

DNREC  
Division of Water Resources  
89 Kings Highway  
Dover, DE 19901

FAX: 302-739-7764



Water Supply Section  
302-739-3665

Underground Discharges Section  
302-739-4761

# FAX

To: Tom McKenna Fax #: 1-302-831-3579  
 From: Jackie Young Date: 5/26/05  
 Re: Comp rpt Pages: 5  
 CC: . . . . .

- Urgent     For Review     Please Comment     Please Reply     Please Recycle

*I do not have a completion report for #195516.*

*Dc 53-49*







GRAVEL PACK

(Y) N

Top 132.5

Bottom 151.0

GROUT

(Y) N

Top 0

Bottom 132.5

DGS ID DC53-49

Type B C G O U mix  
bentonite cement cuttings other unknown

WATER-LEVEL DATA

Date

Time

Water Level

Correction

Water Level A M O R S T W  
air line m-scope other reported static level tape down water-level recorder

WELL YIELD DATA

Pumping Rate

Duration

Static Level

Pumping Level

LOG, TEST, AND SAMPLE DATA

Geologist's Log

Water Quality

Ditch Samples

Driller's Log

Supplemental File

Core Samples 28310-28349 ←

Aquifer Test

GEOPHYSICAL LOG DATA

Caliper

Gamma-Density

Single Point Electric

Differential Single Point

Gamma Spectral

Sonic

Differential Temperature

Induction

Spherically Focused

Flowmeter

Multiple Point   
electriz

Temperature

Gamma

Neutron

Other

# DELAWARE GEOLOGICAL SURVEY GEOPHYSICAL LOG SCHEDULE

DGS ID DG53-49

Record By \_\_\_\_\_

TEM  
(code)

Date Filed 03-11-13

## GEOPHYSICAL LOG DATA

Date Logged 03-11-11

03-11-11

\_\_\_\_\_

\_\_\_\_\_

Log Type GAM

MPE

\_\_\_\_\_

\_\_\_\_\_

Log Source G R S U  
DGS Other USGS Unknown

G R S U  
DGS Other USGS Unknown

G R S U  
DGS Other USGS Unknown

G R S U  
DGS Other USGS Unknown

Log Start \_\_\_\_\_ 0.

\_\_\_\_\_ 0.

\_\_\_\_\_

\_\_\_\_\_

Log Stop \_\_\_\_\_ 154.

\_\_\_\_\_ 154.

\_\_\_\_\_

\_\_\_\_\_

Measuring Point GS KB O TC  
Grd. Slc. Kelly Other Top Bushing Casing

GS KB O TC  
Grd. Slc. Kelly Other Top Bushing Casing

GS KB O TC  
Grd. Slc. Kelly Other Top Bushing Casing

GS KB O TC  
Grd. Slc. Kelly Other Top Bushing Casing

Correction \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## LOG TYPES

CAL - Caliper  
DFT - Differential Temperature  
DSP - Differential Single Point  
FLO - Flowmeter

GAM - Gamma  
GGL - Gamma Density  
GRS - Gamma Spectral  
IND - Induction

MPE - Multiple Point Elec.  
NEU - Neutron  
SFL - Spherically Focused  
SON - Sonic

SPE - Single Point Elec.  
TEM - Temperature  
OTH - Other

## NOTES

TOP M70 FT. CASED W STEEL

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# DELAWARE GEOLOGICAL SURVEY SAMPLE LOG SCHEDULE

195516 DNREC

DGS ID DC 53-49

(PW-1=Local)

Page No. 01

Jan 16, 2004

Record By Tom McKenna

TEM  
(code)

Date Filed 04-01-16

Data Source D G N O R S U  
driller DGS DNREC owner other reported USGS unknown

Date Collected 03-11-11  
11/11/2003

Project Name POTOMAC

Sampling Method A C SSC SWC WLC  
auger flight cuttings split spoon sidewall core wireline core

## SAMPLE DATA

| Sample Number | From        | To          | Box          | Sampling Method |
|---------------|-------------|-------------|--------------|-----------------|
| <u>28310</u>  | <u>76.</u>  | <u>78.</u>  | <u>Box 1</u> | <u>SSC</u>      |
| <u>28311</u>  | <u>78.</u>  | <u>80.</u>  |              |                 |
| <u>28312</u>  | <u>80.</u>  | <u>82.</u>  |              |                 |
| <u>28313</u>  | <u>82.</u>  | <u>84.</u>  |              |                 |
| <u>28314</u>  | <u>84.</u>  | <u>86.</u>  | <u>Box 1</u> |                 |
| <u>28315</u>  | <u>86.</u>  | <u>88.</u>  | <u>Box 2</u> |                 |
| <u>28316</u>  | <u>88.</u>  | <u>90.</u>  |              |                 |
| <u>28317</u>  | <u>90.</u>  | <u>92.</u>  |              |                 |
| <u>28318</u>  | <u>92.</u>  | <u>94.</u>  |              |                 |
| <u>28319</u>  | <u>94.</u>  | <u>96.</u>  | <u>Box 2</u> |                 |
| <u>28320</u>  | <u>96.</u>  | <u>98.</u>  | <u>Box 3</u> |                 |
| <u>28321</u>  | <u>98.</u>  | <u>100.</u> |              |                 |
| <u>28322</u>  | <u>100.</u> | <u>102.</u> |              |                 |

(OVER)



9178327 9178423  
9178422

Dc42-19

Dc42-20

9177951 9177855

Dc42-21

Dc42-22

Dc42

Dc42-25

Dc43

Dc42-23

Dc42-24

Dc43-20

Dc52-50

Dc53-49

Dc52-49

Dc52-51

9167510 9167512  
9167511 9167506

Dc53-32

Dc53

Dc52

Dc53-07

Dc52-56

9188940

Dc53-50

9188941

Dc53-51





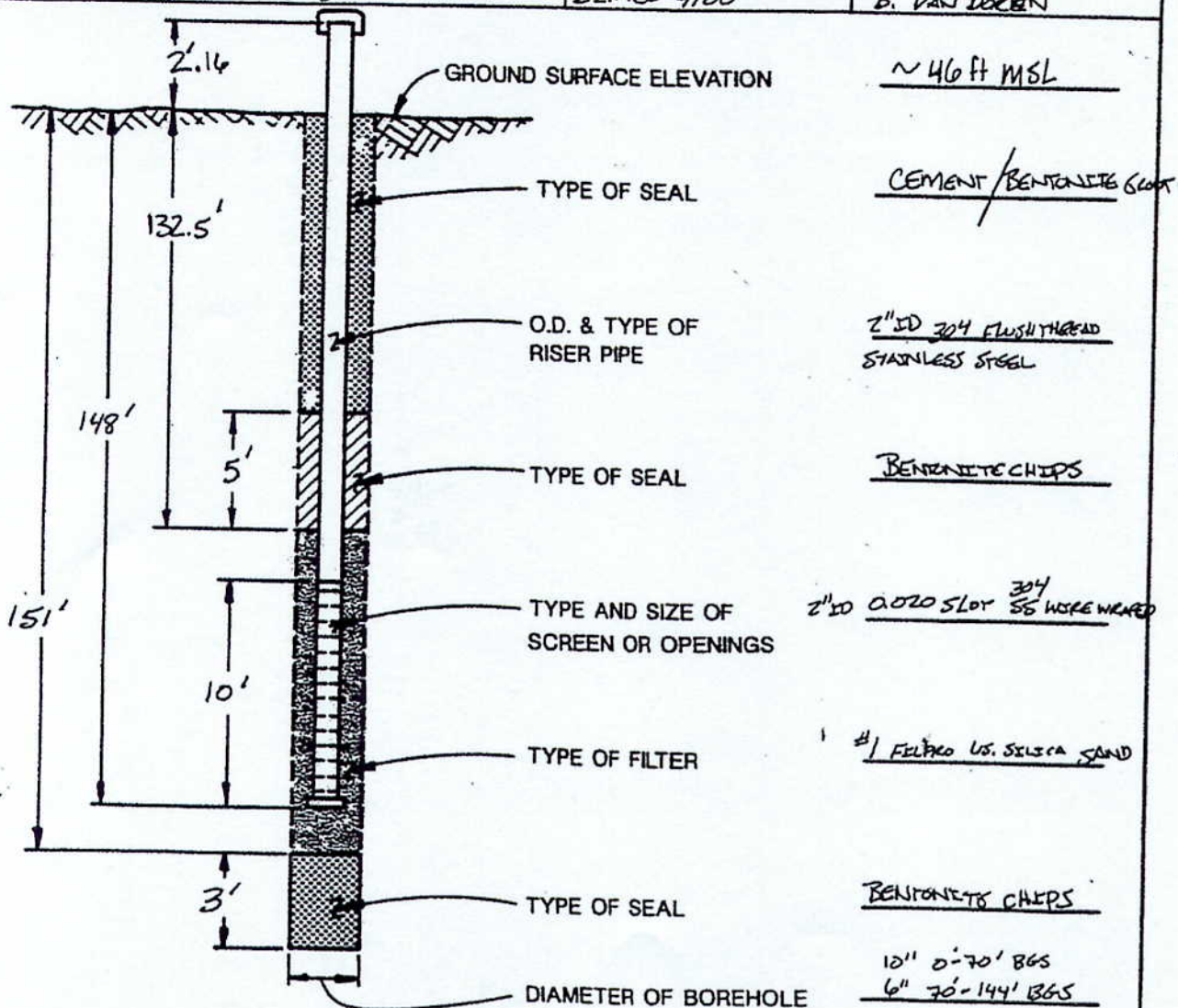
# PIEZOMETER / WELL INSTALLATION LOG

DELAWARE PERMIT #

195516

NO. PW-1

|   |                                       |  |
|---|---------------------------------------|--|
| CLIENT<br><b>US EPA REGION III</b>                  | PROJECT<br><b>STANDARD CHLORINE</b>   | PROJECT NO.<br><b>04718.0123</b>                 |
| PROJECT LOCATION<br><b>NEAR MW15</b>                | COORDINATES<br><b>582657N 439296E</b> | TOP OF RISER ELEVATION<br><b>DATE 11/11/2003</b> |
| STRATUM MONITORED<br><b>POTOMAC SAND</b>            | CHECKED BY                            | INSPECTOR<br><b>M. NAPOLITAN</b>                 |
| DRILLING CONTRACTOR<br><b>CHESAPEAKE GEOSYSTEMS</b> | APPROVED BY                           | DRILLER<br><b>B. VAN DOREN</b>                   |
|   | DRILL RIG<br><b>SEMCO 9100</b>        |  |

**METHOD OF INSTALLATION:**

GRAVITY SAND & BENTONITE NUG PLUG; TRIMMER CEMENT BENTONITE GROUT  
 ROTARY WASH 70'-144' (NO BENTONITE ADD); 0'-70' BGS HIGH YIELD USED.

**REMARKS:**

SET 4" STEEL (ID) CASING IN 10" BOREHOLE TO 70' BGS. CEMENT & BENTONITE  
 GROUTED ANNULUS 70' TO 0' (13.2 lbs/gal to 10.5 lbs/gal) 5.5 bags #1 SAND; 1 BAG BENT CHIPS  
 BOT. SEAL; 1 BAG BENT CHIPS TOP; COMPLETED W/ 6" STEEL CASING W/ LOCKING CAP.



# LOG OF BORING

BORING NO. PW-1

SHEET 3 OF 6

|                          |  |                              |                   |                           |
|--------------------------|--|------------------------------|-------------------|---------------------------|
| CLIENT<br>EPA REGION III |  | PROJECT<br>STANDARD CHLORINE |                   | PROJECT NO.<br>047118.012 |
| PROJECT LOCATION         |  | COORDINATES                  | ELEVATION (DATUM) | TOTAL DEPTH<br>156'       |
| SURFACE CONDITIONS       |  |                              |                   | DATE START<br>11/3/2003   |
|                          |  |                              |                   | DATE FINISH<br>11/11/2003 |

|             |               |  |                |               |
|-------------|---------------|--|----------------|---------------|
| SAMPLING    |               | DRILLING CONTRACTOR<br>CHESAPEAKE GEOSYSTEMS |                |               |
| SAMPLE TYPE | SAMPLE NUMBER | SET  | 2ND 6"         | 3RD 6"        |
|             |               |  | N VALUE        | SAMPLE RECOV. |
| CORING      |               | CHECKED BY                                   |                |               |
| CORE SIZE   | RUN NUMBER    | RUN LENGTH                                   | RUN RECOV.     | RQD           |
|             |               |  | PERCENT RECOV. |               |
|             |               | APPROVED BY                                  |                |               |

| DEPTH IN FEET | SAMPLE TYPE | LOG | CLASSIFICATION OF MATERIAL                   | REMARKS               |     |  |  |  |
|---------------|-------------|-----|--|-----------------------|-----|--|--|--|
| 6 1           |             |     | SAME AS ABOVE; WET                           | 2ft of sand blow in   |     |  |  |  |
| 2             |             |     | 1.0 ft of blow in                            | hole was cleared      |     |  |  |  |
| 3             |             |     |  | 1.1 ppm               |     |  |  |  |
| 4             |             |     |  |                       |     |  |  |  |
| 5             |             |     |  |                       |     |  |  |  |
| SPT 8         | 10          | 14  | 14/18  | 24                    | 2   |  |  |  |
| 6             |             |     | SAME TO 66.5' SOME GRAVEL (QUARTZ)           | 22ft of Heavy Sand    |     |  |  |  |
| 7             |             |     | OPERATOR CHANGE TO SILTY CLAY; BROWN         | hole cleared prior to |     |  |  |  |
| 8             |             |     | black (STR 2/1); MUCOUS; STIFF;              | sample                |     |  |  |  |
| 9             |             |     | dense (MERCHANTVILLE fm); DRY                | BACKGROUND PCD        |     |  |  |  |
| 7 0           |             |     | SAME AS ABOVE TO 70.5'                       |                       |     |  |  |  |
| 1             |             |     | SILTY SAND; Light Brownish Gray (STR 6/1)    | 1.0 ft of blow in     |     |  |  |  |
| 2             |             |     | fine to medium; subrounded; wet; well sorted | cleared before sample |     |  |  |  |
| SPT 9         | 5           | 6   | 7/8  | 13                    | 2   |  |  |  |
| 3             |             |     | Silty sandy CLAY; med light gray (N6)        | BACKGROUND PCD        |     |  |  |  |
| 4             |             |     | dense stiff; DRY                             |                       |     |  |  |  |
| SPT 10        | 26          | 20  | 50/5   | 30                    | 2   |  |  |  |
| 5             |             |     | SAME AS ABOVE; MORE SILT & SAND (N6)         | 0.0 ppm               |     |  |  |  |
| 6             |             |     |  |                       |     |  |  |  |
| SPT 11        | 14          | 11  | 17/46  | 30                    | 2   |  |  |  |
| 7             |             |     | SILTY SAND; med. light gray to med. gray     | 0.0 ppm               |     |  |  |  |
| 8             |             |     | (N6 to N5); well sorted; moist;              | Advanced w/ 6" Rotor  |     |  |  |  |
| 9             |             |     | subrounded                                   | some (mid) w/ 2" SPT  |     |  |  |  |
| SPT 12        | 24          | 26  | 27/31  | 86+                   | 2   |  |  |  |
| 8 0           |             |     | SILTY SAND; (N6 to N5); (course to fine)     | 0.0 ppm               |     |  |  |  |
| 1             |             |     | moist; subrounded to angular; loose          | 2.0 ppm               |     |  |  |  |
| 2             |             |     | w/ GRAVEL (dusky yellow 5/6/4); mica         |                       |     |  |  |  |
| SPT 13        | 11          | 12  | 12/22  | 24                    | 1.8 |  |  |  |
| 3             |             |     | GRADING TO SILTY CLAY; (N6 to N5)            | 0.0 ppm               |     |  |  |  |
| 4             |             |     | stiff; dense w/ 3" of stiff lean clay        |                       |     |  |  |  |
| 5             |             |     | at 78' (lignite or charcoal fragments)       |                       |     |  |  |  |
| SPT 14        | 6           | 6   | 8/8  | 14                    | 2   |  |  |  |
| 6             |             |     | SILTY CLAY; dark GRAY (N3 to N4) w/          | 2.0 ppm               |     |  |  |  |
| 7             |             |     | black nodules (N1 to N2); DENSE; stiff; DRY  |                       |     |  |  |  |
| SPT 15        | 7           | 10  | 17/29  | 23                    | 1.5 |  |  |  |
| 8             |             |     | SILTY CLAY; (N6); dense; lignite             | 0.0 ppm               |     |  |  |  |
| 9             |             |     | CLAY; GRAY to dusky brown                    | 0.0 ppm               |     |  |  |  |
| SPT 16        | 4           | 7   | 17/20  | 24                    | 1.1 |  |  |  |
| 7             |             |     |  |                       |     |  |  |  |
| SPT 17        | 7           | 11  | 13/23  | 24                    | 2   |  |  |  |
| SPT 18        | 7           | 13  | 17/20  | 30                    | 2   |  |  |  |
| SPT 19        | 10          | 19  | 23/28  | 42                    | 2   |  |  |  |

Skipped SPT 19 - adjusted in Equis entry JTB 5/5/04





LOG OF BORING

| CLIENT             |               | PROJECT           |            |                   | PROJECT NO.    |               |                            |              |              |  |         |
|--------------------|---------------|-------------------|------------|-------------------|----------------|---------------|----------------------------|--------------|--------------|--|---------|
| US EPA REGION III  |               | STANDARD CHLORINE |            |                   | 047119.0123    |               |                            |              |              |  |         |
| PROJECT LOCATION   |               | COORDINATES       |            | ELEVATION (DATUM) | TOTAL DEPTH    |               |                            |              |              |  |         |
|                    |               |                   |            |                   | 156'           |               |                            |              |              |  |         |
| SURFACE CONDITIONS |               |                   |            |                   | DATE START     |               |                            |              |              |  |         |
|                    |               |                   |            |                   | 11/03/2003     |               |                            |              |              |  |         |
|                    |               |                   |            |                   | DATE FINISH    |               |                            |              |              |  |         |
|                    |               |                   |            |                   | 11/11/2003     |               |                            |              |              |  |         |
| SAMPLE TYPE        | SAMPLE NUMBER | SAMPLING          |            |                   | N VALUE        | SAMPLE RECOV. | DRILLING CONTRACTOR        |              |              |  |         |
|                    |               | SET 6"            | 2ND 6"     | 3RD 6"            |                |               | CHESAPEAKE GEOSYSTEMS INC. |              |              |  |         |
|                    |               |                   |            |                   |                |               | DRILL RIG                  | DRILLER      | INSPECTOR    |  |         |
|                    |               |                   |            |                   |                |               | SCIMCO 9100                | B. VAN DOREN | M. NAPOLITAN |  |         |
|                    |               |                   |            |                   |                |               | CHECKED BY                 |              | APPROVED BY  |  |         |
|                    |               |                   |            |                   |                |               |                            |              |              |  |         |
| CORE SIZE          | RUN NUMBER    | RUN LENGTH        | RUK RECOV. | ROD RECOV.        | PERCENT RECOV. | ROD           | DEPTH IN FEET              | SAMPLE TYPE  | LOG          | CLASSIFICATION OF MATERIAL   | REMARKS |
|                    |               |                   |            |                   |                |               |                            |              |              |  |         |
| SPT                | 20            | 6                 | 12         | 15/22             | 27             | 2             | 9                          |              |              | CLAY; RED & GRAY MOTTLED; DUSKY BROWN (5YR 2/2); dense stiff; DRY  | 0.0 ppm |
| SPT                | 21            | 5                 | 13         | 16/21             | 29             | 2             | 2                          |              |              | SAME AS ABOVE  | 0.0 ppm |
| SPT                | 22            | 10                | 15         | 19/25             | 33             | 2             | 4                          |              |              | CLAY; DUSKY BROWN (5YR 2/2); dense stiff; dry grading sandy @ 95.5' (N6 to NS)   | 0.0 ppm |
| SPT                | 23            | 5                 | 13         | 18/20             | 31             | 2             | 6                          |              |              | Silty CLAY; (US to NS GRM); GRADING TO silty SAND; Medium to fine grain; moist (N6 to NS); Well sorted                                     | 0.0 ppm |
| SPT                | 23            | 7                 | 13         | 20/40             | 33             | 2             | 8                          |              |              | SANDY SILT - GRADING TO FINE GRAINED SAND; WET   | 0.0 ppm |
| SPT                | 25            | 6                 | 11         | 15/21             | 26             | 2             | 10                         |              |              | SANDY SILT grading to silty SAND; (N6 to NS); Wet; Very Fine to medium grain; Well sorted; dense silt to loose sand;                       | 0.0 ppm |
| SPT                | 26            | 7                 | 11         | 15/24             | 26             | 2             | 1                          |              |              | GRAVEL; Red; angular; well sorted; Very coarse; Wet  | 0.0 ppm |
| SPT                | 28            | 28                | 9/2        | -                 | -              | 0.5           | 6                          |              |              | SAND; GRAY (N6 to NS) and Dark Yellowish orange (10YR 6/6); medium to fine grained clay interbed (gray N6); stiff 10" @ 109.5'             | 0.0 ppm |
| SPT                | 28            | 18                | 36         | 32/32             | 68             | 2             | 7                          |              |              | Silty SAND to Sandy SILT grading to SAND; Light Brown 5YR 5/6 to Pale Yellowish brown 10YR (5/4). medium gr. Some RED color to orange; WET | 0.0 ppm |
| SPT                | 29            | 8                 | 16         | 12/16             | 1.4            |               | 8                          |              |              | SAND; orange brown to Dark Yellowish brown (10YR 6/6); Medium; well sorted; loose moist; subrounded  | 0.0 ppm |
| SPT                | 30            | 32                | 5 1/2      | -                 | -              | 0.5           | 9                          |              |              | SAND; pale yellowish brown (10YR 6/2) med; just SAND; GRAY (N6 to NS); coarse well sorted; WET   | 0.0 ppm |
| SPT                | 31            | 50                | 5 1/2      | -                 | -              | 0             | 1                          |              |              |  |         |
| SPT                | 32            | 50                | 5 1/2      | -                 | -              | 0.3           | 2                          |              |              |  |         |
| SPT                | 33            | 50                | 5 1/2      | -                 | -              | 0             | 3                          |              |              |  |         |
| SPT                | 34            | 50                | 5 1/2      | -                 | -              | 0.2           | 4                          |              |              |  |         |
|                    |               |                   |            |                   |                |               | 5                          |              |              |  |         |
|                    |               |                   |            |                   |                |               | 6                          |              |              |  |         |
|                    |               |                   |            |                   |                |               | 7                          |              |              |  |         |
|                    |               |                   |            |                   |                |               | 8                          |              |              |  |         |
|                    |               |                   |            |                   |                |               | 9                          |              |              |  |         |
|                    |               |                   |            |                   |                |               | 10                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 11                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 12                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 13                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 14                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 15                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 16                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 17                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 18                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 19                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 20                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 21                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 22                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 23                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 24                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 25                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 26                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 27                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 28                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 29                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 30                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 31                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 32                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 33                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 34                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 35                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 36                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 37                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 38                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 39                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 40                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 41                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 42                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 43                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 44                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 45                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 46                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 47                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 48                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 49                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 50                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 51                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 52                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 53                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 54                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 55                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 56                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 57                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 58                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 59                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 60                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 61                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 62                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 63                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 64                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 65                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 66                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 67                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 68                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 69                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 70                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 71                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 72                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 73                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 74                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 75                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 76                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 77                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 78                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 79                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 80                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 81                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 82                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 83                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 84                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 85                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 86                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 87                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 88                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 89                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 90                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 91                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 92                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 93                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 94                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 95                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 96                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 97                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 98                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 99                         |              |              |  |         |
|                    |               |                   |            |                   |                |               | 100                        |              |              |  |         |
|                    |               |                   |            |                   |                |               | 101                        |              |              |  |         |
|                    |               |                   |            |                   |                |               | 102                        |              |              |  |         |
|                    |               |                   |            |                   |                |               | 103                        |              |              |  |         |
|                    |               |                   |            |                   |                |               | 104                        |              |              |  |         |
|                    |               |                   |            |                   |                |               | 105                        |              |              |  |         |
|                    |               |                   |            |                   |                |               | 106                        |              |              |  |         |
|                    |               |                   |            |                   |                |               | 107                        |              |              |  |         |
|                    |               |                   |            |                   |                |               | 108                        |              |              |  |         |
|                    |               |                   |            |                   |                |               | 109                        |              |              |  |         |
|                    |               |                   |            |                   |                |               | 110                        |              |              |  |         |
|                    |               |                   |            |                   |                |               | 111                        |              |              |  |         |
|                    |               |                   |            |                   |                |               | 112                        |              |              |  |         |
|                    |               |                   |            |                   |                |               | 113                        |              |              |  |         |
|                    |               |                   |            |                   |                |               | 114                        |              |              |  |         |
|                    |               |                   |            |                   |                |               | 115                        |              |              |  |         |
|                    |               |                   |            |                   |                |               | 116                        |              |              |  |         |
|                    |               |                   |            |                   |                |               | 117                        |              |              |  |         |
|                    |               |                   |            |                   |                |               | 118                        |              |              |  |         |
|                    |               |                   |            |                   |                |               | 119                        |              |              |  |         |
|                    |               |                   |            |                   |                |               | 120                        |              |              |  |         |



# LOG OF BORING

BORING NO. PW-1

SHEET 5 OF 6

| CLIENT             |            |               |             | PROJECT           |                   |                            |               | PROJECT NO.                          |   |                    |
|--------------------|------------|---------------|-------------|-------------------|-------------------|----------------------------|---------------|--------------------------------------|---|--------------------|
| US EPA REGION III  |            |               |             | STANDARD CHLORINE |                   |                            |               | 04748.0123                           |   |                    |
| PROJECT LOCATION   |            |               | COORDINATES |                   | ELEVATION (DATUM) |                            | TOTAL DEPTH   |                                      |   |                    |
|                    |            |               |             |                   |                   |                            | 156'          |                                      |   |                    |
| SURFACE CONDITIONS |            |               |             |                   |                   |                            |               | DATE START                           |   |                    |
|                    |            |               |             |                   |                   |                            |               | 11/03/2003                           |   |                    |
|                    |            |               |             |                   |                   |                            |               | DATE FINISH                          |   |                    |
|                    |            |               |             |                   |                   |                            |               | 11/11/2003                           |   |                    |
| SAMPLE TYPE        |            | SAMPLE NUMBER |             | SAMPLING          |                   | DRILLING CONTRACTOR        |               |                                      |   |                    |
|                    |            |               |             |                   |                   | CHESAPEAKE GEOSYSTEMS INC. |               |                                      |   |                    |
|                    |            |               |             |                   |                   | DRILL RIG                  |               | INSPECTOR                            |   |                    |
|                    |            |               |             |                   |                   | JAMES 9100                 |               | M. NAPOLITAN / A. BUGGINS.           |   |                    |
|                    |            |               |             |                   |                   | DRILLER                    |               |                                      |   |                    |
|                    |            |               |             |                   |                   | B. VAN DOREN               |               |                                      |   |                    |
|                    |            |               |             |                   |                   | CHECKED BY                 |               | APPROVED BY                          |   |                    |
|                    |            |               |             |                   |                   |                            |               |                                      |   |                    |
| CORE SIZE          | RUN NUMBER | RUN LENGTH    | RUN RECOV.  | ROD RECOV.        | PERCENT RECOV.    | ROD                        | DEPTH IN FEET | SAMPLE TYPE LOG                      | CLASSIFICATION OF MATERIAL                      | REMARKS            |
|                    |            |               |             |                   |                   |                            |               |                                      |   |                    |
| SPT                | 35         | 50            | 100%        | -                 | -                 | 0.6                        | 12            | 1                                    | lg SAND; medium to coarse; NGTONS               | ADVANCED MUD LOG   |
| SPT                | 36         | 65            | 100%        | -                 | -                 | 0.5                        | 2             | GRAY; DENSE; well sorted, subrounded | 4" POWER 4/2" ST                                |                    |
|                    |            |               |             |                   |                   |                            | 3             |                                      | SAME AS ABOVE                                   | 0.0 ppm            |
| SPT                | 37         | 45            | 70%         | 150               | 2                 |                            | 4             |                                      |   |                    |
| SPT                | 38         | 20            | 40          | 50%               | 90                | 1                          | 5             |                                      | SAND; GRAY (N5) to Dark Yellowish orange        | 0.0 ppm            |
|                    |            |               |             |                   |                   |                            | 6             |                                      | (10yr 6/6); coarse grading to fine silty        |                    |
| SPT                | 39         | 20            | 50%         | -                 | -                 | 0.6                        | 7             |                                      | sand @ 125.5; well sorted; subrounded           |                    |
|                    |            |               |             |                   |                   |                            | 8             |                                      | dense; wet                                      |                    |
| SPT                | 40         | 40            | 50%         | -                 | -                 | 0.9                        | 9             |                                      | sand dark yellowish orange                      | 0.0 ppm            |
|                    |            |               |             |                   |                   |                            | 13            |                                      | coarse; grading light orange sand               |                    |
| SPT                | 41         | 20            | 50%         | -                 | -                 | 0.6                        | 1             |                                      | @ 6", well sorted; dry; grading; grey           |                    |
|                    |            |               |             |                   |                   |                            | 2             |                                      | clay (~1") @ bottom of sample.                  |                    |
| SPT                | 42         | 100%          | -           | -                 | -                 | 0.6                        | 3             |                                      | sand gray grading -> light yellow               | 0.0 ppm            |
|                    |            |               |             |                   |                   |                            | 4             |                                      | well sorted, subrounded - wetter than above     |                    |
| SPT                | 43         | 100%          | -           | -                 | -                 | 0.8                        | 5             |                                      | sand light yellow w/darker orange discoloration | 0.0 ppm            |
|                    |            |               |             |                   |                   |                            | 6             |                                      | grading gray sand, well sated, dry              |                    |
| SPT                | 44         | 150%          | -           | -                 | -                 | 0.7                        | 7             |                                      | light gray sand grading silty gravel            | 0.0 ppm            |
|                    |            |               |             |                   |                   |                            | 8             |                                      | well sorted, subrounded, dry                    |                    |
| SPT                | 45         | 70            | 100%        | -                 | -                 | 1.1                        | 9             |                                      | As above - wet.                                 | 0.0 ppm            |
|                    |            |               |             |                   |                   |                            | 14            |                                      | As above  | 0.0 ppm            |
| SPT                | 46         | 20            | 70          | 100%              | -                 | 1                          | 1             |                                      | As above - contained chunk of                   |                    |
|                    |            |               |             |                   |                   |                            | 2             |                                      | pyrite w/woodlike structures. (1x1/2"x1/2")     | 0.0 ppm            |
| SPT                | 47         | 50            | 120%        | -                 | -                 | 0.1                        | 3             |                                      | grading - v fine sand -> clay                   |                    |
|                    |            |               |             |                   |                   |                            | 4             |                                      | light gray; dense; dry                          |                    |
| SPT                | 48         | 100           | 160%        | -                 | -                 | 0.7                        | 5             |                                      | GRAY SAND; medium to coarse; wet                |                    |
|                    |            |               |             |                   |                   |                            | 6             |                                      |   |                    |
|                    |            |               |             |                   |                   |                            | 7             |                                      |   |                    |
|                    |            |               |             |                   |                   |                            | 8             |                                      |   |                    |
|                    |            |               |             |                   |                   |                            | 9             |                                      |   |                    |
|                    |            |               |             |                   |                   |                            | 1500          |                                      | (CLAY ?) CHANGE IN CONTENTS TO                  | DRILLING RATE      |
|                    |            |               |             |                   |                   |                            |               |                                      | RED & GRAY CLAY                                 | SLOWED MUD COLOR   |
|                    |            |               |             |                   |                   |                            |               |                                      |   | CHANGE TO RED SAND |



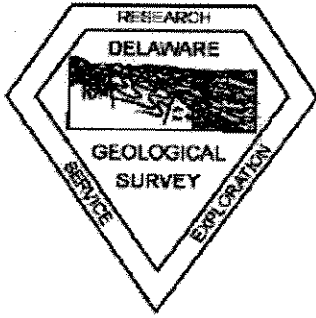
# LOG OF BORING

BORING NO. *PN-1*

SHEET *6* OF *6*

|                                   |               |            |             |   |                   |                               |                            |   |         |
|-----------------------------------|---------------|------------|-------------|---|-------------------|-------------------------------|----------------------------|---|---------|
| CLIENT<br><i>USEPA REGION III</i> |               |            |             | PROJECT<br><i>STANDARD CHLOPING</i>                 |                   |                               |                            | PROJECT NO.<br><i>047117.0123</i>   |         |
| PROJECT LOCATION                  |               |            | COORDINATES |   | ELEVATION (DATUM) |                               | TOTAL DEPTH<br><i>156'</i> | DATE START<br><i>11/03/2003</i>   |         |
| SURFACE CONDITIONS                |               |            |             |   |                   |                               |                            | DATE FINISH<br><i>11/11/2003</i>  |         |
| SAMPLING                          |               |            |             | DRILLING CONTRACTOR<br><i>CHESAPEAKE GEOSYSTEMS</i> |                   |                               |                            |   |         |
| SAMPLE TYPE                       | SAMPLE NUMBER | SET<br>6"  | 2ND<br>6"   | 3RD<br>6"   | N<br>VALUE        | SAMPLE RECOV.                 |                            |   |         |
|                                   |               |            |             | DRILL RIG<br><i>SIMCO 9100</i>                      |                   | DRILLER<br><i>B. VAN DOEN</i> |                            | INSPECTOR<br><i>M. NAPOLITAN</i>  |         |
|                                   |               |            |             | CHECKED BY  |                   |                               | APPROVED BY                |   |         |
| CORING                            |               |            |             | CLASSIFICATION OF MATERIAL                          |                   |                               |                            |   | REMARKS |
| CORE SIZE                         | RUN NUMBER    | RUN LENGTH | RUN RECOV.  | RQD RECOV.  | PERCENT RECOV.    | RQD                           | DEPTH IN FEET              | SAMPLE TYPE LOG   |         |
|                                   |               |            |             |   |                   |                               | 151                        | <i>SAME CUTTINGS &amp; DEBRIS</i>   |         |
|                                   |               |            |             |   |                   |                               | 2                          |   |         |
|                                   |               |            |             |   |                   |                               | 3                          |   |         |
|                                   |               |            |             |   |                   |                               | 4                          |   |         |
|                                   | <i>SPT 48</i> | <i>15</i>  | <i>30</i>   | <i>40%</i>  | <i>70</i>         | <i>1.8</i>                    | 5                          | <i>CLAY; RED &amp; GRAY mottled; some tan and yellow mottles; dense; nonplastic</i> |         |
|                                   |               |            |             |   |                   |                               | 6                          | <i>DEC; 0.0 ppm</i>   |         |
|                                   |               |            |             |   |                   |                               | 7                          | <i>FOBS 154'</i>  |         |
|                                   |               |            |             |   |                   |                               | 8                          | <i>w/ 6" HOLE</i>   |         |
|                                   |               |            |             |   |                   |                               | 9                          | <i>SAMPLED 154-156'</i>   |         |
|                                   |               |            |             |   |                   |                               | 10                         | <i>FOBS 156'</i>  |         |
|                                   |               |            |             |   |                   |                               | 11                         |   |         |
|                                   |               |            |             |   |                   |                               | 12                         |   |         |
|                                   |               |            |             |   |                   |                               | 13                         |   |         |
|                                   |               |            |             |   |                   |                               | 14                         |   |         |
|                                   |               |            |             |   |                   |                               | 15                         |   |         |
|                                   |               |            |             |   |                   |                               | 16                         |   |         |
|                                   |               |            |             |   |                   |                               | 17                         |   |         |
|                                   |               |            |             |   |                   |                               | 18                         |   |         |
|                                   |               |            |             |   |                   |                               | 19                         |   |         |
|                                   |               |            |             |   |                   |                               | 20                         |   |         |

*actually SPT 48  
D10  
15/04*



# Delaware Geological Survey

COMPANY : DGS  
 WELL : Dc53-49 (PW1)  
 LOCATION/FIELD : Metachem/Oxychem  
 COUNTY : New Castle  
 STATE : DE  
 SECTION : DE

**OTHER SERVICES:**

None  
 None  
 None

TOWNSHIP : None RANGE : None

DATE : 11/11/03  
 DEPTH DRILLER : 154  
 LOG BOTTOM : 154.40  
 LOG TOP : 1.40

PERMANENT DATUM : None

KB : None  
 DF : None  
 GL : None

LOG MEASURED FROM: gs  
 DRL MEASURED FROM: gs

CASING DIAMETER : 6"  
 CASING TYPE : steel  
 CASING THICKNESS:

LOGGING UNIT : None  
 FIELD OFFICE : None  
 RECORDED BY : TEM

BIT SIZE : 6"  
 MAGNETIC DECL. : 0  
 MATRIX DENSITY : 2.71  
 NEUTRON MATRIX : Dolomite

BOREHOLE FLUID : 0  
 RM : 0  
 RM TEMPERATURE : 0  
 MATRIX DELTA T : 54

FILE : ORIGINAL  
 TYPE : 8044A

THRESH: 50000

10"x70'-HSA; 70-154-mud rotary  
 6"x70' steel-grouted

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS







# Century GEOPHYSICAL CORP.

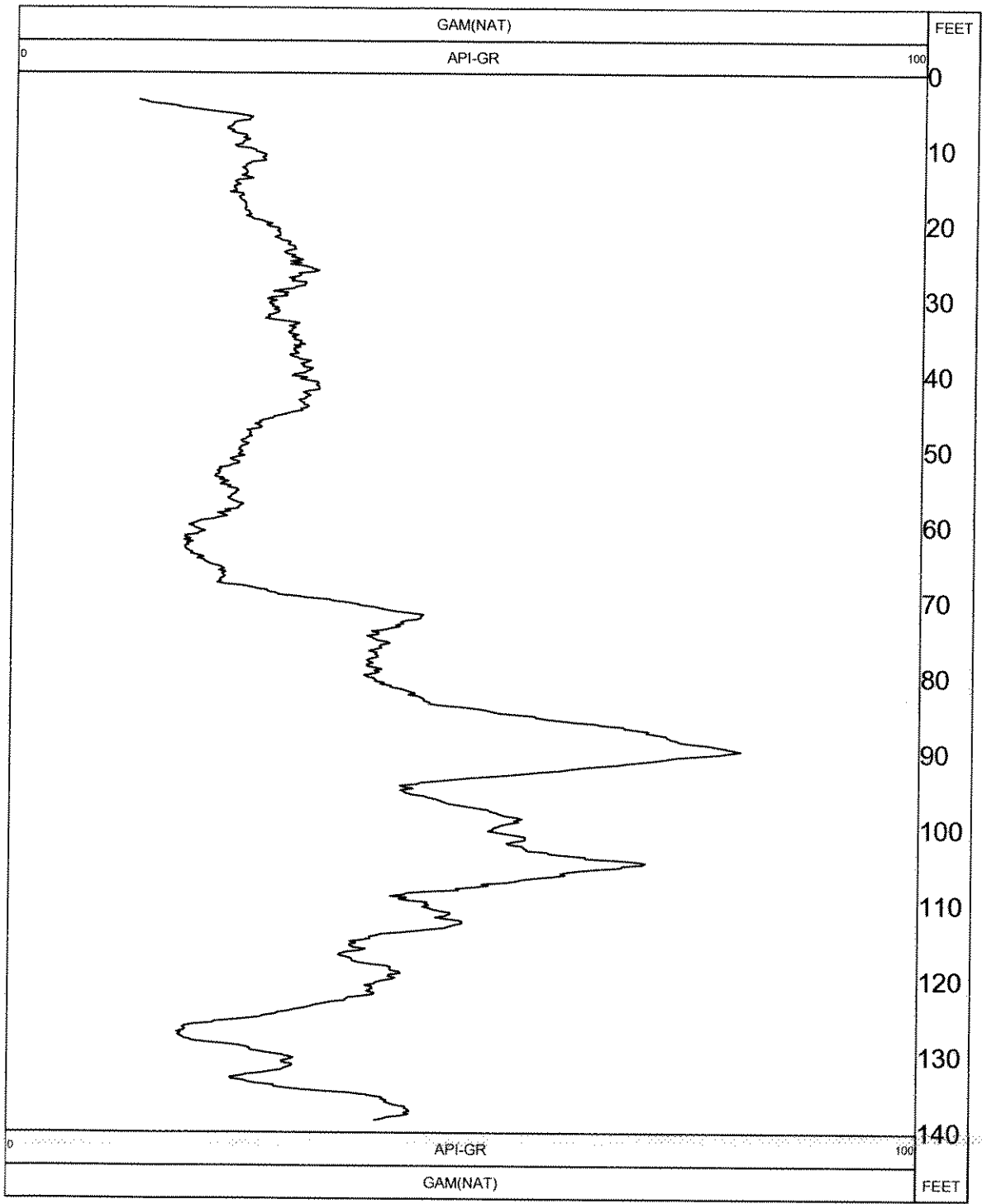
Dc43-20

|                   |                  |                    |               |
|-------------------|------------------|--------------------|---------------|
| COMPANY           | : DGS            | OTHER SERVICES:    |               |
| WELL              | : Dc43-20        | None               |               |
| LOCATION/FIELD    | : MW-12 metachem | None               |               |
| COUNTY            | : New Castle     | None               |               |
| STATE             | : DE             |                    |               |
| SECTION           | : DE             | TOWNSHIP           | : None        |
|                   |                  | RANGE              | : None        |
| DATE              | : 02/26/04       | PERMANENT DATUM    | : toc (4"     |
| DEPTH DRILLER     | : 148            |                    | KB : None     |
| LOG BOTTOM        | : 139.00         | LOG MEASURED FROM: | gs DF : None  |
| LOG TOP           | : 3.60           | DRL MEASURED FROM: | gs GL : 53.71 |
| CASING DIAMETER   | : 4              | LOGGING UNIT       | : None        |
| CASING TYPE       | : 4" stee        | FIELD OFFICE       | : None        |
| CASING THICKNESS: |                  | RECORDED BY        | : tem         |
| BIT SIZE          | : 7 7/8"         | BOREHOLE FLUID     | : 0           |
| MAGNETIC DECL.    | : 0              | RM                 | : 0           |
| MATRIX DENSITY    | : 2.71           | RM TEMPERATURE     | : 0           |
| NEUTRON MATRIX    | : Dolomite       | MATRIX DELTA T     | : 54          |

THRESH: 50000

gamma  
toc is 2.4' als

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS





# Century GEOPHYSICAL CORP.

Dc52-56

|                   |                  |                    |               |
|-------------------|------------------|--------------------|---------------|
| COMPANY           | : DGS            | OTHER SERVICES:    |               |
| WELL              | : Dc52-56        | None               |               |
| LOCATION/FIELD    | : MW-11 metachem | None               |               |
| COUNTY            | : New Castle     | None               |               |
| STATE             | : DE             |                    |               |
| SECTION           | : DE             | TOWNSHIP           | : None        |
|                   |                  | RANGE              | : None        |
| DATE              | : 02/26/04       | PERMANENT DATUM    | : toc 4"      |
| DEPTH DRILLER     | : 148            | KB                 | : None        |
| LOG BOTTOM        | : 137.00         | LOG MEASURED FROM: | gs DF : None  |
| LOG TOP           | : 3.60           | DRL MEASURED FROM: | gs GL : 51.97 |
| CASING DIAMETER   | : 4              | LOGGING UNIT       | : None        |
| CASING TYPE       | : 4"steel        | FIELD OFFICE       | : None        |
| CASING THICKNESS: |                  | RECORDED BY        | : tem         |
| BIT SIZE          | : 7-7/8          | BOREHOLE FLUID     | : 0           |
| MAGNETIC DECL.    | : 0              | RM                 | : 0           |
| MATRIX DENSITY    | : 2.71           | RM TEMPERATURE     | : 0           |
| NEUTRON MATRIX    | : Dolomite       | MATRIX DELTA T     | : 54          |
|                   |                  | FILE               | : PROCESSED   |
|                   |                  | TYPE               | : 9012A       |
|                   |                  | THRESH:            | 50000         |

gamma  
top outer casing is 1.55' als

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

