 92 GAL.  |                        |
|                   |  |   | FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE.  |                        |
|                   |  |   | NOTE: A 0.3 FT. END CAP WAS PLACED AT THE BOTTOM OF THE SCREEN SECTION 2, 5, AND 10 FT. SCREEN SECTIONS ARE ACTUALLY 2.35, 5.325, 10.325 FT. IN LENGTH RESPECTIVELY.  |                        |

JOB NO. 853-3051 GA. INSP. WFH PROJECT CWM/WELLS/MODEL CITY BORING NO. F142-15  
 DEPTH HOLE 24.0 FT. DEPTH WL. 378 ft DRILLING METHOD HOLLOW STEM AUGERS 4 1/4" ID SHEET 1 OF 1  
 TEMP 78° F TIME WL. 9/22/86 DRILLING COMPANY EUPIRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 320.4 FT.  
 WEATHER PARTLY CLOUDY DRILL RIG ACKER AD-2 DRILLER J. GENDVESE DATUM MSL  
 COORDINATES N 8130.06 E 8759.83 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 9:00 / 7-11-86  
 LOCATION \_\_\_\_\_ WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 12:00 / 7-11-86

| ELEV. DEPTH (FT.) | DESCRIPTION   | UNIFIED CLASS. | BLOWS/FOOT | SAMPLES |             |                                 | REMARKS                 |  |
|-------------------|---|----------------|------------|---------|-------------|---------------------------------|-------------------------|--|
|                   |   |                |            | NUMBER  | TYPE        | HAMMER BLOWS PER 6 IN. REC./ATT |                         |  |
| 320.4             | GROUND SURFACE  |                |            |         |             |                                 | GROUND SURFACE          |  |
| 30.0              | VERY STIFF TO STIFF, BROWN CLAYEY SILT, SOME F.C SAND, TRACE TO LITTLE F GRAVEL.  | CL             | 30         | 1       | DO          | 5-17-13-15                      | 22/24                   | UPPER CLAY TILL ROOTS TO 2.0 FT<br>TAN FINE SAND LENSSE 2.7 TO 2.9 FT SLIGHTLY MOTTLED FROM 4.0 FT TO 6.0 FT. FINE SAND LENSSE 5.5 TO 5.8 FEET |
| 38                |   |                | 2          | DO      | 15-17-21-22 | 24/24                           |                         |  |
| 46                |   |                | 3          | DO      | 19-22-24-24 | 22/24                           |                         |  |
| 24                |   |                | 4          | DO      | 10-12-12-14 | 21/24                           |                         |  |
| 312.4             | COMPACT TO DENSE, BROWN, E SAND, AND TO LITTLE SILT, TRACE TO LITTLE M-C SAND, TRACE TO LITTLE SUBANGULAR GRAVEL, DILATANT. | SM             | 30         | 5       | DO          | 6-12-18-18                      | 23/24                   | UPPER SILT TILL TURNING MOIST AT 8.0 FT.   |
| 57                |   |                | 6          | DO      | 12-15-22-25 | 24/24                           |                         |  |
| 21*               |   |                | 7          | DO      | 45-0-11-11  | 23/24                           | SATURATED FROM 14.0 FT. |  |
| 40                |   |                | 8          | DO      | 11-20-20-16 | 24/24                           |                         |  |
| 40                |   |                | 9          | DO      | 11-14-26-26 | 20/24                           |                         |  |
| 43                |   |                | 10         | DO      | 15-17-26-28 | 24/24                           |                         |  |
| 36                |   |                | 11         | DO      | 16-18-18-18 | 24/24                           |                         |  |
| 22.0              | VERY SOFT GRAY CLAY, TRACE FINE SAND AND SILT, SATURATED, NON-DILATANT  | CL             | 17         | 12      | DO          | 6-8-9-9                         | 23/24                   | GLACIOLACUSTRINE CLAY  |
| 24.0              | END OF SAMPLING AUGERED TO 23.0 FT.   |                |            |         |             |                                 |                         | END OF SAMPLING<br>* NOTE: 300 LB. HAMMER WAS USED.<br><br>INSTALLED F142-15<br>SEE ACCOMPANYING MONITORING WELL INSTALLATION LOG.             |

# MONITORING WELL INSTALLATION LOG

NYSDDEC OHMS Document No. 201469232-00043

|  |  |                            |  |
|--|--|----------------------------|--|
| JOB NO. <u>853-3051</u>                          | PROJECT <u>CWMA / WELLS / MODEL CITY</u>                 | WELL NO. <u>E112-15</u>    | SHEET <u>1</u> OF <u>2</u>   |
| GA INSP. <u>WFH</u>                              | DRILLING METHOD <u>HOLLOW STEM AUGERS - 4 1/4" ID</u>    | GROUND ELEV. <u>320.4</u>  | WATER DEPTH. <u>3.75</u>   |
| WEATHER <u>P. CLOUDY</u>                         | DRILLING COMPANY <u>EMPIRE SOILS INVESTIGATIONS INC.</u> | COLLAR ELEV. <u>322.72</u> | DATE/TIME <u>9-22-86</u>   |
| TEMP. <u>78° F</u>                               | DRILL RIG <u>ACKER AD-2</u>                              | DRILLER <u>J. GENOVESE</u> | STARTED <u>9:00</u> <u>7-16-86</u> COMPLETED <u>12:00</u> <u>7-16-86</u> |
| LOCATION/COORDINATES <u>N. 8130.06 E 8739.83</u> |  | TIME / DATE                | TIME / DATE  |

| MATERIALS INVENTORY                          |                |  |                |
|--|----------------|--|----------------|
| WELL CASING <u>2.0</u> W. IN.                | <u>10.0</u> LF | WELL SCREEN <u>2.0</u> W. IN.              | <u>15.3</u> LF |
| CASING TYPE <u>304 STAINLESS STEEL</u>       |                | SCREEN TYPE <u>304 STAINLESS STEEL</u>     |                |
| JOINT TYPE <u>FLUSH TEFLON VITON O-RINGS</u> |                | SLOT SIZE <u>0.006 INCH</u>                |                |
| GROUT QUANTITY <u>NA</u>                     |                | CENTRALIZERS <u>NONE</u>                   |                |
| GROUT TYPE <u>NA</u>                         |                | DRILLING MUD TYPE <u>NONE</u>              |                |
|  |                | BENTONITE SEAL <u>PELLETS 4.0' DEEP</u>    |                |
|  |                | INSTALLATION METHOD <u>THROUGH AUGERS</u>  |                |
|  |                | FILTER PACK QTY <u>17.4 L.F., 400 LBS.</u> |                |
|  |                | FILTER PACK TYPE <u>#1-Q SAND</u>          |                |
|  |                | INSTALLATION METHOD <u>THROUGH AUGERS</u>  |                |

| ELEV./DEPTH (FT.) | SOIL/ROCK DESCRIPTION   | WELL SKETCH | INSTALLATION NOTES  |
|-------------------|---|-------------|---|
| 320.4             | NOTE: FOR COMPLETE SOIL DESCRIPTIONS SEE BORING LOG #15-18<br><br>GROUND SURFACE  |             | AUGERED TO 23.0 FT. BELOW GROUND SURFACE; INSTALLED   |
| 0.0               | UPPER CLAY TILL<br>VERY STIFF TO STIFF, BROWN CLAYEY SILT, SOME F-C SAND, TRACE TO LITTLE F GRAVEL. TAN F SAND LENSSE 2.7 TO 2.9 FT. F SAND LENSSE 5.5 TO 5.8 FT. |             | 2.5 FT. STICKUP ADDED   |
| 312.4             | UPPER SILT TILL<br>COMPACT TO DENSE, BROWN F SAND, AND TO LITTLE SILT, TRACE TO LITTLE M-C SAND, TRACE TO LITTLE SUBANGULAR GRAVEL, DILATANT SATURATED FROM MOPT. |             | 1.6 FT. BENTONITE PELLET SEAL REMOVED   |
| 298.4             |   |             | MIXED CEMENT GROUT FILLED TO GROUND SURFACE   |
| 22.0              | GLACIOFLUVIAL CLAY<br>VERY SOFT, GRAY CLAY, TRACE F SAND AND SILT, SATURATED  |             | PROTECTIVE CASING WITH #4-Q SAND  |
| 24.0              | END OF SAMPLING AUGERED TO 23.0 FT.   |             | WEEP HOLES WERE PUT IN PROTECTIVE CASING FOR DRAINAGE; PROTECTIVE PISTONS WERE PLACED AROUND WELL                     |
| 296.4             |   |             | A CONCRETE PAD WAS LATER PLACED AROUND WELL BY THE SITE AND NEW WEEP HOLES WERE PUT IN CASING.                        |
|                   |   |             | (CONTINUED ON NEXT PAGE)  |
|                   |   |             | <b>WELL DEVELOPMENT NOTES</b>   |
|                   |   |             | DATE DEVELOPED: 7-25-86 TO 9-2-86   |
|                   |   |             | DEVELOPMENT METHOD: AIR LIFT  |
|                   |   |             | VOLUME PURGED: 51.0 GAL.  |
|                   |   |             | FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE.  |
|                   |   |             | NOTE: A 6.5 FT. END CAP WAS PLACED AT THE BOTTOM OF THE SCREEN SECTION 2.5, 9.325, 10.325 FT. IN LENGTH RESPECTIVELY. |

**Golder  
Associates**

|                                      |              |              |
|--------------------------------------|--------------|--------------|
| SUBJECT CWM/WELLS/MODEL CITY F192-15 |              |              |
| Job No. 853-3051                     | Made by WFH  | Date 7.16.86 |
| Ref.                                 | Checked DJM  | Sheet 2 of 2 |
|                                      | Reviewed JFC |              |

A DEDICATED STAINLESS STEEL BAILER WAS INSTALLED SUBSEQUEN  
TO DEVELOPMENT.

Lined area for additional notes or drawings.

JOB NO. 853-3051 QA. INSP. W.H. PROJECT CWM/WELLS/MODEL CITY BORING NO. F192-2S  
 DEPTH HOLE 20.0 FT DEPTH WL. 3.81 FT DRILLING METHOD HOLLOW STEM AUGERS-4 1/4" ID SHEET 1 OF 1  
 TEMP 78° F TIME WL. 922186 DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 309.3 FT  
 WEATHER SUNNY DRILL RIG ACKER 40-2 DRILLER J. GENOVESE DATUM MSL  
 COORDINATES N 0476.67 E 056892 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 1:00 / 7-15-86  
 LOCATION 6.5 FEET SOUTH OF F192-2D WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 3:00 / 7-15-86

| ELEV. DEPTH (Ft) | DESCRIPTION   | UNIFIED CLASS | BLOWS/FOOT | SAMPLES |      |                                | REMARKS        |   |
|------------------|---|---------------|------------|---------|------|--------------------------------|----------------|---|
|                  |   |               |            | NUMBER  | TYPE | HAMMER BLOWS PER 6 IN. REC/ATT |                |   |
| 309.3            | GROUND SURFACE  |               |            |         |      |                                | GROUND SURFACE |   |
| 0.0              | COMPACT, TAN TO DARK GRAY TO RED BROWN, F-M SAND, SOME CLAYEY SILT, TRACE GRAVEL.   | SM            | 11         | 1       | DO   | 3-4-7-8                        | 18/24          | FILL ROOTS AND LEAVES FROM 0-2.0 FT.  |
| 315.3            |   |               | 22         | 2       | DO   | 8-10-12-11                     | 22/24          |   |
| 4.0              | STIFF TO VERY STIFF BROWN, SLIGHTLY MOTTLED, CLAYEY SILT, TRACE TO LITTLE F-C SAND. GRAY WEATHERING ALONG VERTICAL FRACTURES. | CL            | 34         | 3       | DO   | 12-14-18-19                    | 21/24          | UPPER CLAY TILL   |
|                  |   |               | 31         | 4       | DO   | 12-14-17-21                    | 20/24          | DILATANT TAN F SAND LENSES FROM 6.2 TO 6.5 FT, 7.2 TO 7.5 FT, 8.5 TO 8.8 FT, AND 9.0 TO 9.2 FT. |
| 309.3            |   |               | 50         | 5       | DO   | 12-15-35-30                    | 22/24          |   |
| 10.0             | SOFT TO VERY SOFT GRAY BROWN TO BROWN GRAY, SILTY CLAY, LITTLE TO SOME F-C SAND.  | CL            | 8          | 6       | DO   | 3-4-4-5                        | 24/24          | GLACIOLACUSTRINE CLAY   |
|                  |   |               | 27         | 7       | DO   | 9-11-16-18                     | 22/24          | DILATANT TAN SILT AND RED BROWN F SAND LENSES BETWEEN 12.0 AND 14.0 FT AND 18.0 AND 20.0 FT.    |
|                  |   |               | 5          | 8       | DO   | 2-3-2-3                        | 24/24          |   |
|                  |   |               | 6          | 9       | DO   | 3-3-3-4                        | 22/24          |   |
| 299.3            |   |               | 5          | 10      | DO   | 2-2-3-3                        | 23/24          |   |
| 20.0             | END OF BORING   |               |            |         |      |                                |                | END OF BORING   |



# MONITORING WELL INSTALLATION LOG

NY SDEC OHMS Document No. 201409232-00043

|  |   |                               |   |
|--|---|-------------------------------|---|
| JOB NO. <u>853-3051</u>  | PROJECT <u>CWM / WELLS / MODEL CITY</u>               | WELL NO. <u>F112-2S</u>       | SHEET <u>1</u> OF <u>2</u>  |
| GA INSP. <u>WELH</u>   | DRILLING METHOD <u>HOLLOW STEM AUGERS - 4 1/2" ID</u> | GROUND ELEV. <u>319.3</u> Ft  | WATER DEPTH <u>3.81</u> Ft  |
| WEATHER <u>CLEAR</u>   | DRILLING COMPANY <u>EMPIRE SOILS INVESTIGATIONS</u>   | COLLAR ELEV. <u>320.46</u> Ft | DATE/TIME <u>9-22-86</u>  |
| TEMP. <u>70° F</u>   | DRILL RIG <u>ALKER AD-2</u>                           | DRILLER <u>J. GENOVESE</u>    | STARTED <u>1:00</u> <u>7-15-86</u> COMPLETED <u>3:00</u> <u>7-15-86</u> |
| LOCATION/COORDINATES <u>7.0 FT. SOUTH OF F112-2D / N 8476 67 ; E 8538 92</u> |   |                               |   |

## MATERIALS INVENTORY

|  |   |   |
|--|---|---|
| WELL CASING <u>2.0</u> IN. DIA. <u>10.0</u> FT.              | WELL SCREEN <u>2.0</u> IN. DIA. <u>10.9</u> FT. | BENTONITE SEAL <u>PELLETS</u> <u>4.0</u> DEEP   |
| CASING TYPE <u>304 STAINLESS STEEL</u>                       | SCREEN TYPE <u>304 STAINLESS STEEL</u>          | INSTALLATION METHOD <u>THROUGH AUGERS</u>       |
| JOINT TYPE <u>FLANG TOPLOW UNION THREADED, TAPS, 2-RINGS</u> | SLOT SIZE <u>0.006</u> INCH                     | FILTER PACK QTY <u>13.4</u> L.F. <u>400</u> LBS |
| GROUT QUANTITY <u>NA</u>                                     | CENTRALIZERS <u>NONE</u>                        | FILTER PACK TYPE <u>#1-Q SAND</u>               |
| GROUT TYPE <u>NA</u>   | DRILLING MUD TYPE <u>NONE</u>                   | INSTALLATION METHOD <u>THROUGH AUGERS</u>       |

| ELEV./DEPTH (FT.) | SOIL/ROCK DESCRIPTION  | WELL SKETCH | INSTALLATION NOTES  |
|-------------------|--|-------------|---|
|                   | NOTE: FOR COMPLETE SOIL DESCRIPTIONS, SEE BORING LOG F112-2S   |             | AUGERED TO 20.0 FT. ADDED #4-Q SAND THROUGH AUGERS TO 19.5 FT. INSTALLED WELL PIPE (2-5' SCREENS, 1-10' RISER) 1.4 FT STICKUP. ADDED #1-Q SAND TO 6.6 FT. BELOW GROUND SURFACE (TOOK SAMPLE). ADDED PELLETS TO 2.6 FT. REMOVED AUGERS. MIXED CEMENT GROUT. FILLED TO SURFACE. PUT ON 8" Ø ALUMINUM PROTECTIVE CASING. FILLED INTERIOR OF PROTECTIVE CASING WITH #4-Q SAND. WEED HOLES WERE PUT IN PROTECTIVE CASING FOR DRAINAGE. PROTECTIVE POSTS WERE PLACED AROUND WELL. A CONCRETE PAD WAS LATER PLACED AROUND WELL ON THE SITE AND NEW |
| 319.3             | GROUND SURFACE   |             |   |
| 0.0               | FILL<br>COMPACT, TAN TO DARK GRAY, TO RED BROWN F-M SAND. SOME CLAYEN SILT, TRACE GRAVEL.  |             |   |
| 315.5             | UPPER CLAY TILL<br>STIFF TO VERY STIFF BROWN SLIGHTLY MOTTLED, QUARTZITE TRACE TO LITTLE F-C SAND. DILATANT, TAN F SAND LENSES FROM 4.2 TO 6.5 FT, 7.2 TO 7.8 FT, 8.5 TO 8.8 FT, AND 9.0 TO 9.2 FT.      |             |   |
| 4.0               | GLACIOLACUSTRINE CLAY<br>SOFT TO VERY SOFT, GRAY BROWN TO BROWN GRAY SILTY CLAY, LITTLE TO SOME F-C SAND. DILATANT, TAN SILT AND RED BROWN F SAND LENSES BETWEEN 12.0 AND 14.0 FT. AND 18.0 AND 20.0 FT. |             |   |
| 10.0              | END OF BORING  |             |   |
| 299.3             |  |             | (CONTINUED ON NEXT PAGE)  |
|                   |  |             | <b>WELL DEVELOPMENT NOTES</b>   |
|                   |  |             | DATE DEVELOPED: <u>7-25-86</u> TO <u>9-2-86</u>   |
|                   |  |             | DEVELOPMENT METHOD: <u>A-2</u> LIFT   |
|                   |  |             | VOLUME PURGED: <u>37.9</u> GAL.   |
|                   |  |             | FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE.  |
|                   |  |             | NOTE: A 0.3 FT. END CAP WAS PLACED AT THE BOTTOM OF THE SCREEN SECTION 2, 5, AND 10 FT. SCREEN SECTIONS ARE ACTUALLY 2.35, 5.325, 10.325 FT. IN LENGTH, RESPECTIVELY.   |



# MONITORING WELL INSTALLATION LOG

JOB NO. 853-3031 PROJECT GWM/WELLS / MODEL CITY WELL NO. F12-2D SHEET 1 OF 2  
 GA INSP. WEH DRILLING METHOD HOLLOW STEM AUGERS GROUND ELEV. 319.0 FT WATER DEPTH 5.16 FT  
 WEATHER CLEAR DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. COLLAR ELEV. 320.16 FT DATE/TIME 9-22-86  
 TEMP. 78°F DRILL RIG ACKER AD-2 DRILLER J. GENOVESE STARTED 7:00 7:15.86 COMPLETED 12:00 7:16.86  
 LOCATION/COORDINATES 7.0 FT. NORTH OF F12-2S / N 8483.79, E 8569.43 TIME / DATE TIME / DATE

## MATERIALS INVENTORY

|   |  |   |
|---|--|---|
| WELL CASING <u>2.0</u> M. DIA. <u>24.9</u> I.L. | WELL SCREEN <u>2.0</u> M. DIA. <u>5.6</u> I.L. | BENTONITE SEAL <u>PELLETS</u> <u>17' DEEP</u> |
| CASING TYPE <u>STAINLESS STEEL</u>              | SCREEN TYPE <u>STAINLESS STEEL</u>             | INSTALLATION METHOD <u>TREMIE TUBE</u>        |
| JOINT TYPE <u>FLW</u> <u>TEFLW</u> <u>J/TW</u>  | SLOT SIZE <u>0.006 INCH</u>                    | FILTER PACK QTY <u>110 LF</u>                 |
| GROUT QUANTITY <u>48 LF</u>                     | CENTRALIZERS <u>NONE</u>                       | FILTER PACK TYPE <u>1-G SAND</u>              |
| GROUT TYPE <u>BENTONITE GROUT</u>               | DRILLING MUD TYPE <u>NONE</u>                  | INSTALLATION METHOD <u>TREMIE TUBE / WASH</u> |

| ELEV./DEPTH (FT.)   | SOIL/ROCK DESCRIPTION   | WELL SKETCH | INSTALLATION NOTES  |
|---|---|-------------|---|
| (FT.)   |   |             |   |
| 319.0   | GROUND SURFACE  |             | EXISTING WELL W-4A WAS MODIFIED AND RENAMED F12-2D. FOR COMPLETE DETAILS AND INFORMATION CONCERNING THE INSTALLATION OF THIS WELL, SEE EMPIRE SOILS INVESTIGATIONS, INC. SUBSURFACE LOG (1-25-84) AND OBSERVATION WELL DETAILS (JANUARY 1984), INCLUDED.                                |
| 0.0   | TOPSOIL   |             |   |
| 0.4   | MOIST, STIFF, BROWN CLAYEY SILT, SOME F-C SAND, LITTLE F GRAVEL |             | EXISTING PROTECTIVE CASING WAS REMOVED; A 1" Ø PVC LINE WAS PLACED DOWN THE INSIDE OF THE 2" Ø S.S. PIPE; INSIDE OF WELL WAS WASHED OUT, GEOMON BENTONITE SEAL AND FILTER SAND WAS REMOVED BY JETTING; INSIDE OF WELL OPEN TO 35.8 FT. BELOW GROUND SURFACE; BOTTOM OF WELL AT 35.8 FT. |
| 312.0   | 7.0   |             |   |
| 306.9   | 12.1  |             | (CONTINUED ON NEXT PAGE)<br><b>WELL DEVELOPMENT NOTES</b><br>DATE DEVELOPED: 7-28-86 TO 9-2-86<br>DEVELOPMENT METHOD: AIR LIFT<br>VOLUME PURGED: 33.3 gal<br>FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE  |
| 299.9   | 19.1  |             |   |
| 289.3   | 28.0  |             |   |
| 287.7   | 29.7  |             |   |
| 286.3   | 32.7  |             |   |
| 281.9   | 37.1  |             |   |
| 274.8   | 44.2  |             |   |
| 44.2  | END OF BORING   |             |   |
| NOTE: DESCRIPTIONS ARE FROM EMPIRE SOILS INVESTIGATIONS, INC. SUBSURFACE LOG WELL W-4A (1-25-84) RENAMED F12-2D |   |             |   |

**Golder  
Associates**

|                                      |              |              |
|--------------------------------------|--------------|--------------|
| SUBJECT CWM/WELLS/MODEL CITY FI 2-2D |              |              |
| Job No. 853-3051                     | Made by WFH  | Date 7.16.86 |
| Ref.                                 | Checked DJM  | Sheet 2 of 2 |
|                                      | Reviewed JFC |              |

#1-Q SAND WAS PLACED INSIDE THE SCREEN TO 29.7 FT, HALF OF A FOOT ABOVE THE TOP OF SCREEN (5 FT. SCREEN ASSUMED TO BE 5.6 FT. IN LENGTH); #4-Q SAND WAS PLACED TO 28.7 FT.; A NEW 8" Ø ALUMINUM PROTECTIVE CASING WAS PUT ON WELL; INTERIOR OF PROTECTIVE CASING WAS FILLED WITH #4-Q SAND; WEEP HOLES WERE PLACED IN CASING FOR DRAINAGE. A CONCRETE PAD AND PROTECTIVE POSTS ALREADY EXISTED; A WELL WIZARD WAS INSTALLED SUBSEQUENT TO DEVELOPMENT.

## Boring Log

|                                      |                         |   |                                       |
|--------------------------------------|-------------------------|---|---------------------------------------|
| JOB NO. <u>853-3051</u>              | GA. INSP. <u>PMS</u>    | PROJECT <u>CWM WELLS/MODEL CITY</u>                       | BORING NO. <u>F12-35</u>              |
| DEPTH HOLE <u>18.3 FT.</u>           | DEPTH WL. <u>3.24</u>   | DRILLING METHOD <u>HOLLOW STEM AUGERS-4 1/4" ID</u>       | SHEET <u>1</u> OF <u>1</u>            |
| TEMP <u>70° F</u>                    | TIME WL. <u>9/22/86</u> | DRILLING COMPANY <u>EMPIRE SOILS INVESTIGATIONS, INC.</u> | SURFACE ELEV. <u>316.8 FT.</u>        |
| WEATHER <u>CLEAR</u>                 |                         | DRILL RIG <u>CME 45</u>                                   | DRILLER <u>J. LAMM</u>                |
| COORDINATES <u>N9017.05 E8718.12</u> |                         | WT. SAMPLER HAMMER <u>140 LBS.</u>                        | DROP <u>30 IN.</u>                    |
| LOCATION <u>                    </u> |                         | WT. CASING HAMMER <u>300 LBS.</u>                         | DROP <u>30 IN.</u>                    |
|                                      |                         |   | STARTED <u>3:51 / 7-14-86</u>         |
|                                      |                         |   | COMPLETED <u>                    </u> |

| ELEV. DEPTH (FT) | DESCRIPTION   | UNIFIED CLASS. | BLOWS/FOOT | SAMPLES |      |                                 | REMARKS   |  |                 |
|------------------|---|----------------|------------|---------|------|---------------------------------|---|--|-----------------|
|                  |   |                |            | NUMBER  | TYPE | HAMMER BLOWS PER 8 IN. REC./ATT |   |  |                 |
| 316.8            | GROUND SURFACE  |                |            |         |      |                                 | GROUND SURFACE  |  |                 |
| 00               | FIRM TO STIFF, BROWN SILTY CLAY, LITTLE TO SOME F.C. SAND, TRACE TO LITTLE GRAVEL.                | CL             | 7          | 1       | DO   | 2-4-3-4                         | 21/24   | UPPER CLAY TILL ROOTS TO 2.0 FT.                                   |                 |
|                  |   |                | 7          | 2       | DO   | 4-3-4-4                         | 12/24   | MOTTLED FROM 2.0 FT TO 6.0 FT.                                     |                 |
|                  |   |                | 7          | 3       | DO   | 2-3-4-6                         | 12/24   | GRAY WEATHERING ALONG VERTICAL FRACTURES FROM 2.0 TO 6.0 FT.       |                 |
|                  |   |                | 14         | 4       | DO   | 7-6-8-15                        | 2A/24   | SILT AND M SAND LENSES FROM 7.5 TO 9.1 FT.                         |                 |
|                  |   |                | 40         | 5       | DO   | 15-24-16-5                      | 20/24   |  |                 |
|                  |   |                |            | 9       | 7    | DO                              | 4-4-5-5   | 9/24   |                 |
|                  |   |                |            | 31      | 8    | DO                              | 6-15-16-6   | 24/24  | UPPER SILT TILL |
| 304.8            | COMPACT TO DENSE BROWN AND GRAY, M.C. SAND, LITTLE F. GRAVEL, LITTLE F SAND, TRACE CLAY.          | SM             | 11         | 10      | DO   | 5-7-4-6                         | 15/24   | GLACIOLACUSTRINE CLAY SILT AND F SAND LENSE FROM 13.8 TO 14.0 FEET |                 |
| 12.0             |   | CL             | 17         | 11      | DO   | 7-10-7-6                        | 24/24   | MIXED CLAY AND CLAYEY SILT FROM 16.0 TO 17.4 FT.                   |                 |
| 102.8            |   | CH             |            |         |      |                                 |   |  |                 |
| 14.0             | FIRM GRAY BROWN CLAY, SOME F.C. SAND, TRACE GRAVEL BECOMING VERY SOFT GRAY CLAY, TRACE F.M. SAND. |                |            |         |      |                                 |   |  |                 |
| 238.8            | END OF BORING   |                |            |         |      |                                 | END OF BORING   |  |                 |
| 18.0             | WELL SUNK TO 18.3 FT.   |                |            |         |      |                                 | INSTALLED F12-35 SEE ACCOMPANYING MONITORING WELL INSTALLATION LOG. |  |                 |

# MONITORING WELL INSTALLATION LOG

NY State Office of Environmental Conservation Document No. 201269232-00043

|   |  |                                |                             |
|---|--|--------------------------------|-----------------------------|
| JOB NO. <u>853-3051</u>                         | PROJECT <u>CWM / WELLS / MODEL CITY</u>                  | WELL NO. <u>F112-35</u>        | SHEET <u>1</u> OF <u>2</u>  |
| SA INSP. <u>PMS</u>                             | DRILLING METHOD <u>HOLLOW STEM AUGERS-4 1/4" ID</u>      | GROUND ELEV. <u>316.8 FT</u>   | WATER DEPTH <u>3.24 FT</u>  |
| WEATHER <u>CLEAR</u>                            | DRILLING COMPANY <u>EMPIRE SOILS INVESTIGATIONS, INC</u> | COLLAR ELEV. <u>319.14 FT</u>  | DATE/TIME <u>9-22-86</u>    |
| TEMP. <u>70° F</u>                              | DRILL RIG <u>CME 45</u>                                  | DRILLER <u>J. LAMM</u>         | STARTED <u>9:19 7/15/86</u> |
| LOCATION/COORDINATES <u>N 9017.06 E 8718.12</u> |  | COMPLETED <u>10:38 7/15/86</u> |                             |

| MATERIALS INVENTORY                               |   |   |  |
|---|---|---|--|
| WELL CASING <u>2.0</u> IN. DIA. <u>10.0</u> FT.   | WELL SCREEN <u>2.0</u> IN. DIA. <u>10.6</u> FT. | BENTONITE SEAL <u>PELLETS 3.7' DEEP</u>     |  |
| CASING TYPE <u>304 STAINLESS STEEL</u>            | SCREEN TYPE <u>304 STAINLESS STEEL</u>          | INSTALLATION METHOD <u>THROUGH AUGERS</u>   |  |
| JOINT TYPE <u>FLUSH TEFLOW VITON TAPE O-RINGS</u> | SLOT SIZE <u>0.006 INCH</u>                     | FILTER PACK QTY <u>12.3 L.F. ; 350 LBS.</u> |  |
| GROUT QUANTITY <u>NA</u>                          | CENTRALIZERS <u>NONE</u>                        | FILTER PACK TYPE <u>#1-Q SAND</u>           |  |
| GROUT TYPE <u>NA</u>                              | DRILLING MUD TYPE <u>NONE</u>                   | INSTALLATION METHOD <u>THROUGH AUGERS</u>   |  |

| ELEV./DEPTH (FT.) | SOIL/ROCK DESCRIPTION  | WELL SKETCH | INSTALLATION NOTES  |                                   |
|-------------------|--|-------------|---|-----------------------------------|
| 316.8             | NOTE: FOR COMPLETE SOIL DESCRIPTIONS, SEE BORING LOG F112-35<br><br>GROUND SURFACE   |             | AUGERED TO 18.0 FT. ADDED A FEW HANDFULS OF #1-Q SAND TO BOTTOM OF HOLE. INSTALLED WELL PIPE (1-10' SCREEN (HORIZONTAL) 2.5 FT. STICKUP, WELL SANK BELOW AUGERED DEPTH TO 18.3 FT. BELOW GROUND SURFACE. ADDED #1-Q SAND (SLURRY) TO 5.7 FT. (DRY SAMPLE TAKEN). PELLETS ADDED TO 2.0 FT. REMOVE AUGERS. MIXED CEMENT GROUT. FILLED TO GROUND SURFACE. PUT ON 8" ALUMINUM PROTECTIVE CASING. FILLED INTERIOR OF PROTECTIVE CASING WITH #4-Q SAND. NEED HOLES WERE PUT IN CASING FOR DRAINAGE. PROTECTIVE POSTS WERE PUT AROUND WELL. A CONCRETE PAD WAS LATER PLACED AROUND WELL ON |                                   |
| 0.0               | UPPER CLAY TILL<br>FIRM TO STIFF, BROWN SILTY CLAY. LITTLE TO SOME F-C SAND, TRACE TO LITTLE GRAVEL.<br><br>SILT AND M SAND LENSES FROM 7.5 TO 9.1 FT.   |             | 2.0'  | (CONTINUED ON NEXT PAGE)          |
| 304.8             | UPPER SILT TILL<br>COMPACT TO DENSE, BROWN AND GRAY M.I.D.S. SAND. LITTLE F GRAVEL, LITTLE F SAND, TRACE CLAY.   |             | 5.1'  | WELL DEVELOPMENT NOTES            |
| 12.0              | GLACIOLACUSTRINE CLAY  |             | 18.0'   | DATE DEVELOPED: 7-25-86 TO 9-2-86 |
| 302.8             | FIRM, GRAY BROWN CLAY, SOME F-C SAND, TRACE GRAVEL, BROWNISH GREEN SOFT, GRAY CLAY, TRACE F-M SAND. SILT AND F SAND LENSES FROM 13.8 TO 16.0 FT. MILD CLAY AND CLAYEN SILT FROM 16.0 TO 17.4 FT. |             | 18.3'   | DEVELOPMENT METHOD: AIR LIFT      |
| 18.0              | END OF BORING<br>SUNK TO 18.3 FT.  |             | VOLUME PURGED: 346 GAL  |                                   |
|                   |  |             | FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLES.   |                                   |
|                   |  |             | NOTE: A 0.3 FT. END CAP WAS PLACED AT THE BOTTOM OF THE SCREEN SECTION. 2, 5, AND 10 FT. SCREEN SECTIONS ARE ACTUALLY 2.35, 9.325, 10.325 FT. IN LENGTH RESPECTIVELY.   |                                   |

**Golder Associates**

|                              |              |              |
|------------------------------|--------------|--------------|
| SUBJECT CWM/WELLS/MODEL CITY |              | F1 & 2-35    |
| Job No. 853-3051             | Made by PMS  | Date 7-15-86 |
| Ref.                         | Checked DJM  | Sheet 2 of 2 |
|                              | Reviewed JFC |              |

THE SITE AND NEW WEED HOLES WERE PUT IN CASING; A DEDICATED STAINLESS STEEL BAILER WAS INSTALLED SUBSEQUENT TO DEVELOPMENT.

Boring Log

JOB NO. 853-3051 GA. INSP. LEL PROJECT CWM/WELLS/MODEL CITY BORING NO. FP-15  
 DEPTH HOLE 18.0 FT. DEPTH WL. 2.79 ft. DRILLING METHOD HOLLOW STEM AXERS - 4 1/4" ID SHEET 1 OF 1  
 TEMP 73° F TIME WL. 9/23/86 DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 318.6 FT.  
 WEATHER SUNNY DRILL RIG CME 45 DRILLER J. LAMM DATUM M.S.L.  
 COORDINATES N 90° 52' 37" E. 1006.65 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 9:05 / 16:30 / 86  
 LOCATION 4.5 FEET WEST OF FP-10 WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 10:52 / 16:30 / 86

| ELEV. DEPTH (FT) | DESCRIPTION  | UNIFIED CLASS | BLOWS/FOOT | SAMPLES |      |                                 | REMARKS        |  |
|------------------|--|---------------|------------|---------|------|---------------------------------|----------------|--|
|                  |  |               |            | NUMBER  | TYPE | HAMMER BLOWS PER 6 IN. REC./ATT |                |  |
| 318.6            | GROUND SURFACE   |               |            |         |      |                                 | GROUND SURFACE |  |
| 318.1            | Loose-Brown F SAND, AND SILT FIBROUS ROOTS DRY.  | SL            | 10         | 1       | DO   | 3-5-5-8                         | 19/24          | GROUND SURFACE TOPSOIL   |
| 304.5            | VERY STIFF TO FIRM, BROWN MOTTLED, CLAYEY SILT TO SILTY CLAY, SOME M-C SAND, TRACE GRAVEL, GRAY WEATHERING ALONG VERTICAL FRACTURES. | CL            | 48         | 3       | DO   | 7-18-30-33                      | 17/24          | UPPER CLAY TILL 0.5-4.0 FEET FIBROUS ROOTS                         |
|                  |  |               | 29         | 4       | DO   | 8-11-18-30                      | 17/24          |  |
|                  |  |               | 53         | 5       | DO   | 42-28-25-30                     | 22/24          | 8.0-14.0 FEET OCCASIONAL POCKETS OF SOFT GRAY CLAY                 |
|                  |  |               | 14         | 6       | DO   | 6-6-8-9                         | 19/24          |  |
|                  |  |               | 15         | 7       | DO   | 3-5-10-11                       | 21/24          |  |
| 304.5            |  |               | 28         | 8       | DO   | 20-13-13-10                     | 24/24          |  |
| 14.1             | VERY SOFT GRAY CLAY, TRACE TO LITTLE F SAND.   | CH            | 2          | 9       | DO   | WH-1-1-1                        | 19/24          | GLACIOLACUSTRINE CLAY 14.5-14.6 FT. GRAY SILT AND F SAND LENS      |
| 300.6            |  |               | 3          | 11      | DO   | 2-1-2-1                         | 22/24          |  |
| 18.0             | END OF SAMPLING AUGERED TO 16.0 FT.  |               |            |         |      |                                 |                | END OF SAMPLING  |
|                  |  |               |            |         |      |                                 |                | INSTALLED FP-15 SEE ACCOMPANYING MONITORING WELL INSTALLATION LOG. |



# MONITORING WELL INSTALLATION LOG

JOB NO. 853-3051 PROJECT CWM / WELLS / MODEL CITY WELL NO. FP-15 SHEET 1 OF 1  
 GA. HSB. LEL DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" ID GROUND ELEV. 318.6 FT WATER DEPTH 2.79 FT  
 WEATHER CLEAR DRILLING COMPANY EMPIRE SONS INVESTIGATIONS INC. COLLAR ELEV. 321.00 FT DATE/TIME 9-23-86  
 TEMP. 79 F DRILL RIG CME 45 DRILLER J. LAMM STARTED 10:40 6-30-86 COMPLETED 11:35 6-30-86  
 LOCATION/COORDINATES 4.9 FT WEST OF FP-1D / N 9052 37 E 10061 B5

## MATERIALS INVENTORY

|   |  |  |
|---|--|--|
| WELL CASING <u>2.0</u> W. DIA. <u>10.0</u> LI | WELL SCREEN <u>2.0</u> W. DIA. <u>7.9</u> LI | BENTONITE SEAL <u>PELLETS 4.0' DEEP</u>      |
| CASING TYPE <u>304 STAINLESS STEEL</u>        | SCREEN TYPE <u>304 STAINLESS STEEL</u>       | INSTALLATION METHOD <u>THROUGH AUGERS</u>    |
| JOINT TYPE <u>RUBBER TEFLOON VITON</u>        | SLOT SIZE <u>0.006 INCH</u>                  | FILTER PACK QTY. <u>11.0 L.F. ; 300 LBS.</u> |
| GROUT QUANTITY <u>NA</u>                      | CENTRALIZERS <u>NONE</u>                     | FILTER PACK TYPE <u>#1-0 SAND</u>            |
| GROUT TYPE <u>NA</u>                          | DRILLING MUD TYPE <u>NONE</u>                | INSTALLATION METHOD <u>THROUGH AUGERS</u>    |

| ELEV./DEPTH (FT.) | SOIL/ROCK DESCRIPTION  | WELL SKETCH | INSTALLATION NOTES  |
|-------------------|--|-------------|---|
| 318.6             | GROUND SURFACE   |             | AUGERED TO 16.0 FT.; ADDED #1-0 SAND TO 15.5 FT. BELOW GROUND SURFACE (SAMPLE TAKEN); INSTALLED WELL PIPE (1-2' SCREEN 1-5' SCREEN 1-10' RISER) 2.4 FT. STICKUP;  |
| 0.0               | TOPSOIL  |             | ADDED #1-0 SAND TO 9.0 FT. ADDED PELLETS TO 1.0 FT.   |
| 318.1             | LOOSE, BROWN EARTH AND SILT. DISKS NOTED   |             | REMOVED AUGERS; MIXED CEMENT GROUT; FILLED TO GROUND SURFACE; PUT 8" Ø ALUMINUM PROTECTIVE CASING ON; FILLED INTERIOR OF PROTECTIVE CASING WITH #4-0 SAND; PROTECTIVE POSTS WERE PUT AROUND WELL; WEEP HOLES WERE PUT IN CASING FOR DRAINAGE; A CONCRETE PAD WAS LATER PLACED BY THE SITE AROUND WELL AND NEW WEEP HOLES WERE PUT IN CASING; A DEDICATED STAINLESS STEEL CASING WAS INSTALLED SUBSEQUENT TO DEVELOPMENT |
| 0.5               | UPPER CLAY TILL  |             |   |
| 304.5             | VERY STIFF TO FIRM, MOTTLED CLAYE SILT TO SANDY CLAY, SOME M-C SAND, TRACE GRAVEL. 8.0 - 14.0 FT. OCCASIONAL FOLDS OF SOFT GRAY CLAY |             |   |
| 14.1              | GLACIOLAUSTRINE CLAY   |             |   |
| 300.6             | VERY SOFT, GRAY CLAY, TRACE TO LITTLE # SAND 14.5 - 14.8 FT. GRAY SILT AND # SAND LENS   |             |   |
| 18.0              | END OF SAMPLING AUGERED TO 16.0 FT.  |             |   |
|                   |  |             | <b>WELL DEVELOPMENT NOTES</b>   |
|                   |  |             | DATE DEVELOPED: 7-25-86 TO 7-30-86  |
|                   |  |             | DEVELOPMENT METHOD: AIR LIFT  |
|                   |  |             | VOLUME PURGED: 5.0 GAL.   |
|                   |  |             | FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE.  |
|                   |  |             | NOTE: A 0.5 FT. END CAP WAS PLACED AT THE BOTTOM OF THE SCREEN SECTION: 2.9, AND 10 FT. SCREEN SECTIONS ARE ACTUALLY 2.99, 5.925, 10.325 FT. IN LENGTH RESPECTIVELY.  |

Boring Log

JOB NO. 853-3051 GA. INSP. WH/LEL PROJECT CWA/WELLS/MOORE CITY BORING NO. FP-1D  
 DEPTH HOLE 52.0 FT. DEPTH WL. 4.09 FT. DRILLING METHOD HOLLOW STEEL AUGERS-4 1/4" ID SHEET 1 OF 1  
 TEMP 88°/75° F TIME WL. 9-23-86 DRILLING COMPANY EMERGE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 318.4 FT.  
 WEATHER PARTLY CLOUDY/SUNNY DRILL RIG ACKER AD-2 DRILLER J. GENOVESE DATUM USL  
 COORDINATES N 9052.15 E 10066.45 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 3:05 / 7-7-86  
 LOCATION 4.0 FT. EAST OF FP-13 WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 1:00 / 7-8-86

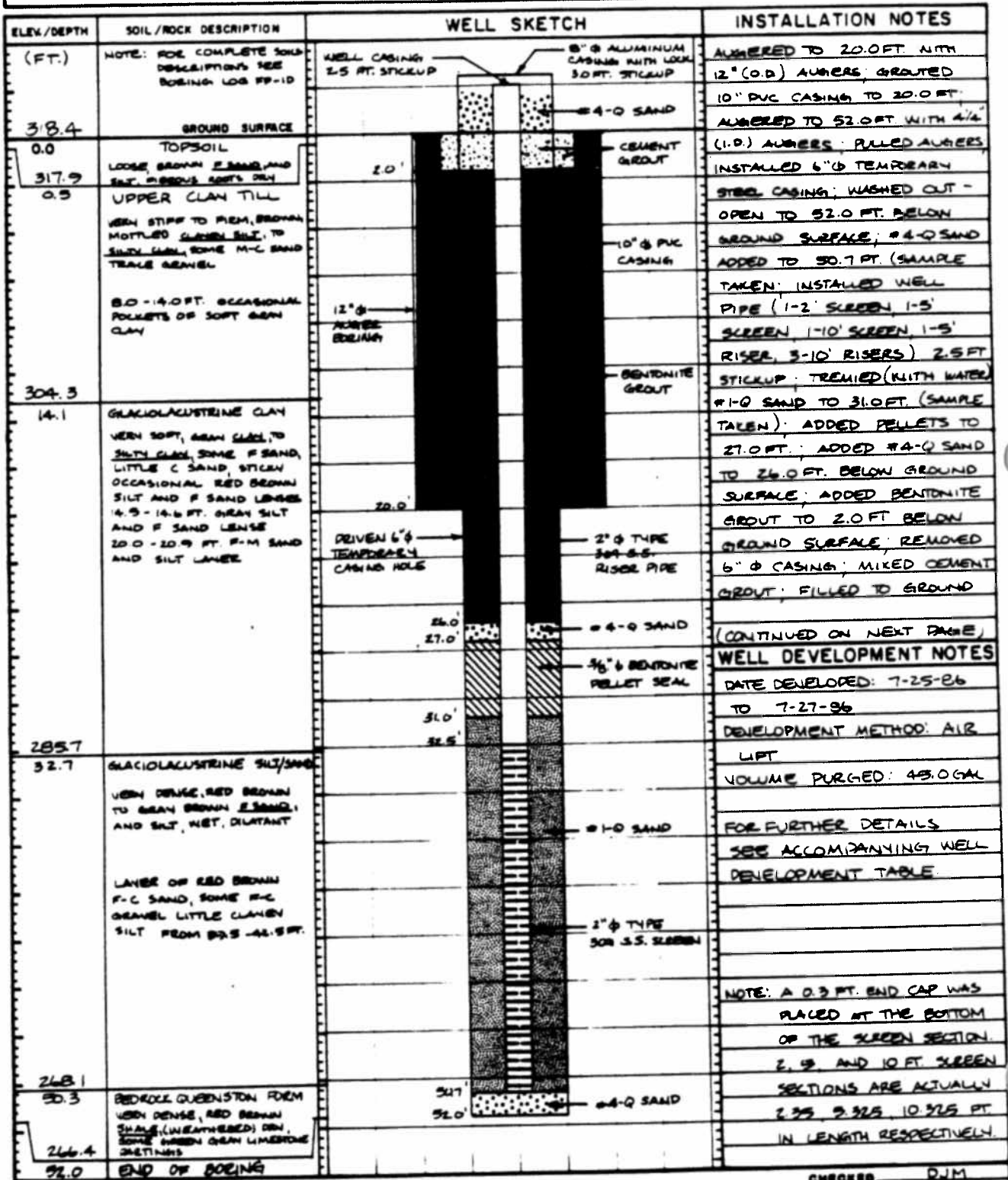
| ELEV. DEPTH (FT.) | DESCRIPTION  | UNIFIED CLASS | BLOWS/FOOT | SAMPLES |      |                        |  | REMARKS   |
|-------------------|--|---------------|------------|---------|------|------------------------|--|---|
|                   |  |               |            | NUMBER  | TYPE | HAMMER BLOWS PER 6 IN. | REC./ATT   |   |
| 278.4<br>20.0     | FOR COMPLETE SOILS DESCRIPTION AT THIS LOCATION, SEE BORING LOG FP-13  |               |            |         |      |                        |  | INSTALLED 10 INCH DIAM PVC CASING TO 20.0 FT. AUGERED TO 20.0 FT NO SAMPLING  |
| 289.7<br>32.7     | VERY SOFT, GRAY, CLAY TO SILTY CLAY, SOME F SAND, LITTLE C SAND, STICKY, OCCASIONAL RED BROWN SILT AND F SAND LENSES.  | CL            | 3          | 1       | DO   | 5-2-1-1                | 11/24  | GLACIOLACUSTRINE CLAY FROM 20.0-20.9 FT F-M SAND AND SILT LAYER   |
|                   |  |               | 2          | 2       | DO   | 3-1-1-1                | 24/24  |   |
|                   |  |               | 3          | 5       | DO   | 1-1-2-2                | 2/24   |   |
|                   |  |               | 5          | 6       | DO   | 1-3-2-3                | 11/24  |   |
|                   |  |               | 12         | 7       | DO   | 4-5-7-16               | 10/24  |   |
|                   |  |               | 25         | 9       | DO   | 5-11-14-17             | 8/24   |   |
| 268.1<br>50.3     | VERY DENSE, RED BROWN TO GRAY BROWN F SAND, AND SILT, WET, DILATANT.<br><br>LAYER OF RED BROWN F-C SAND, SOME F-C GRAVEL, LITTLE CLAYEY SILT, FROM 39.5-42.5 FT. | SM            | 52*        | 10      | DO   | 15-21-31-65            | 24/24  | GLACIOLACUSTRINE SILT/SAND<br>AUGERED 34.0 TO 36.0 FT. NO SAMPLE<br>AUGERED 37.0 TO 38.0 FT., NO SAMPLING<br><br>AUGERED 41.5-42.0 FT., NO SAMPLING<br>AUGERED 43.5-44.0 FT., NO SAMPLING<br><br>AUGERED 49.3-50.0 FT., NO SAMPLING |
|                   |  |               | -          | -       | -    | -                      | -  |   |
|                   |  |               | 710*       | 12      | DO   | 70-100*                | 12/12  |   |
|                   |  |               | 33*        | 13      | DO   | 20-16-17-25            | 24/24  |   |
|                   |  |               | 170*       | 14      | DO   | 30-70-100*             | 16/18  |   |
|                   |  |               | 135*       | 15      | DO   | 30-60-75               | 14/18  |   |
|                   |  |               | 28*        | 16      | DO   | 44-98*                 | 12/12  |   |
|                   |  |               | 103*       | 17      | DO   | 21-40-63*              | 13/18  |   |
|                   |  |               | 115*       | 18      | DO   | 25-45-70*              | 16/18  |   |
|                   |  |               | 162*       | 19      | DO   | 43-62-100/3            | 16/16  |   |
| 266.4<br>52.0     | VERY DENSE, RED BROWN SILT (WEATHERED) DRY, SOME GREEN GRAY LIMESTONE PARTINGS   | -             | 2100       | 22.25   | DO   | 112/4*                 | 4/5  | BEDROCK QUEENSTON FORM  |
|                   |  |               | 24         | DO      |      |                        | 2/19   |   |
| 52.0              | END OF BORING  |               |            |         |      |                        | END OF BORING<br><br>* NOTE: 300 LB. HAMMER WAS USED.<br><br>INSTALLED FP-1D<br>SEE ACCOMPANYING MONITORING WELL INSTALLATION LOG. |   |

# MONITORING WELL INSTALLATION LOG

JOB NO. B53-3051 PROJECT CWM NYSD&C OHMS Document No. 201469232-00043 WELLS MODEL WELLS WELL NO. FP-1D SHEET 1 OF 2  
 SA INSP. WEH DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" I.D. GROUND ELEV. 318.4 WATER DEPTH 4.0 FT.  
 WEATHER SUNNY DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. COLLAR ELEV. 320.94 DATE/TIME 9-23-86  
 TEMP. 68° - 75° F DRILL RIG ACKER AD-2 DRILLER GENOVESE STARTED 8:00 7-7-86 COMPLETED 5:00 7-9-86  
 LOCATION/COORDINATES 4.5 FT. EAST OF FP-1S / N 90S2 1S E 10066 4S TIME / DATE TIME / DATE

## MATERIALS INVENTORY

WELL CASING 2.0 W. DIA. 35.0 I.L. WELL SCREEN 2.0 W. DIA. 18.2 I.L. BENTONITE SEAL PELLETS 4.0' DEEP  
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD TREMIPE TUBE WASH  
 JOINT TYPE FLUSH TEPLOX VITON TAPE O-RINGS SLOT SIZE 0.006 INCH FILTER PACK QTY 2 L.F. 500 LBS  
 GROUT QUANTITY \_\_\_\_\_ CENTRALIZERS NONE FILTER PACK TYPE #1-0 SAND  
 GROUT TYPE BENTONITE GROUT DRILLING MUD TYPE NONE INSTALLATION METHOD TREMIPE TUBE WASH



**Golder  
Associates**

|                              |              |              |
|------------------------------|--------------|--------------|
| SUBJECT CWM/WELLS/MODEL CITY |              | FP-1D        |
| Job No. 853-3051             | Made by FWS  | Date 7-9-86  |
| Ref.                         | Checked DJM  | Sheet 2 of 2 |
|                              | Reviewed JFC |              |

SURFACE; PUT ON 8"  $\phi$  ALUMINUM PROTECTIVE CASING. FILLED INTERIOR OF PROTECTIVE CASING WITH #4-Q SAND. WEEP HOLES PUT IN CASING FOR DRAINAGE; PROTECTIVE POSTS PLACED AROUND WELL. A CONCRETE PAD WAS LATER PLACED AROUND WELL BY THE SITE AND NEW WEEP HOLES PUT IN CASING; A WELL WIZARD WAS INSTALLED SUBSEQUENT TO DEVELOPMENT.

Boring Log

JOB NO. 853-3051 GA. INSP. W.H. PROJECT CNM/WELLS/MODEL CITY BORING NO. F3-15  
 DEPTH HOLE 20.0 FT. DEPTH WL. 4.05 ft DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" ID SHEET 1 OF 1  
 TEMP 75° F TIME WL. 9:22:86 DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 320.2 FT.  
 WEATHER PARTLY CLOUDY DRILL RIG ACKER AD-2 DRILLER J. GENOVESE DATUM MSL  
 COORDINATES N 8119.55 E 10.813.33 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 9:45/7-14-86  
 LOCATION \_\_\_\_\_ WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 3:30/7-14-86

| ELEV. DEPTH (FT.) | DESCRIPTION   | UNIFIED CLASS | BLOWS/FOOT | SAMPLES |      |                                | REMARKS   |   |
|-------------------|---|---------------|------------|---------|------|--------------------------------|---|---|
|                   |   |               |            | NUMBER  | TYPE | HAMMER BLOWS PER 8 IN. REC/ATT |   |   |
| 320.2             | GROUND SURFACE  |               |            |         |      |                                | GROUND SURFACE  |   |
| 0.0               | VERY STIFF TO FIRM, BROWN MOTTLED, CLAYEY SILT TO SILTY CLAY, LITTLE F SAND, TRACE TO LITTLE GRAVEL.                              | CL            | 57         | 1       | DO   | 12-25-12-14                    | 18/24   | UPPER CLAY TILL   |
|                   |   |               | 90         | 2       | DO   | 22-50-40-4                     | 22/24   | F SAND LAYER FROM 4.5 TO 4.8 FT.                                  |
|                   |   |               | 27         | 3       | DO   | 12-13-14-14                    | 24/24   | GRAY WEATHERING ALONG VERTICAL FRACTURES FROM 4.0 TO 12.0 FT.     |
|                   |   |               | 53         | 4       | DO   | 17-21-32-29                    | 22/24   |   |
|                   |   |               | 14         | 5       | DO   | 6-6-8-12                       | 20/24   |   |
|                   |   |               | 14         | 6       | DO   | 6-7-7-9                        | 24/24   | BECOMING FIRM TO SOFT GRAY BROWN SILTY CLAY FROM 12.0 TO 14.0 FT. |
|                   |   |               | 11         | 7       | DO   | 6-6-5-4                        | 24/24   |   |
|                   |   |               | 8          | DO      |      |                                |   |   |
| 306.2             | COMPACT TO LOOSE, GRAY BROWN F SAND, SOME SILT, TRACE TO LITTLE GRAVEL, SATURATED, DILATANT, CLASTS OF RED BROWN SHALE FRAGMENTS. | SM            | 23         | 9       | DO   | 12-9-14-7                      | 23/24   | UPPER SILT TILL   |
| 14.0              |   |               | 6          | 10      | DO   | 8-3-5-3                        | 22/24   |   |
| 301.2             | VERY SOFT BROWN GRAY CLAY, LITTLE F-C SAND.   | CL            | 13         | 11      | DO   | 9-7-6-8                        | 18/24   | GLACIOLACUSTRINE CLAY   |
| 19.0              |   |               | 12         | DO      |      |                                |   |   |
| 300.2             | END OF BORING   |               |            |         |      |                                | END OF BORING   |   |
| 20.0              |   |               |            |         |      |                                | INSTALLED F3-15<br>SEE ACCOMPANYING<br>MONITORING WELL<br>INSTALLATION LOG. |   |

# MONITORING WELL INSTALLATION LOG

NYSDEC OHMS Document No. 201469232-00043

|                                       |   |                               |                              |
|---------------------------------------|---|-------------------------------|------------------------------|
| JOB NO. <u>B53-3051</u>               | PROJECT <u>CWM / WELLS / MODEL CITY</u>                   | WELL NO. <u>F3-15</u>         | SHEET <u>1</u> OF <u>2</u>   |
| SA INSP. <u>WPH</u>                   | DRILLING METHOD <u>HOLLOW STEM AUGERS - 4 1/4" I.D.</u>   | GROUND ELEV. <u>320.2 FT</u>  | WATER DEPTH <u>4.05 FT</u>   |
| WEATHER <u>P. CLOUDY</u>              | DRILLING COMPANY <u>EMPIRE SOILS INVESTIGATIONS, INC.</u> | COLLAR ELEV. <u>321.97 FT</u> | DATE/TIME <u>9-22-86</u>     |
| TEMP. <u>65°F</u>                     | DRILL RIG <u>ACKER AD-2</u>                               | DRILLER <u>J. GONOVESE</u>    | STARTED <u>10:00</u> 7/14/86 |
| LOCATION/COORDINATES <u>N 8115.95</u> | <u>E 10815.33</u>   | COMPLETED <u>3:30</u> 7/14/86 | TIME / DATE                  |

## MATERIALS INVENTORY

|   |   |   |
|---|---|---|
| WELL CASING <u>2.0</u> W. DIA. <u>10.0</u> I.D. | WELL SCREEN <u>2.0</u> W. DIA. <u>10.6</u> I.D. | BENTONITE SEAL <u>PELLETS 4.0' DEEP</u>   |
| CASING TYPE <u>304 STAINLESS STEEL</u>          | SCREEN TYPE <u>304 STAINLESS STEEL</u>          | INSTALLATION METHOD <u>THROUGH AUGERS</u> |
| JOINT TYPE <u>FLUSH TEPLOX VITON O-RINGS</u>    | SLOT SIZE <u>0.006 INCH</u>                     | FILTER PACK QTY <u>13.4 LF</u> 400 LBS    |
| GROUT QUANTITY <u>NA</u>                        | CENTRALIZERS <u>NONE</u>                        | FILTER PACK TYPE <u>#1-Q SAND</u>         |
| GROUT TYPE <u>NA</u>                            | DRILLING MUD TYPE <u>NONE</u>                   | INSTALLATION METHOD <u>THROUGH AUGERS</u> |

| ELEV./DEPTH (PT.) | SOIL/ROCK DESCRIPTION   | WELL SKETCH | INSTALLATION NOTES  |
|-------------------|---|-------------|---|
|                   | NOTE: FOR COMPLETE SOIL DESCRIPTIONS SEE BORING LOG PB-15   |             |   |
| 320.2             | GROUND SURFACE  |             | AUGERED TO 20.0 FT. ADDED # 4-0 SAND TO 19.2 FT. BELOW GROUND SURFACE; INSTALLED WELL PIPE (1-10' SCREEN, 1-10' RISER) 1.4 FT. STICKUP. ADDED #1-Q SAND TO 6.6 FT. (SAMPLE TAKEN); ADDED PELLETS TO 2.6 FT. BELOW GROUND SURFACE. REMOVED AUGERS; MIXED CEMENT GROUT; FILLED TO GROUND SURFACE; PUT ON 8" ALUMINUM PROTECTIVE CASING; FILLED INTERIOR OF PROTECTIVE CASING WITH # 4-0 SAND. WEED HOLES WERE PUT IN PROTECTIVE CASING FOR DRAINAGE; PROTECTIVE POSTS WERE PLACED AROUND WELL; A CONCRETE PAD WAS LATER PLACED AROUND WELL BY THE SITE. |
| 0.0               | UPPER CLAY TILL<br>VERY STIFF TO FIRM, BROWN MOTTLED CLAYEY SILT TO SILTY CLAY, LITTLE F SAND, TRACE TO LITTLE GRAVEL. F SAND LAYER FROM 4.8 TO 4.6 FT. | 2.6'        |   |
| 306.2             | BECOMING FIRM TO SOFT, BROWN BROWN, SILTY CLAY FROM 12.0 TO 4.0 FT.   | 6.6'        |   |
| 14.0              | UPPER SILT TILL<br>COMPACT TO LOOSE, BROWN BROWN F SAND, SOME SILT, TRACE TO LITTLE GRAVEL; SATURATED; PLASTIC CLAYS OF RED BROWN SHALE FRAGMENTS.      | 8.6'        |   |
| 301.2             | GLACIOLACUSTRINE CLAY   | 12.0'       |   |
| 19.0              | VERY SOFT, BROWN BROWN GRAY, LITTLE F-C SAND  | 16.1'       |   |
| 300.2             |   | 20.0'       |   |
| 20.0              | END OF BORING   |             |   |
|                   |   |             | (CONTINUED ON NEXT PAGE)  |
|                   |   |             | <b>WELL DEVELOPMENT NOTES</b>   |
|                   |   |             | DATE DEVELOPED: 7-25-86 TO 8-13-86  |
|                   |   |             | DEVELOPMENT METHOD: AIR LIFT  |
|                   |   |             | VOLUME PURGED: 9.6 GAL.   |
|                   |   |             | FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE.  |
|                   |   |             | NOTE: A 63 FT. END CAP WAS PLACED AT THE BOTTOM OF THE SCREEN SECTION. 3, 5, AND 10 FT. SCREEN SECTIONS ARE ACTUALLY 3.25, 5.25, 10.325 FT. IN LENGTH, RESPECTIVELY.  |

**Golder  
Associates**

|                              |              |              |
|------------------------------|--------------|--------------|
| SUBJECT CWM/WELLS/MODEL CITY |              | F3-15        |
| Job No. 853-3051             | Made by WFH  | Date 7.14.86 |
| Ref.                         | Checked DJM  | Sheet 2 of 2 |
|                              | Reviewed JFC |              |

AND NEW WEEP HOLES WERE PUT IN CASING. A DEDICATED STAINLESS STEEL BAILER WAS INSTALLED SUBSEQUENT TO DEVELOPMENT.

# Boring Log

NYSDEC OHMS Document No. 201489232 00043

|  |                                    |   |                                 |
|--|------------------------------------|---|---------------------------------|
| JOB NO. <u>853-3051</u>                  | GA. INSP. <u>LEL</u>               | PROJECT <u>CWM/WELLS/MODEL CITY</u>                       | BORING NO. <u>F3-25</u>         |
| DEPTH HOLE <u>22.0 FT</u>                | DEPTH WL. <u>306 ft</u>            | DRILLING METHOD <u>HOLLOW STEM AUGERS - 4 1/4" ID</u>     | SHEET <u>1</u> OF <u>1</u>      |
| TEMP <u>65° F</u>                        | TIME WL. <u>9/22/86</u>            | DRILLING COMPANY <u>EMPIRE SOILS INVESTIGATIONS, INC.</u> | SURFACE ELEV. <u>319.2 FT</u>   |
| WEATHER <u>PARTLY CLOUDY</u>             | DRILL RIG <u>CME 45</u>            | DRILLER <u>J. LAMM</u>                                    | DATUM <u>MSL</u>                |
| COORDINATES <u>N 9058.00 E 10.798.57</u> | WT. SAMPLER HAMMER <u>140 LBS.</u> | DROP <u>30 IN.</u>  | STARTED <u>10-05/16-27-86</u>   |
| LOCATION <u>7.0 FT. W. OF F3-20</u>      | WT. CASING HAMMER <u>300 LBS.</u>  | DROP <u>30 IN.</u>  | COMPLETED <u>11-30/16-27-86</u> |

| ELEV. DEPTH (FT) | DESCRIPTION  | UNIFIED CLASS | BLOWS/FOOT | SAMPLES |      |                                | REMARKS        |                           |
|------------------|--|---------------|------------|---------|------|--------------------------------|----------------|---------------------------|
|                  |  |               |            | NUMBER  | TYPE | HAMMER BLOWS PER 6 IN. REC/ATT |                |                           |
| 319.2            | GROUND SURFACE   |               |            |         |      |                                | GROUND SURFACE |                           |
| 0.0              | LOOSE, LIGHT BROWN TO BROWN MOTTLED, E SAND, AND SILT, SOME FIBROUS ROOTS.   | ML            | 11         | 2       | DO   | 4-5-6-6                        | 21/24          | FILL                      |
| 318.0            |  | CL            | 12         | 3       | DO   | 6-6-6-14                       | 12/24          | UPPER CLAY TILL           |
| 1.2              | STIFF TO VERY STIFF, BROWN TO BROWN GRAY, SILTY CLAY TO CLAYEY SILT, SOME TO SAND.   | CL            | 19         | 4       | DO   | 5-8-11-12                      | 21/24          | ROOT FRAGMENTS TO 4.0 FT. |
| 312.2            |  | ML            | 45         | 5       | DO   | 15-20-25-25                    | 24/24          | UPPER SILT TILL           |
| 7.0              | LOOSE TO COMPACT, BROWN TO GRAY BROWN, F SAND, AND SILT, DILATANT.   | ML            | 16         | 7       | DO   | 5-8-8-3                        | 10/24          |                           |
| 309.2            |  | CL            | 6          | 8       | DO   | 1-3-3-5                        | 12/24          | GLACIOLACUSTRINE CLAY     |
| 10.0             | SOFT, GRAY BROWN SILTY CLAY, SOME F-C SAND, BECOMING VERY SOFT GRAY CLAY, LITTLE F SAND OCCASIONAL F SAND OR SILT LENSES THROUGHOUT. | CL            | 10         | 9       | DO   | 5-5-5-6                        | 22/24          |                           |
| 297.2            |  | CH            | 2          | 10      | DO   | 1-1-1-1                        | 24/24          |                           |
|                  |  | CH            | 4          | 12      | DO   | 1-2-2-2                        | 12/24          |                           |
| 22.0             |  | CH            | 7          | 13      | DO   | 1-5-2-1                        | 12/24          |                           |
|                  |  | CH            | 3          | 14      | DO   | WH-1-2-1                       | 12/24          |                           |
| END OF BORING    |  |               |            |         |      |                                |                | END OF BORING             |



# MONITORING WELL INSTALLATION LOG

JOB NO. 853-3051 PROJECT CWM / WELLS / MODEL CITY WELL NO. F3-25 SHEET 1 OF 2  
 SA INSP. LEL DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" ID GROUND ELEV. 319.2 FT WATER DEPTH 3.06 FT  
 WEATHER CLOUDY DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. COLLAR ELEV. 320.45 FT DATE/TIME 9-22-86  
 TEMP. 65° F DRILL RIG CME 45 DRILLER J. LAMM STARTED 2:00 / 6:27:86 COMPLETED 3:10 / 6:27:86  
 LOCATION/COORDINATES 7.0 FT. WEST OF F3-20 / N 9028.00 / E 10798.57

## MATERIALS INVENTORY

WELL CASING 2.0 in. dia. 10.0 ft. WELL SCREEN 2.0 in. dia. 12.9 ft. BENTONITE SEAL PELLETS 3.9' DEEP  
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD THROUGH AUGERS  
 JOINT TYPE FLUSH TYPON VITON TAPE 0.8100 SLOT SIZE 0.006 INCH FILTER PACK QTY 16 L.F. / 580 LBS  
 GROUT QUANTITY NA CENTRALIZERS NONE FILTER PACK TYPE #1-Q SAND  
 GROUT TYPE NA DRILLING MUD TYPE NONE INSTALLATION METHOD THROUGH AUGERS

| ELEV./DEPTH (FT.) | SOIL/ROCK DESCRIPTION   | WELL SKETCH | INSTALLATION NOTES   |  |
|-------------------|---|-------------|--|--|
|                   | NOTE: FOR COMPLETE SOIL DESCRIPTIONS, SEE BORING LOG F3-25  |             | AUGERED TO 22.0 FT.  |  |
|                   |   |             | ADDED #1-Q SAND TO 20.6 FT. INSTALLED WELL PIPE (1-2' SCREEN 1-10' SCREEN 1-10' RISER) |  |
| 319.2             | GROUND SURFACE  |             |  | 1.5 FT. STICKUP (WELL PIPE SANK 1.0 FT TO 21.6 FT. BELOW GROUND SURFACE);  |
| 0.0               | FILL<br>LOOSE, LIGHT BROWN TO BROWN, MOTTLED F SAND AND SILT, SOME FIBRILS EVIDENT.   |             |  | ADDED #1-Q SAND TO 5.9 FT. (SAMPLE TAKEN);   |
| 1.2               | UPPER CLAY TILL<br>STIFF TO VERY STIFF, BROWN TO BROWN GRAY SILTY CLAY TO SANDY SILT, SOME TO AND SAND  |             |  | ADDED PELLETS TO 2.0 FT. BELOW GROUND SURFACE;   |
| 312.2             | UPPER SILT TILL<br>LOOSE TO COMPACT, BROWN TO GRAY BROWN F SAND AND SILT, DILATANT  |             |  | REMOVED AUGERS; MIXED CEMENT GROUT; FILLED TO GROUND SURFACE;  |
| 7.0               |   |             |  | PUT ON 8" Ø ALUMINUM PROTECTIVE CASING;  |
| 309.2             | GLACIOLACUSTRINE CLAY<br>SOFT, GRAY BROWN SILTY SLUDG, SOME F-C SAND, BECOMING VERY SOFT, GRAY SILTY, LITTLE F SAND. OCCASIONAL F SAND OR SILT LENSES THROUGHOUT. |             |  | FILLED INTERIOR OF PROTECTIVE CASING WITH #4-Q SAND. WEEP HOLES WERE PUT IN CASING FOR DRAINAGE; PROTECTIVE POSTS WERE PLACED AROUND WELL; A CONCRETE  |
| 297.2             |   |             |  | (CONTINUED ON NEXT PAGE)   |
| 22.0              | END OF BORING   |             |  | WELL DEVELOPMENT NOTES<br>DATE DEVELOPED: 7-25-86 TO 7-30-86<br>DEVELOPMENT METHOD: AIR LIFT<br>VOLUME PURGED: 10.6 GAL.<br><br>FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE.<br><br>NOTE: A 0.3 FT. END CAP WAS PLACED AT THE BOTTOM OF THE SCREEN SECTION 2.5, AND 10 FT. SCREEN SECTIONS ARE ACTUALLY 2.25, 9.25, 10.325 FT IN LENGTH, RESPECTIVELY. |

**Golder  
Associates**

|   |              |              |
|---|--------------|--------------|
| <b>SUBJECT CWM/WELLS/MODEL CITY F3-2S</b> |              |              |
| Job No. 853-3051                          | Made by LEL  | Date 6.27.86 |
| Ref.                                      | Checked DJM  | Sheet 2 of 2 |
|   | Reviewed JFC |              |

PAD WAS LATER PLACED AROUND WELL BY THE SITE AND NEW  
 WEEP HOLES WERE PUT IN CASING; A DEDICATED STAINLESS  
 STEEL BAILER WAS INSTALLED SUBSEQUENT TO DEVELOPMENT.

Empty lined area for notes or additional data.

JOB NO. 853-3051 GA. INSP. PMS PROJECT CWM/WELLS/MODEL CITY BORING NO. F3-2D  
 DEPTH HOLE 50.0 FT. DEPTH WL. 5.07 ft. DRILLING METHOD HOLLOW STEM AUGERS-4 1/4" ID SHEET 1 OF 1  
 TEMP 65° F TIME WL. 9-22-86 DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 319.5 FT  
 WEATHER CLOUDY DRILL RIG ACKER 40-2 DRILLER J. GRUOVESE DATUM MSL  
 COORDINATES N9059.62 E10805.35 WT. SAMPLER HAMMER 140 LBS DROP 30 IN. STARTED 9:45 / 7-2-86  
 LOCATION 7.0 FT. EAST OF F3-25 WT. CASING HAMMER 300 LBS DROP 30 IN. COMPLETED 2:00 / 7-2-86

| ELEV. DEPTH (FT) | DESCRIPTION   | UNIFIED CLASS | BLOWS/FOOT | SAMPLES |      |                        |  | REMARKS   |
|------------------|---|---------------|------------|---------|------|------------------------|--|---|
|                  |   |               |            | NUMBER  | TYPE | HAMMER BLOWS PER 6 IN. | REC./ATT   |   |
| 297.5            | FOR COMPLETE SOILS DESCRIPTION AT THIS LOCATION, ALSO SEE BORING LOG F3-25                              |               |            |         |      |                        |  | INSTALLED 10 INCH DIAM. PVC SURFACE CASING TO 19.7 FT. AUGERED TO 22.0 FT., NO SAMPLING   |
| 22.0             | VERY SOFT GRAY CLAY, TRACE TO LITTLE F-C SAND, TRACE TO LITTLE SILT.                                    | CH CL         | 2          | 1       | DO   | WR-WH-2-2              | 24/24  | GLACIOLACUSTRINE CLAY TRACE GRAVEL 22.0 TO 24.0 FT. OCCASIONAL THIN BROWN SILT LENSE OR POCKET BELOW 27.6 FT.   |
|                  |   |               | 3          | 2       | DO   | WH-WH-3-2              | 24/24  |   |
|                  |   |               | 6          | 3       | DO   | 2-3-3-3                | 24/24  |   |
|                  |   |               | 4          | 4       | DO   | 4-2-2-3                | 22/24  |   |
|                  |   |               | 7          | 5       | DO   | WH-WH-7-4              | 13/24  |   |
|                  |   |               | 16         | 6       | DO   | 5-2-14-20              | 14/24  |   |
| 286.0            | VERY DENSE, RED BROWN, TURNING GRAY BROWN, TURNING BROWN F-M SAND, LITTLE SILT, TRACE TO LITTLE GRAVEL. | SM            | 63*        | 8       | DO   | 15-35-28-21            | 24/24  | GLACIOLACUSTRINE SILT/SAND SILT AND F SAND FROM 38.0 TO 40.0 FT. AUGERED FROM 43.6 TO 44.0 FT., NO SAMPLING C SAND AND GRAVEL LENSE FROM 46.0 TO 46.2 FT. AUGERED FROM 47.5 TO 48.0 FT. NO SAMPLING |
| 33.5             |   |               | 69*        | 9       | DO   | 20-20-49-85            | 24/24  |   |
|                  |   |               | 85*        | 10      | DO   | 16-36-49-71            | 17/24  |   |
|                  |   |               | 41*        | 11      | DO   | 5-15-26-30             | 14/24  |   |
|                  |   |               | 50*        | 12      | DO   | 25-50-100/4            | 22/17  |   |
|                  |   |               | 71*        | 13      | DO   | 20-36-35-31            | 18/24  |   |
|                  |   |               | 107*       | 14      | DO   | 27-37-70*              | 24/18  |   |
|                  |   |               | 94*        | 15      | DO   | 17-39-55-60            | 24/24  |   |
|                  |   |               |            | 16      | DO   |                        |  |   |
|                  |   |               |            |         |      |                        |  |   |
| 270.3            | VERY DENSE RED BROWN SILT, LITTLE F-C SAND, LITTLE GRAY F GRAVEL.                                       | ML            |            |         |      |                        | BASAL RED TILL RED WEATHERED SHALE FRAGMENTS FROM 49.8 TO 50.0 FT. |   |
| 49.2             | END OF BORING   |               |            |         |      |                        | END OF BORING  |   |
| 269.5            |   |               |            |         |      |                        |  |   |
| 50.0             |   |               |            |         |      |                        |  |   |

\* NOTE: 300 LB. HAMMER WAS USED.

INSTALLED F3-2D SEE ACCOMPANYING MONITORING WELL INSTALLATION LOG.

# MONITORING WELL INSTALLATION LOG

NY SD E.C. O.H.M.S. Document No. 201409252-00043

JOB NO. BS3-3051 PROJECT CWM / WELLS / MODEL CITY WELL NO. F3-2D SHEET 1 OF 2  
 SA INSP. PMS DRILLING METHOD HOLLOW STEM AUGER - 4 1/4" I.D. GROUND ELEV. 319.5 FT. WATER DEPTH 5.07 FT.  
 WEATHER CLEAR DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. COLLAR ELEV. 321.38 FT. DATE/TIME 9-22-86  
 TEMP. 70° F DRILL RIG ACKER AD-2 DRILLER J. GENOVESE STARTED 11:00 7-3-86 COMPLETED 3:26 7-3-86  
 LOCATION/COORDINATES 7.0 FT. EAST OF E3-2S / N 9059.62 E 10805.35 TIME / DATE TIME / DATE

## MATERIALS INVENTORY

WELL CASING 2.0 W. DIA. 33.0 W. WELL SCREEN 2.0 W. DIA. 18.2 BENTONITE SEAL PELLETS 4.5' DEEP  
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD TREMI TUBE WASH  
 JOINT TYPE FLUSH TEFLON VITON TAPE O-RINGS SLOT SIZE 0.006 INCH FILTER PACK QTY 20.5 L.F. 325 IBS  
 GROUT QUANTITY 100 GAL. CENTRALIZERS NONE FILTER PACK TYPE #1-0 SAND  
 GROUT TYPE BENTONITE GROUT DRILLING MUD TYPE NONE INSTALLATION METHOD TREMI TUBE WASH

| ELEV./DEPTH (FT.) | SOIL/ROCK DESCRIPTION  | WELL SKETCH | INSTALLATION NOTES  |
|-------------------|--|-------------|---|
|                   | NOTE: FOR COMPLETE SOIL DESCRIPTIONS, SEE DRAWING LOG FS-2D  |             |   |
| 319.5             | GROUND SURFACE   |             | AUGERED TO 10.0 FT. WITH 12" (O.D.) AUGERS; GROUTED 10" PVC CASING TO 19.7 FT. BELOW GROUND SURFACE (GROUT SAMPLE TAKEN)  |
| 0.0               | FILL   |             | AUGERED TO 30.0 FT. BELOW GROUND SURFACE WITH 4 1/4" (I.D.) AUGERS; REMOVED AUGERS  |
| 318.3             | LOOSE, LIGHT BROWN TO BROWN, MOTTLED S. SAND, AND SILT SOME FINING BENE.   |             | INSTALLED 6" Ø TEMPORARY STEEL CASING; WASHED OUT TO 30.0 FT.; ADDED #4-0 SAND TO 49.5 FT. (SAMPLE TAKEN); INSTALLED WELL PIPE (1-2' SCREEN, 1-5' SCREEN, 1-10' SCREEN, 1-5' RISER, 3-10' RISERS) 1.9 FT. STICKUP, TREMIED (WITH WATER) #1-0 SAND TO 29.5 FT. BELOW GROUND SURFACE (SAMPLE TAKEN); ADDED BENTONITE PELLETS TO 25.0 FT. MIXED GROUT (50 IBS. BENTONITE/100 GAL. H2O); FILLED TO 2.5 FT. BELOW GROUND SURFACE. REMOVED 6" CASING. |
| 1.2               | UPPER CLAY TILL  |             | (CONTINUED ON NEXT PAGE)  |
| 312.5             | UPPER SILT TILL  |             | WELL DEVELOPMENT NOTES  |
| 7.0               | UPPER SILT TILL  |             | DATE DEVELOPED: 7-25-86   |
| 309.5             | LOOSE TO COMPACT, BROWN TO GREY BROWN S. SAND, AND SILT DILUTANT.  |             | TO 7-27-86  |
| 10.0              | GLACIOLACUSTRINE CLAY  |             | DEVELOPMENT METHOD: AIR LIFT  |
|                   | SOFT, GRAY BROWN SILTY SAND, SOME F-C SAND, BECOMING VERY SOFT, GRAY CLAY, LITTLE F SAND OR SILT LENSES THROUGHOUT |             | VOLUME PURGED: 42.0 GAL   |
|                   | TRACE GRAVEL 22.0-24.0 FT.   |             | FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE.  |
|                   | OCCASIONAL THIN, BROWN SILT LENSES OR POCKET BELOW 27.6 FT.  |             |   |
| 256.0             | GLACIOLACUSTRINE SILT/SAND   |             | NOTE: A 0.3 FT. END CAP WAS PLACED AT THE BOTTOM OF THE SCREEN SECTION. 2.5 AND 10 FT. SCREEN SECTIONS ARE ACTUALLY 2.35, 9.325, 10.325 FT. IN LENGTH RESPECTIVELY.   |
| 35.5              | VERY DENSE, RED BROWN, BEARING GRAY BROWN F-C SAND, LITTLE SILT, TRACE TO LITTLE GRAVEL                            |             |   |
|                   | SILT AND F SAND LENSES 35.0 FT - 40.0 FT.  |             |   |
|                   | C SAND AND GRAVEL LENSES FROM 46.0 - 46.5 FT.  |             |   |
| 270.3             | BASAL RED TILL   |             |   |
| 49.2              | VERY DENSE, RED BROWN SILT, LITTLE F-C SAND, LITTLE GRAY F GRAVEL, AND WEATHERED SHALE                             |             |   |
| 269.5             | END OF BORING  |             |   |
| 50.0              |  |             |   |

**Golder  
Associates**

|                              |              |              |
|------------------------------|--------------|--------------|
| SUBJECT CWM/WELLS/MODEL CITY |              | F3-2D        |
| Job No. 853-3051             | Made by PMS  | Date 7.3.86  |
| Ref.                         | Checked DJM  | Sheet 2 of 2 |
|                              | Reviewed JFC |              |

MIXED CEMENT GROUT FILLED TO GROUND SURFACE PUT ON 8"  $\phi$  ALUMINUM PROTECTIVE CASING FILLED INTERIOR OF CASING WITH #4-Q SAND WEEP HOLES WERE PUT IN CASING FOR DRAINAGE; PROTECTIVE POSTS WERE PLACED AROUND WELL; A CONCRETE PAD WAS LATER PLACED AROUND WELL BY THE SITE AND NEW WEEP HOLES WERE PUT IN CASING; A WELL WIZARD WAS INSTALLED SUBSEQUENT TO DEVELOPMENT.

## Boring Log

JOB NO. 853-3051 GA. INSP. PMS PROJECT CWM/WELLS/MODEL CITY BORING NO. FB-15  
 DEPTH HOLE 18.0 FT. DEPTH WL. 0.24 FT. 46 DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" ID SHEET 1 OF 1  
 TEMP 70° F TIME WL. 9-22-86 DRILLING COMPANY EMPRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 319.2  
 WEATHER CLEAR DRILL RIG CME 45 DRILLER J. LAMM DATUM MSL  
 COORDINATES N 89° 20.7' E 11208.35 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 8:33 / 7-0-86  
 LOCATION --- WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 9:45 / 7-0-86

| ELEV.<br>DEPTH<br>(FT) | DESCRIPTION  | UNIFIED CLASS | BLOWS/FOOT | SAMPLES |      |                        |           | REMARKS  |
|------------------------|--|---------------|------------|---------|------|------------------------|-----------|--|
|                        |  |               |            | NUMBER  | TYPE | HAMMER BLOWS PER 6 IN. | REC./ATT. |  |
| 319.2                  | GROUND SURFACE   |               |            |         |      |                        |           | GROUND SURFACE   |
| 0.0                    | VERY STIFF, BECOMING STIFF, BROWN, MOTTLED CLAYEY SILT, SOME F-C SAND, TRACE GRAVEL, TRACE ROOTS                       | CL            | 11         | 1       | DO   | 4-4-7-6                | 22/24     | FILL<br>ROOTS PRESENT  |
| 317.2                  | STIFF BROWN, BECOMING GRAY BROWN MOTTLED, SILTY CLAY, SOME TO LITTLE F-C SAND.   | CL            | 15         | 2       | DO   | 5-6-9-11               | 17/24     | UPPER CLAY TILL  |
| 2.0                    |  |               | 18         | 3       | DO   | 5-7-11-14              | 17/24     | GRAY WEATHERING ALONG VERTICAL FRACTURES FROM 2.0 TO 6.0 FT. OCCASIONAL FIBROUS ROOT PRESENT |
| 311.2                  |  |               | 41         | 4       | DO   | 17-21-20-25            | 7/24      |  |
| 8.0                    | COMPACT TO DENSE, BROWN TO GRAY BROWN, SILTY, LITTLE TO SOME F-C SAND, TRACE TO LITTLE F GRAVEL, TRACE TO LITTLE CLAY. | ML            | 13         | 5       | DO   | 8-7-6-6                | 12/24     | UPPER SILT TILL<br>DILATANT FROM 8.0 TO 10.0 FT.   |
| 305.4                  |  |               | 8          | 7       | DO   | 8-4-4-14               | 16/24     | SOFT BROWN CLAYEY SILT WITH SILT AND CLAY POCKETS, FROM 11.2 TO 12.8 FT.                     |
|                        |  |               | 49         | 8       | DO   | 14-21-28-28            | 24/24     |  |
|                        |  |               | 19         | 10      | DO   | 10-10-9-6              | 16/24     |  |
| 15.8                   | SOFT GRAY CLAY TRACE F-M SAND, TRACE SILT, OCCASIONAL THIN BROWN SILT LENS.  | CL            | 8          | 12      | DO   | 5-4-4-6                | 24/24     | GLACIOLACUSTRINE CLAY  |
| 301.2                  | END OF BORING  |               |            |         |      |                        |           | END OF BORING  |
| 18.0                   |  |               |            |         |      |                        |           |  |

INSTALLED FB-15  
 SEE ACCOMPANYING  
 MONITORING WELL  
 INSTALLATION LOG.

# MONITORING WELL INSTALLATION LOG

JOB NO. B53-3051 PROJECT GWM / WELLS / MODEL CITY WELL NO. FB-15 SHEET 1 OF 1  
 GA INSP. PMS DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" ID GROUND ELEV. 319.2 WATER DEPTH 0.30 AG. S  
 WEATHER CLEAR DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS COLLAR ELEV. 322.02 DATE/TIME 9-22-86  
 TEMP. 70° F DRILL RIG CME 45 DRILLER J. LAMM STARTED 9:57 7/10/86 COMPLETED 10:40 7/10/86  
 LOCATION/COORDINATES N 89° 00' 78" E 11200.39

## MATERIALS INVENTORY

WELL CASING 2.0 in. dia. 10.0 in. dia. WELL SCREEN 2.0 in. dia. 10.6 in. dia. BENTONITE SEAL PELLETS 4.2' DEEP  
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD THROUGH AUGERS  
 JOINT TYPE FLUSH TEFLOON VITON TAPE O-RINGS SLOT SIZE 0.006 INCH FILTER PACK QTY. 123 L.F. : 300 LBS.  
 GROUT QUANTITY NA CENTRALIZERS NONE FILTER PACK TYPE #1-Q SAND  
 GROUT TYPE NA DRILLING MUD TYPE NONE INSTALLATION METHOD THROUGH AUGERS

| ELEV./DEPTH (FT.) | SOIL/ROCK DESCRIPTION   | WELL SKETCH | INSTALLATION NOTES   |
|-------------------|---|-------------|--|
|                   | NOTE: FOR COMPLETE SOIL DESCRIPTIONS, SEE BORING LOG FB-15  |             |  |
| 319.2             | GROUND SURFACE  |             | AUGERED TO 18.0 FT. ADDED #1-Q SAND TO 17.8 FT. BELOW GROUND SURFACE. INSTALLED WELL PIPE (1-10' SCREEN 1-10' RISER) 2.8 FT. STICKUP.  |
| 0.0               | FILL WITH STIFF, BROWNISH STIFF, BROWN, MOTTLED SILT CLAY. SOME F-C SAND, TRACE SOME GRAVEL.  |             | ADDED #1-Q SAND TO 5.7 FT. (SAMPLE TAKEN). ADDED PELLETS TO 1.5 FT. REMOVED AUGERS. MIXED CEMENT GROUT. FILLED TO GROUND SURFACE. PUT ON 8" Ø ALUMINUM PROTECTIVE CASING. FILLED INTERIOR OF PROTECTIVE CASING WITH #4-Q SAND. WEED HOLES WERE PUT IN PROTECTIVE CASING FOR DRAINAGE. PROTECTIVE POSTS WERE PLACED AROUND WELL. A CONCRETE PAD WAS LATER PLACED AROUND WELL BY THE SITE AND NEW WEED HOLES WERE PUT IN CASING. A DEDICATED STAINLESS STEEL BAILER WAS INSTALLED SUBSEQUENT TO DEVELOPMENT. |
| 317.2             |   |             |  |
| 2.0               | UPPER CLAY TILL STIFF, BROWN, BROWNISH BROWN, MOTTLED SILT CLAY.  |             |  |
| 311.2             |   |             |  |
| 8.0               | UPPER SILT TILL COMPACT TO DENSE, BROWN TO BROWN SILT, LITTLE TO SOME F-C SAND, TRACE TO LITTLE F GRAVEL, TRACE TO LITTLE CLAY. SOFT, BROWN, CLAYEY SILT WITH SILT AND CLAY FOLKETS FROM 11.2 TO 12.8 FT. |             |  |
| 303.4             |   |             |  |
| 15.8              | GLACIOLACUSTRINE CLAY SOFT, GRAY SILT, TRACE F-A SAND, TRACE SILT, OCCASIONAL THIN BROWN SILT LENSES  |             |  |
| 301.2             |   |             |  |
| 18.0              | END OF BORING   |             |  |
|                   |   |             | WELL DEVELOPMENT NOTES<br>DATE DEVELOPED: 7-18-86 TO 7-30-86<br>DEVELOPMENT METHOD: AIR LIFT<br>VOLUME PURGED: 22.1 GAL.<br>FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE.<br>NOTE: A 0.3 FT. END CAP WAS PLACED AT THE BOTTOM OF THE SCREEN SECTION 2.5, 5 AND 10 FT. SCREEN SECTIONS ARE ACTUALLY 2.35, 5.325, 10.325 FT. IN LENGTH RESPECTIVELY.  |

# Boring Log

JOB NO. 853-3051 GA. INSP. PMS PROJECT CWM/WELLS/MODEL CITY BORING NO. FB-25  
 DEPTH HOLE 18.8 FT. DEPTH WL. 9.19 FT. DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" ID SHEET 1 OF 1  
 TEMP 70/60 F TIME WL. 9/22/86 DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 321.7 FT.  
 WEATHER CLEAR/CLOUDY DRILL RIG CME 45 DRILLER J. LAMM DATUM MSL  
 COORDINATES N9327.53 E11524.77 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 3:36 / 16:18:86  
 LOCATION 4.5 FT EAST OF FB-2LD WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 9:19 / 16:19:86

| ELEV. DEPTH (FT.) | DESCRIPTION  | UNIFIED CLASS | BLOWS/FOOT | SAMPLES |      |                                 | REMARKS  |  |
|-------------------|--|---------------|------------|---------|------|---------------------------------|--|--|
|                   |  |               |            | NUMBER  | TYPE | HAMMER BLOWS PER 8 IN. REC./ATT |  |  |
| 321.7<br>0.0      | GROUND SURFACE   |               |            |         |      |                                 | GROUND SURFACE   |  |
| 311.7<br>10.0     | STIFF TO VERY STIFF, DARK BROWN TO BROWN <u>CLAYEY SILT</u> , SOME F-C SAND. | CL            | 26         | 1       | DO   | 5-8-18-17                       | 21/24  | UPPER CLAY TILL<br><br>MOTTLED TO 8.0 FT. GRAY WEATHERING ALONG VERTICAL FRACTURES FROM 4.0 FT. LAYER OF COMPACT, LIGHT BROWN, F-M SAND, FROM 6.0 TO 7.2 FT. |
|                   |  |               | 22         | 2       | DO   | 12-12-20-20                     | 24/24  |  |
|                   |  |               | 26         | 3       | DO   | 6-11-15-25                      | 22/24  |  |
|                   |  |               | 57         | 4       | DO   | 25-30-27-20                     | 19/24  |  |
|                   |  |               | 14         | 6       | DO   | 5-6-8-16                        | 24/24  |  |
| 307.7<br>14.0     | COMPACT TO DENSE, BROWN, <u>F-M SAND</u> , LITTLE SILT, TRACE CLAY.          | SM            | 12         | 7       | DO   | 5-4-8-21                        | 24/24  | UPPER SILT TILL<br>POCKETS OF SILT BETWEEN 12.0 AND 12.6 FT. SLIGHT ODDER THROUGHOUT   |
|                   |  |               | 41         | 8       | DO   | 11-17-24-28                     | 24/24  |  |
| 303.7<br>18.0     | SOFT BROWN GRAY <u>CLAY</u> , TRACE TO AND F-M SAND, TRACE SILT.             | CL<br>CH      | 5          | 9       | DO   | 1-2-3-3                         | 24/24  | GLACIOLACUSTRINE CLAY<br>THIN SILT LENSES AT 15.8 AND 16.6 FT.   |
|                   |  |               | 4          | 11      | DO   | 3-2-2-4                         | 24/24  |  |
|                   | END OF BORING<br>WELL SUNK TO 18.8 FT.                                       |               |            |         |      |                                 | END OF BORING<br><br>INSTALLED FB-25<br>SEE ACCOMPANYING<br>MONITORING WELL<br>INSTALLATION LOG. |  |



# MONITORING WELL INSTALLATION LOG

NYSDEC OHMS Document No. 201469232-00043

JOB NO. B53-3051 PROJECT CWM / WELLS / MODEL CITY WELL NO. FB-25 SHEET 1 OF 2  
 QA INSP. PMS DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" ID GROUND ELEV. 321.7 FT WATER DEPTH 9.19 FT  
 WEATHER CLOUDY DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS INC. COLLAR ELEV. 323.45 FT DATE/TIME 9-22-86  
 TEMP. 60° F DRILL RIG CME 45 DRILLER J. LAMM STARTED 9:19 6:19 86 COMPLETED 10:42 6:19 86  
 LOCATION/COORDINATES 4.5 FT. EAST OF FB-2LD / N 9327 53; E 11524.77 TIME / DATE

## MATERIALS INVENTORY

WELL CASING 2.0 M. DIA. 10.0 LI. WELL SCREEN 2.0 M. DIA. 10.6 LI. BENTONITE SEAL PELLETS 4.0' DEEP  
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD THROUGH AUGERS  
 JOINT TYPE PLUSH TEFLON VITON TAPE O-RINGS SLOT SIZE 0.006 INCH FILTER PACK QTY 125 L.F.  
 GROUT QUANTITY NA CENTRALIZERS NONE FILTER PACK TYPE #1-0 SAND  
 GROUT TYPE NA DRILLING MUD TYPE NONE INSTALLATION METHOD THROUGH AUGERS

| ELEV./DEPTH (FT.) | SOIL/ROCK DESCRIPTION  | WELL SKETCH | INSTALLATION NOTES   |  |
|-------------------|--|-------------|--|--|
|                   | NOTE: FOR COMPLETE SOIL DESCRIPTIONS, SEE BORING LOG FB-25   |             | AUGERED TO 18.0 FT.  |  |
| 321.7             | GROUND SURFACE   |             | #4-0 SAND  | ADDED A FEW HANDFULS OF #1-0 SAND (SLURRY);  |
| 0.0               | UPPER CLAY TILL<br>STIFF TO VERY STIFF, DARK BROWN SILTY CLAY, SOME F-C SAND<br><br>LAYER OF COMPACT, LIGHT BROWN, F-M SAND, FROM 6.0 TO 7.2 FT. |             | 1.5' STICKUP   | INSTALLED WELL PIPE (1-10' SCREEN, 1-10' RISER)  |
| 311.7             | UPPER SILT TILL  |             | 5.5'   | 1.8 FT. STICKUP; WELL PIPE SANK INTO SOFT CLAY TO 18.8 FT BELOW GROUND SURFACE; ADDED #1-0 SAND (SLURRY) TO 5.5 FT. (DRY SAMPLE TAKEN);  |
| 10.0              | UPPER SILT TILL<br>COMPACT TO DENSE BROWN F-M SAND, LITTLE SILT TRACE<br>CLAY RELEASED UP SILT BETWEEN 1.0 AND 2.0 FT.                           |             | 8.2'   | ADDED PELLETS TO 1.5 FT. BELOW GROUND SURFACE;   |
| 307.7             | GLACIOLACUSTRINE CLAY<br>SOFT, BROWN FINE SILT TRACE TO AND F-M SAND, TRACE SILT THIN SILT LENSES AT 14.8 AND 16.4 FT.                           |             | 18.0   | REMOVED AUGERS; MIXED CEMENT GROUT; FILLED TO GROUND SURFACE; PUT ON 8" Ø ALUMINUM PROTECTIVE CASING; FILLED INTERIOR OF PROTECTIVE CASING WITH #4-0 SAND; WEEP HOLES WERE PUT IN CASING FOR DRAINAGE; PROTECTIVE POSTS WERE PUT AROUND WELL; A CONCRETE PAD WAS LATER |
| 14.0              |  | 18.8        | (CONTINUED ON NEXT PAGE)   |  |
| 303.7             | END OF BORING SUNK TO 18.8 FT.   |             | <b>WELL DEVELOPMENT NOTES</b><br>DATE DEVELOPED: 7-14-86 TO 8-1-86<br>DEVELOPMENT METHOD: AIR LIFT<br>VOLUME PURGED: 6.1 GAL<br><br>FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE. |  |
| 18.0              |  |             | NOTE: A 0.5 FT. END CAP WAS PLACED AT THE BOTTOM OF THE SCREEN SECTION. 2.5, AND 10 FT. SCREEN SECTIONS ARE ACTUAL 2.55, 5.325, 10.325 FT. IN LENGTH RESPECTIVELY.                               |  |

**Golder Associates**

|                              |              |              |
|------------------------------|--------------|--------------|
| SUBJECT CWM/WELLS/MODEL CITY |              | FB-25        |
| Job No. 853-3051             | Made by PMS  | Date 6-19-86 |
| Ref.                         | Checked DJM  | Sheet 2 of 2 |
|                              | Reviewed JFC |              |

PLACED AROUND WELL BY THE SITE AND NEW WEAP HOLES WERE PUT IN CASING; A DEDICATED STAINLESS STEEL BAILER WAS INSTALLED SUBSEQUENT TO DEVELOPMENT.

# Boring Log

JOB NO. B53-3051 GA. INSP. FWS PROJECT CWM/WELLS/MODEL CITY BORING NO. FB-2LD  
 DEPTH HOLE 55.3 FT. DEPTH WL. 7.06 FT DRILLING METHOD HOLLOW STEM AUGERS-4 1/4" ID SHEET 1 OF 1  
 TEMP 70° F TIME WL. 9/22/86 DRILLING COMPANY EMPIRE SOIL INVESTIGATIONS INC. SURFACE ELEV. 321.6 FT  
 WEATHER SUNNY/MILD DRILL RIG CME 55 DRILLER M. GAUDY DATUM MSL  
 COORDINATES N932691 E1152016 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 110 / 6:25  
 LOCATION 3.0 FEET EAST OF FB-24D WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 9.00 / 6:26

| ELEV. DEPTH (FT) | DESCRIPTION   | UNIFIED CLASS | BLOWS/FOOT  | SAMPLES |             |                                 | REMARKS  |   |
|------------------|---|---------------|-------------|---------|-------------|---------------------------------|--|---|
|                  |   |               |             | NUMBER  | TYPE        | HAMMER BLOWS PER 6 IN. REC./ATT |  |   |
| 301.6            | FOR COMPLETE SOIL DESCRIPTION AT THIS LOCATION ALSO SEE BORING LOG FB-25  |               |             |         |             |                                 | INSTALLED 10 INCH DIA PVC SURFACE CASING TO 19.7 FT. AUGERED TO 20.0 FT. NO SAMPLING |   |
| 200              | VERY SOFT GRAY CLAY, LITTLE F-C SAND, TRACE TO LITTLE SILT, TRACE GRAVEL, STICKY, MOIST   | CL            | 11          | 1       | DO          | 2-6-5-4                         | 5/24   | GLACIOLACUSTRINE CLAY 5 INCHES OF COMPACT BROWN GRAY SILT AND F SAND, DILATANT FROM 20.0 TO 22.0 FT   |
| 5                |   |               | 2           | DO      | 2-2-3-2     | 24/24                           |  |   |
| 4                |   |               | 3           | DO      | 1-2-2-3     | 18/24                           |  |   |
| 8                |   |               | 4           | DO      | 4-4-4-4     | 21/24                           |  |   |
| 292.3            | COMPACT BROWN, BECOMING VERY DENSE RED BROWN, F SAND, TRACE TO SOME M-C SAND, TRACE TO SOME SILT, TRACE TO SOME GRAVEL.<br><br>AT 42.7 FT BECOMING VERY DENSE MULTICOLORED F-M SAND. (RUNNING SAND) | SM SW         | 11          | 5       | DO          | 4-3-8-9                         | 23/24  | GLACIOLACUSTRINE SILT/SAND<br><br>AUGERED FROM 37.0 TO 38.0 FT. NO SAMPLE<br>LAYERS OF DILATANT SILT BETWEEN 38.0 FT AND 42.0 FT.<br><br>AUGERED FROM 44.0 TO 45.0 FT. NO SAMPLING<br><br>SILT LAYER FROM 49.0 FT TO 50.0 FT.<br><br>AUGERED 53.0 TO 54.0 FT. NO SAMPLING |
| 15               |   |               | 6           | DO      | 11-7-8-12   | 0/24                            |  |   |
| 29               |   |               | 7           | DO      | 8-9-20-43   | 18/23                           |  |   |
| 81               |   |               | 8           | DO      | 19-31-50-64 | 18/24                           |  |   |
| 81               |   |               | 9           | DO      | 24-57*      | 11/12                           |  |   |
| 43               |   |               | 10          | DO      | 15-21-22-27 | 19/24                           |  |   |
| 79               |   |               | 11          | DO      | 25-37-42-57 | 20/24                           |  |   |
| 30               |   |               | 12          | DO      | 13-15-15-16 | 21/24                           |  |   |
| 4                |   |               | 13          | DO      | WH-WH-4-13  | 11/24                           |  |   |
| 90               |   |               | 14          | DO      | 19-41-49-57 | 22/24                           |  |   |
| 30               | 15  | DO            | 9-13-17-21  | 23/24   |             |                                 |  |   |
| 45               | 16  | DO            | 13-17-28-20 | 22/24   |             |                                 |  |   |
| 244.6            | CRUMBLY BROWN RED WEATHERED SHALE   |               | 705         | 17      | DO          | 45-55-50/3                      | 14/16  | BEDROCK - QUENSTONE FORMATION<br>END OF BORING  |
| 246.3            |   |               |             |         |             |                                 |  |   |
| 55.3             | END OF BORING   |               |             |         |             |                                 |  |   |

\* NOTE: 300 LB. HAMMER WAS USED.

INSTALLED FB-2LD SEE ACCOMPANYING MONITORING WELL INSTALLATION LOG.

# MONITORING WELL INSTALLATION LOG

JOB NO. B53-3051 PROJECT CWM/WELLS/MODEL CITY WELL NO. FB-2LD SHEET 1 OF 2  
 GA. HSP. FWS DRILLING METHOD HOLLOW STEEL AUGERS - 4 1/4" I.D. GROUND ELEV. 321.6 FT WATER DEPTH 7.36 FT  
 WEATHER SUNNY DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS INC. COLLAR ELEV. 323.77 FT DATE/TIME 9-22-86  
 TEMP. 70°-75° F DRILL RIG CME 95 DRILLER M. GAUDY STARTED 9:10 9-26-86 COMPLETED 9:00 9-27-86  
 LOCATION/COORDINATES 4.5 FT. WEST OF FB-2S AND 2.0 FT. EAST OF FB-2UD TIME 11:52 AM DATE 9-26-86

## MATERIALS INVENTORY

WELL CASING 2.0 W. DIA. 43.0 W. SCREEN 2.0 W. DIA. 12.9 BENTONITE SEAL PELLETS 4' DEEP  
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD TREMIE TUBE WASH  
 JOINT TYPE RUSH TAPERON WITH O-RINGS SLOT SIZE 0.006 INCH FILTER PACK QTY 154 LF 300 LBS  
 GROUT QUANTITY 125 GAL CENTRALIZERS NONE FILTER PACK TYPE #1-Q SAND  
 GROUT TYPE BENTONITE GROUT DRILLING MUD TYPE NONE INSTALLATION METHOD TREMIE TUBE WASH

| ELEV./DEPTH (FT) | SOIL/ROCK DESCRIPTION  | WELL SKETCH  | INSTALLATION NOTES   |
|------------------|--|--|--|
| 321.6            | GROUND SURFACE   | WELL SKETCH  | AUGERED TO 19.0 FT WITH 12" (O.D.) AUGERS GROUTED 10" Ø PVC CASING TO 19.0 FT. PUSHED TO 19.7 FT. BELOW GROUND SURFACE (GROUT SAMPLE TAKEN); AUGERED TO 55.3 FT WITH 4 1/4" (I.D.) AUGERS. REMOVED AUGERS; INSTALLED 6" Ø TEMPORARY STEEL CASING TO 43.0 FT; CASING DRIVEN TO 54.8 FT; WASHED OUT TO 55.3 FT - OPEN TO 54.2 FT. ADDED #4-O SAND TO 33.7 FT BELOW GROUND SURFACE (SAMPLE TAKEN); INSTALLED WELL PIPE (1-2' SCREEN, 1-10' RISERS) 2.2 FT STICKUP. TREMIED (WITH WATER) #1-Q SAND TO 38.8 FT. BELOW GROUND SURFACE (DRY SAMPLE TAKEN); ADDED PELLETS TO 34.7 FT; ADDED #4-O SAND TO 34.1 FT; MIXED GROUT. |
| 0.0              | UPPER CLAY TILL<br>STIFF TO VERY STIFF, DARK BROWN TO BROWN CLAYEY SILT, SOME F-C SAND. LAYER OF COMPACT, LIGHT BROWN, F.A. SAND, FROM 6.0 TO 7.2 FT.  | <p style="font-size: small;">WELL CASING 2.2 FT STICKUP<br/>8" Ø ALUMINUM CASING WITH LOCK 2.6 FT STICKUP<br/>#4-O SAND<br/>CEMENT GROUT<br/>10" Ø PVC CASING<br/>12" Ø 4-WIRE BOREING<br/>BENTONITE GROUT<br/>2" Ø TYPE 304 SS RISER PIPE<br/>DRIVEN 6" Ø TEMPORARY CASING HOLE<br/>#4-O SAND<br/>3/8" Ø BENTONITE PELLET SEAL<br/>#1-Q SAND<br/>2" Ø TYPE 304 SS SCREEN<br/>#4-O SAND CAGED MATERIAL</p> | (CONTINUED ON NEXT PAGE)   |
| 10.0             | UPPER SILT TILL<br>COMPACT TO DRIFVE, BROWN F-C SAND, LITTLE SILT, TRALE CLAY FRAGMENTS OF SILT BETWEEN 13.0 AND 13.6 FT.  |  |  |
| 14.0             | GLACIOLACUSTRINE CLAY<br>VERY SOFT, GREEN GRAY, LITTLE F-C SAND TRALE TO LITTLE SILT. TRALE GRAVEL, SILT, AND ST. THIN SILT LENSES AT 15.8 AND 16.6 FT. 5 INCHES OF COMPACT, BROWN GRAY SILT, AND F SAND, DILATANT FROM 20.0 TO 22.0 FT.   |  |  |
| 29.3             | GLACIOLACUSTRINE SILT/SAND<br>COMPACT, BROWN BECOMING VERY DENSE, RED BROWN, F SAND, TRALE TO SOME F-C SAND TRALE TO SOME SILT. TRALE TO SOME GRAVEL.<br><br>LAYERS OF DILATANT SILT BETWEEN 38.0 FT. AND 42.0 FT.<br><br>AT 44.7 FT. BECOMING VERY DENSE, MULTICOLOURED F-C SAND (RAINING SAND)<br><br>SILT LAYER FROM 49.0 FT. TO 50.0 FT. |  |  |
| 292.3            |  |  |  |
| 266.3            | BEDROCK QUEENSTON FORMATION<br>CRUMBLY, BROWN RED, WEATHERED SURFACE   |  |  |
| 55.3             | END OF BOREING   |  |  |

**WELL DEVELOPMENT NOTES**  
 DATE DEVELOPED: 7-4-86 TO 7-18-86  
 DEVELOPMENT METHOD: A12 LIFT  
 VOLUME PURGED: 130.0 GAL  
 FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE  
 NOTE: A 0.3 FT. END CAP WAS PLACED AT THE BOTTOM OF THE SCREEN SECTION. 2.9 AND 10 FT. SCREEN SECTIONS ARE ACTUALLY 2.35, 9.325, 10.325 FT. IN LENGTH RESPECTIVELY.

**Golder  
Associates**

|                              |              |              |
|------------------------------|--------------|--------------|
| SUBJECT CWM/WELLS/MODEL CITY |              | F8-2LD       |
| Job No. 853-3051             | Made by FWS  | Date 6.27.86 |
| Ref.                         | Checked DJM  | Sheet 2 of 2 |
|                              | Reviewed JFC |              |

1<sup>ST</sup> BATCH 60 LBS BENTONITE / 40 GAL. H<sub>2</sub>O, 2<sup>ND</sup> BATCH 65 LBS BENTONITE / 45 GAL. H<sub>2</sub>O, 3<sup>RD</sup> BATCH 60 LBS BENTONITE / 40 GAL. H<sub>2</sub>O; FILLED TO 2.7 FT. BELOW GROUND SURFACE; REMOVED CASING; MIXED CEMENT GROUT; FILLED TO 0.3 FT. ABOVE GROUND SURFACE (TOP OF 10" Ø PVC CASING); PUT ON 8" Ø ALUMINUM PROTECTIVE CASING; FILLED INTERIOR OF PROTECTIVE CASING WITH # 4-Ø SAND; WEEP HOLES WERE PUT IN CASING FOR DRAINAGE; PROTECTIVE POSTS WERE PUT AROUND WELL; A CONCRETE PAD WAS LATER PLACED AROUND WELL BY THE SITE AND NEW WEEP HOLES WERE PUT IN CASING; A WELL WIZARD WAS INSTALLED SUBSEQUENT TO DEVELOPMENT.

# Boring Log

JOB NO. 853-3051 GA. INSP. PHS NYSDEC OHMS Document No. 20146823200043 PROJECT WATER WELLS / MOBILE CITY BORING NO. FB-2UD  
 DEPTH HOLE 44.0 FT. DEPTH WL. 7.22 FT. DRILLING METHOD HOLLOW STEM AUGERS-4 1/4" ID SHEET 1 OF 1  
 TEMP 70° F TIME WL. 9-22-86 DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 321.6 FT  
 WEATHER PARTLY CLOUDY / RAIN DRILL RIG CME 55 DRILLER M. GAUDY DATUM MSL  
 COORDINATES N9325.22 E11518.13 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 3:30 / 6-27-86  
 LOCATION 2.0 FT WEST OF FB-2LD WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 9:00 / 6-30-86

| ELEV.<br>DEPTH<br>(FT.) | DESCRIPTION  | UNIFIED CLASS | BLOWS/FOOT | SAMPLES |      |                                | REMARKS  |
|-------------------------|--|---------------|------------|---------|------|--------------------------------|--|
|                         |  |               |            | NUMBER  | TYPE | HAMMER BLOWS PER 6 IN. REC/ATT |  |
| 294.1                   | For complete soil description at this location also see boring logs FB-2S and FB-2LD |               |            |         |      |                                | INSTALLED 10 INCH DIAM PVC SURFACE CASING TO 19.5 FT. AUGERED TO 27.5 FEET NO SAMPLING   |
| 27.5                    | SOFT GRAY CLAY, LITTLE M-F SAND.   | CL            | 15         | 1       | DO   | 1-4-11-6 24/24                 | GLACIOLACUSTRINE CLAY SILT LENSE FROM 28.5 TO 28.6 FT.   |
| 292.1                   | BROWN GRAY F-C SAND, SOME CLAY, TRACE GRAVEL, MOIST.                                 | SM            | 20         | 2       | DO   | 4-9-11-13 11/24                | GLACIOLACUSTRINE SILT/SAND   |
| 29.5                    |  |               |            |         |      |                                |  |
| 290.1                   |  |               |            |         |      |                                |  |
| 31.5                    | END OF SAMPLING<br>AUGERED TO 44.0 TO INSTALL FB-2UD                                 |               |            |         |      |                                | END OF SAMPLING<br>AUGERED TO 44.0 FT TO INSTALL FB-2UD.<br><br>INSTALLED FB-2UD<br>SEE ACCOMPANYING MONITORING WELL INSTALLATION LOG. |

# MONITORING WELL INSTALLATION LOG

NYSDEC OHMS Document No. 201409202-00043

|   |  |                                |                             |
|---|--|--------------------------------|-----------------------------|
| JOB NO. <u>853-3051</u>   | PROJECT <u>CWM / WELLS / MODEL CITY</u>                  | WELL NO. <u>FB-2UD</u>         | SHEET <u>1</u> OF <u>2</u>  |
| GA HSP <u>PMS</u>   | DRILLING METHOD <u>HOLLOW STEM AUGERS- 4 1/4" I.D.</u>   | GROUND ELEV. <u>321.6 FT.</u>  | WATER DEPTH <u>7.22'</u>    |
| WEATHER <u>CLEAR</u>  | DRILLING COMPANY <u>EMPIRE SOILS INVESTIGATIONS INC.</u> | COLLAR ELEV. <u>324.01 FT.</u> | DATE/TIME <u>9-22-86</u>    |
| TEMP. <u>70° F</u>  | DRILL RIG <u>ACKER AD-2</u>                              | DRILLER <u>GENOVESE</u>        | STARTED <u>2:52 6:30 PM</u> |
| LOCATION/COORDINATES <u>2.0 FT WEST OF FB-2UD / N 9325.22; E 11518.13</u> |  | COMPLETED <u>11:08 7:1 PM</u>  |                             |

| MATERIALS INVENTORY                             |   |  |  |
|---|---|--|--|
| WELL CASING <u>2.0</u> IN. DIA. <u>33.0</u> FT. | WELL SCREEN <u>2.0</u> IN. DIA. <u>12.9</u> FT. | BENTONITE SEAL <u>PELLETS 4.0' DEEP</u>        |  |
| CASING TYPE <u>304 STAINLESS STEEL</u>          | SCREEN TYPE <u>304 STAINLESS STEEL</u>          | INSTALLATION METHOD <u>TREMBLE TYPE 1 WASH</u> |  |
| JOINT TYPE <u>FLUSH TEFLON VITON O-RINGS</u>    | SLOT SIZE <u>0.006 INCH</u>                     | FILTER PACK QTY <u>16.0 L.F. 350 LBS</u>       |  |
| GROUT QUANTITY <u>35 GAL.</u>                   | CENTRALIZERS <u>NONE</u>                        | FILTER PACK TYPE <u>#1-Q SAND</u>              |  |
| GROUT TYPE <u>BENTONITE GROUT</u>               | DRILLING MUD TYPE <u>NONE</u>                   | INSTALLATION METHOD <u>TREMBLE TYPE 1 WASH</u> |  |

| ELEV./DEPTH (FT.) | SOIL/ROCK DESCRIPTION  | WELL SKETCH  | INSTALLATION NOTES   |  |
|-------------------|--|--|--|--|
| 321.6             | GROUND SURFACE   | <p>The well sketch shows a vertical well casing starting at 321.6 ft. Below the casing, there is a 2.0 ft. stick-up. The casing is 12" diameter. Below the casing, there is a 10" diameter PVC casing. The well is filled with #4-Q sand. A 2" diameter riser pipe is installed, with a 2" diameter screen at the bottom. The well is sealed with bentonite pellets. The well is developed to 44.0 ft. The well is located 2.0 ft. west of FB-2UD.</p> | <p>AUGERED TO 19.0 FT WITH 12" (O.D.) AUGERS; GROUTED 10" Ø PVC CASING TO 19.0 FT.; PUSHED CASING TO 19.5 FT. BELOW GROUND SURFACE (GROUT SAMPLE TAKEN); AUGERED TO 44.0 FT WITH 4 1/4" (I.D.) AUGERS; REMOVED AUGERS; INSTALLED 6" Ø TEMPORARY STEEL CASING WASHED OUT - OPEN TO 44.0 FT. ADDED #4-Q SAND TO 43.5 FT. BELOW GROUND SURFACE (SAMPLE TAKEN); INSTALLED WELL PIPE (1-2' SCREEN 1-10' SCREEN 1-3' RISER 3-10' RISERS) 2.4 FT. STICK-UP; TREMBLED #1-Q SAND (WITH WATER) TO 28.0 FT. BELOW GROUND SURFACE (DRY SAMPLE TAKEN); ADDED PELLETS TO 24.0 FT. MIXED GROUT 50 LBS BENTONITE/35 GAL H<sub>2</sub>O; FILLED TO 2.0 FT. BELOW GROUND SURFACE; REMOVED 6" CASING; MIXED CEMENT GROUT.</p> |  |
| 0.0               | UPPER CLAY TILL<br>STIFF TO VERY STIFF DARK BROWN TO BROWN CLAYEY SILT, SOME F-C SAND<br><br>LANE OF COMPACT, LIGHT BROWN, F-M SAND, FROM 6.0 TO 7.2 FT.   |  |  |  |
| 311.6             | UPPER SILT TILL<br>COMPACT TO DENSE, BROWN 2-M SAND, LITTLE SILT, TRACE CLAY; POCKETS OF SILT BETWEEN 12.0 AND 12.6 FT.  |  |  |  |
| 307.6             | GLACIOLACUSTRINE CLAY<br>VERY SOFT, GREY SILTY, LITTLE F-C SAND, TRACE TO LITTLE SILT, TRACE GRAVEL, SILTY MUD, THIN SILT LENSES AT 19.8 AND 19.6 FT., 5 INCHES OR COMPACT, BROWN GREY SILT AND A SAND, DILATANT FROM 24.0 TO 25.0 FT. |  |  |  |
| 292.1             | SILT LENSES FROM 28.0 TO 28.6 FT.  |  |  |  |
| 29.5              | GLACIOLACUSTRINE SILT/SAND<br>COMPACT, BROWN GRAY SILT SAND, SOME CLAY, TRACE GRAVEL, MUD<br><br>LAINERS OF DILATANT SILT BETWEEN 38.0 FT. AND 42.0 FT.<br><br>AT 42.7 FT. BECOMING VERY DENSE, MULTICOLORED FINE SAND (RAINING SAND)  |  |  |  |
| 277.6             | END OF BORING  |  |  |  |
| 44.0              |  |  |  |  |

(CONTINUED ON NEXT PAGE)

**WELL DEVELOPMENT NOTES**

DATE DEVELOPED: 7-14-86 TO 7-17-86

DEVELOPMENT METHOD: AIR LIFT

VOLUME PURGED: 175.0 GAL

FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE.

NOTE: A 0.3 FT. END CAP WAS PLACED AT THE BOTTOM OF THE SCREEN SECTION 2.9 AND 10 FT. SCREEN SECTIONS ARE ACTUALLY 2.35, 9.325, 10.325 FT. IN LENGTH RESPECTIVELY.

**Golder  
Associates**

|                              |              |              |
|------------------------------|--------------|--------------|
| SUBJECT CWM/WELLS/MODEL CITY |              | FB-2UD       |
| Job No. 853-3051             | Made by PMS  | Date 7-1-86  |
| Ref.                         | Checked DJM  | Sheet 2 of 2 |
|                              | Reviewed JFC |              |

FILLED TO TOP OF 10" Ø PVC CASING (0.5 FT. ABOVE GROUND SURFACE);  
PUT ON PROTECTIVE CASING; FILLED INTERIOR OF PROTECTIVE CASING  
WITH #4-Q SAND; PUT WEEP HOLES IN PROTECTIVE CASING FOR  
DRAINAGE; PROTECTIVE POSTS WERE PLACED AROUND WELL; A CONCRETE  
PAD WAS LATER PLACED AROUND WELL BY THE SITE AND NEW  
WEEP HOLES WERE PUT IN CASING; A WELL WIZARD WAS INSTALLED  
SUBSEQUENT TO DEVELOPMENT.



JOB NO. 853-3051 GA. INSP. PMS PROJECT CWM/WELLS/NOVEL CITY BORING NO. F9-25  
 DEPTH HOLE 20.0 FT. DEPTH WL. 3.74 FT. DRILLING METHOD HOLLOW STEM AUGERS-4 1/4" ID SHEET 1 OF 1  
 TEMP 75° F TIME WL. 9:22:86 DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 322.5 FT  
 WEATHER CLEAR DRILL RIG CME 45 DRILLER J. LAMM DATUM MSL  
 COORDINATES N 8927.31 E 12480.31 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 11:27 / 7-10-86  
 LOCATION --- WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 3:36 / 7-10-86

| ELEV. DEPTH (FT) | DESCRIPTION   | UNIFIED CLASS | BLOW/FOOT | SAMPLES |      |                                 | REMARKS   |   |
|------------------|---|---------------|-----------|---------|------|---------------------------------|---|---|
|                  |   |               |           | NUMBER  | TYPE | HAMMER BLOWS PER 6 IN. REC./ATT |   |   |
| 322.5            | GROUND SURFACE  |               |           |         |      |                                 | GROUND SURFACE  |   |
| 0.0              | VERY STIFF, BROWN MOTTLED, CLAYEY SILT TO SILTY CLAY, SOME F-C SAND, TRACE GRAVEL.  | CL            | 22        | 1       | DO   | 2-10-12-15                      | 22/24   | FILL<br>DARK GRAY OR BLACK LAYERS FROM 2.0 TO 6.0 FT.<br>ROOTS TO 6.0 FT.   |
|                  |   |               | 15        | 2       | DO   | 7-8-7-15                        | 23/24   |   |
|                  |   |               | 17        | 3       | DO   | 5-7-10-12                       | 21/24   |   |
| 316.5            | STIFF TO FIRM, BROWN, MOTTLED, SILTY CLAY, SOME F-C SAND, TRACE TO LITTLE GRAVEL, GRAY WEATHERING ALONG VERTICAL FRACTURES. | CL            | 31        | 4       | DO   | 17-18-13-23                     | 13/24   | UPPER CLAY TILL<br>TAN SILT LENSE FROM 8.4 TO 8.7 FT. SILT POCKETS RED SHALE AND GRAY LINE-STONE FRAGMENTS FROM 8.7 TO 10.0 FT. AUGERED FROM 10.0 TO 12.0 FT. NO SAMPLE RECOVERED, COBBLE |
| 6.0              |   |               | 30        | 5       | DO   | 4-16-14-21                      | 17/24   |   |
|                  |   |               | -         | -       | -    | -                               | -   |   |
| 310.1            | DENSE TO VERY DENSE, RED BROWN TO BROWN, SILTY, SOME F-C SAND. TRACE TO LITTLE GRAVEL AS GRAY SUBROUNDED CLASTS.            | ML            | 40        | 6       | DO   | 13-14-26-22                     | 15/24   | UPPER SILT TILL<br>14.0-17.2 MIXED WITH SILTY CLAY  |
| 12.4             |   |               | 21        | 8       | DO   | 10-15-8-23                      | 13/24   |   |
|                  |   |               | 108       | 9       | DO   | 25-45-63-45                     | 24/24   |   |
| 304.1            | VERY SOFT GRAY CLAY, THIN BROWN SILT LENSES.  | CL            | 6         | 11      | DO   | 2-3-3-2                         | 20/24   | GLACIOLACUSTRINE CLAY   |
| 18.4             |   |               |           |         |      |                                 |   |   |
| 302.5            | END OF SAMPLING AUGERED TO 19.7 FT.   |               |           |         |      |                                 | END OF SAMPLING   |   |
| 20.0             |   |               |           |         |      |                                 |   |   |
|                  |   |               |           |         |      |                                 | INSTALLED F9-25<br>SEE ACCOMPANYING<br>MONITORING WELL<br>INSTALLATION LOG. |   |

JOB NO. 853-3051  
 SCALE 1 INCH = 5 FEET

Golder Associates

CHECKED DJM  
 DATE DRAWN 11/30/86