

D. A. A. A.

0017709

TEST REQUEST FORM

Sample/Specimen No. 9-093 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 1-4-90

9212110192

| Test Requested        | No. of Samples | Test Lab Information (Instruction Used) |
|-----------------------|----------------|---|
| <u>SIEVE ANALYSIS</u> | <u>1</u>       | <u>ETAL-07</u>                          |
| <u>HYDROMETER</u>     | <u>1</u>       | <u>ETAL-07 (IF REQ)</u>                 |
| <u>N/A</u>            | <u>N/A</u>     | <u>N/A</u>                              |
| <u>N/A</u>            | <u>N/A</u>     | <u>N/A</u>                              |

Remarks FIELD SAMPLE  
MW-5-1

Received By: R.G. ALEXANDER Date 12-20-89

Approved By: RG ALEXANDER Date 1-4-90



# SIEVE ANALYSIS DATA SHEET

Sample ID 9-093 Page 1 of 1

Tested By RG ALEXANDER Date 1-4-90

Procedure ETAL-07 Rev 1 Date Issued 11-15-89

| EQUIPMENT ITEM | CALIBRATION NO. | DATE DUE       |
|----------------|-----------------|----------------|
| Balance        | <u>3304</u>     | <u>3-25-90</u> |
| Thermometer    | <u>0006</u>     | <u>2-6-90</u>  |
| <u>N/A</u>     | <u>N/A</u>      | <u>N/A</u>     |

Sample Description SAND Sieve Time 10 (min)

reduced by  splitting  quartering  stockpile

(B) BEFORE TEST WT. N/A (A) AFTER TEST WT. N/A  $\frac{B-A}{B} \times 100 = \underline{N/A} \% \text{ LOSS}$

| Sieve ID Number | Sieve Size  | Sample Weight  | Cumulative Wt. Retained (g) | % Retained  | Cumulative % Retained | Cumulative % Pass | % Pass      |
|-----------------|-------------|----------------|-----------------------------|-------------|-----------------------|-------------------|-------------|
| <u>N/A</u>      |             | $\phi$         |                             |             |                       |                   |             |
|                 |             | $\phi$         |                             |             |                       |                   |             |
|                 | <u>3/4</u>  | $\phi$         | $\phi$                      | $\phi$      | $\phi$                | <u>100</u>        | <u>100</u>  |
|                 | <u>1/2</u>  | <u>2577.13</u> | <u>21.99</u>                | <u>0.9</u>  | <u>0.9</u>            | <u>99.1</u>       | <u>99.1</u> |
|                 | <u>3/8</u>  |                | <u>23.88</u>                | <u>0.9</u>  | <u>0.9</u>            | <u>99.1</u>       | <u>99.1</u> |
|                 | <u>#4</u>   |                | <u>36.96</u>                | <u>1.4</u>  | <u>1.4</u>            | <u>98.6</u>       | <u>98.6</u> |
|                 | <u>#10</u>  | <u>2577.13</u> | <u>40.20</u>                | <u>1.6</u>  | <u>1.6</u>            | <u>98.4</u>       | <u>98.4</u> |
|                 | <u>#40</u>  | <u>108.23</u>  | <u>22.28</u>                | <u>20.6</u> | <u>20.6</u>           | <u>79.4</u>       | <u>78.1</u> |
|                 | <u>#60</u>  |                | <u>56.22</u>                | <u>51.9</u> | <u>51.9</u>           | <u>48.1</u>       | <u>47.3</u> |
|                 | <u>#100</u> |                | <u>86.96</u>                | <u>80.3</u> | <u>80.3</u>           | <u>19.7</u>       | <u>19.4</u> |
|                 | <u>#200</u> |                | <u>101.30</u>               | <u>93.6</u> | <u>93.6</u>           | <u>6.4</u>        | <u>6.3</u>  |

Finess Modules (FM) N/A (See ASTM C 136-83, Section 8.2)

**MATERIALS FINER THAN NO. 200 SIEVE BY WASHING**

C=Percentage of Material Passing a 200 Sieve 6.4%  
 D=Original Dry Weight of Sample 108.23 g  
 E=Dry Weight of Sample After Washing/Sieve 01.30 g  
 $C = \frac{D-E}{D} \times 100$

Remarks  
WASH GRAPING

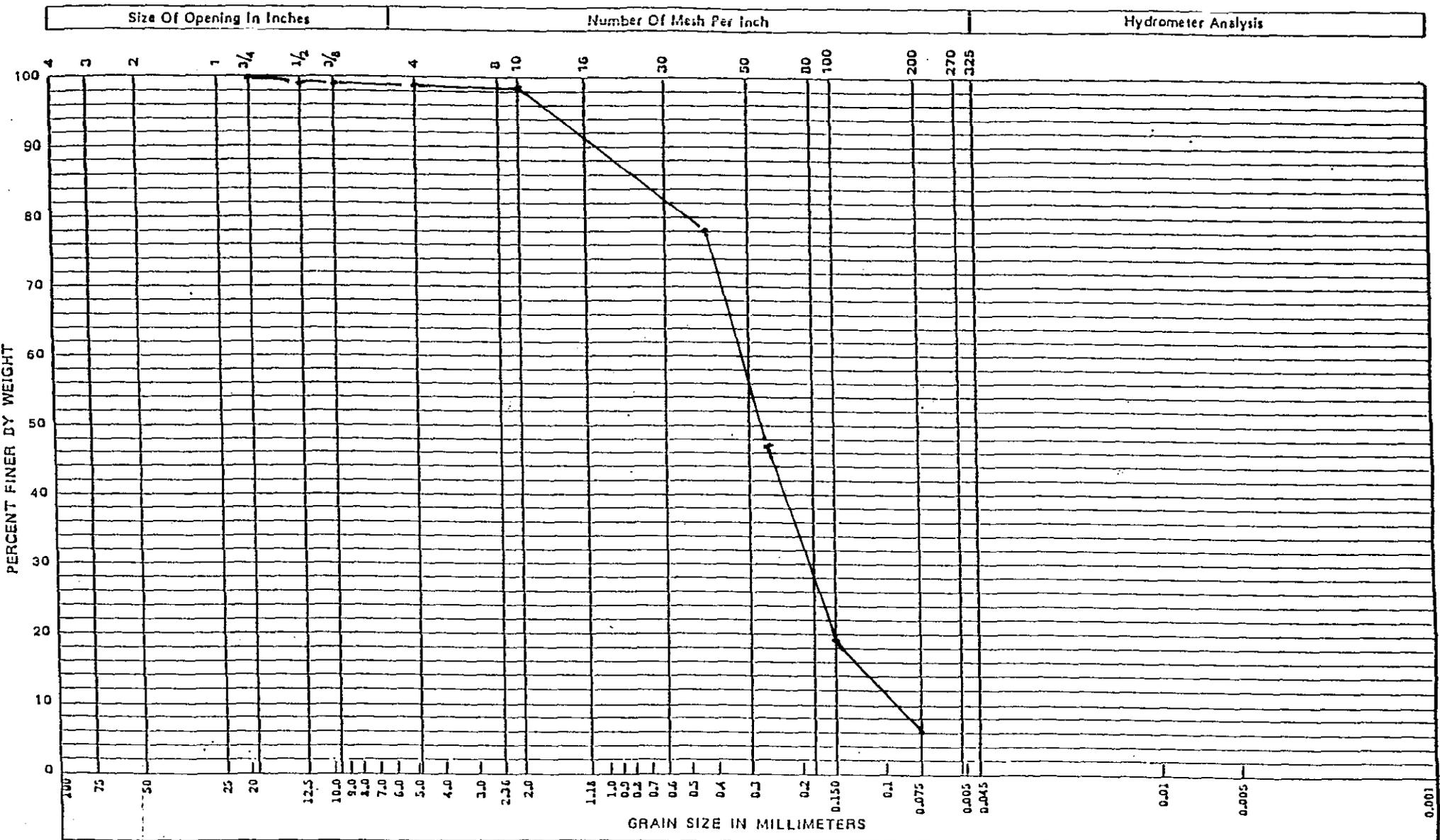
ALL DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS TRAINED AND USED CALIBRATED INSTRUMENTS

Checked By H. Benney Date 1-11-90

9.212110193

9 2 1 2 1 1 1 1 3 4

# GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-093 Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

|  |  |   |
|--|--|---|
| <p>Sample Description: <u>SAND</u><br/><u>MW-5-1</u></p> | <p>Plotted by: <u>R.G. ALEXANDER</u><br/>Date: <u>1-8-90</u></p> | <p>Checked by: <u>HL Bonny</u><br/>Date: <u>1-11-90</u></p> |
|--|--|---|



Company Contact J. Lindberg Telephone 65005  
 Sample Collected by R. Miller (GAI) Date 12/13-12/18/89 Time n/a  
 Sample Locations 1100-2 MW-5  
 Ice Chest No. n/a Field Logbook and Page No. WHC-N-306-3  
 Remarks samples taken during drilling of MW-5

Bill of Lading No. n/a Offsite Property No. n/a  
 Method of Shipment gov't vehicle Hand Carry  
 Shipped to Jerry Alexander, WHC, 2101-M Physical Testing Laboratory (Soils)

Sample Identification

|                           |                                |
|---------------------------|--------------------------------|
| MW-5-1, 2.5'              | plastic bag, grain size only   |
| MW-5-2, 6.0'              | " " , all                      |
| MW-5-3, 15.0'             | " " , grain size only          |
| MW-5-4, 19.0'             | " " , all                      |
| MW-5-5, 35.0'             | " " , all                      |
| <del>MW-5-6, 50.25'</del> | <del>" " , Open 12/20/89</del> |
| MW-5-6, 48.5'             | " " , all                      |
| MW-5-7, 50.25'            | " " , all-grain                |
| MW-5-8, 55.0'             | " " , all-grain                |
| MW-5-9, 66.4'             | " " , all-grain                |
| MW-5-10, 71.75'           | " " , all-grain                |
| MW-5-11, 76.55'           | " " , all-grain                |
| MW-5-12, 81.5'            | " " , grain                    |
| MW-5-13, 88.65'           | acrylic tube, grain/perm.      |

Chain of Possession

|   |  |                                     |
|---|--|-------------------------------------|
| Relinquished by: <u>Rand D. Miller</u><br><u>Rand D. Miller (GAI)</u> | Received by: <u>JW Lindberg</u><br><u>JW Lindberg 12/20/89</u> | Date/Time: <u>12/20/89 1415</u>     |
| Relinquished by: <u>JW Lindberg</u>                                   | Received by: <u>RG Alexander</u><br><u>R.G. ALEXANDER</u>      | Date/Time: <u>12/20/89 1530 hrs</u> |
| Relinquished by:  | Received by:   | Date/Time:                          |
| Relinquished by:  | Received by:   | Date/Time:                          |

92121136



RADIATION RELEASE

Bldg. MW-5-A Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-1  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-A Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-2  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-A Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-3  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-A Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-4  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-A Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-5  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5 Date 12/12/89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-6  
54-3000-022 (09/88)

9 2 1 2 1 1 3 1 3 3

TEST REQUEST FORM

Sample/Specimen No. 9-094 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 1-4-90

| Test Requested        | No. of Samples | Test Lab Information (Instruction Used) |
|-----------------------|----------------|---|
| <u>SIEVE ANALYSIS</u> | <u>1</u>       | <u>ETAL-07</u>                          |
| <u>MOISTURE</u>       | <u>1</u>       | <u>ETAL-14</u>                          |
| <u>HYDROMETER</u>     | <u>1</u>       | <u>ETAL-07 (IF REQ)</u>                 |
| <u>N/A</u>            | <u>N/A</u>     | <u>N/A</u>                              |

Remarks FIELD SAMPLE  
MU-5-2

Received By: RG ALEXANDER Date 12-20-89

Approved By: RG ALEXANDER Date 1-4-90

92121139

## SIEVE ANALYSIS DATA SHEET

Sample ID 9-094 Page 1 of 1

Tested By R.G. ALEXANDER Date 1-4-90

Procedure ETAL-07 Rev. 1 Date Issued 11-15-89

| EQUIPMENT ITEM | CALIBRATION NO. | DATE DUE                                |
|----------------|-----------------|---|
| Balance        | <u>3304</u>     | <u>3-25-90</u> <small>Real-4-90</small> |
| Thermometer    | <u>0006</u>     | <u>2-6-90</u>                           |
| N/A            | N/A             | N/A                                     |

Sample Description SANDY GRAVEL Sieve Time 10 (min)

reduced by  splitting  quartering  stockpile

(B) BEFORE TEST WT. N/A (A) AFTER TEST WT. N/A  $\frac{B-A}{B} \times 100 = \frac{N/A}{N/A} \% \text{ LOSS}$

| Sieve ID Number | Sieve Size | Sample Weight | Cumulative Wt. Retained (g) | % Retained | Cumulative % Retained | Cumulative % Pass | % Pass |
|-----------------|------------|---------------|-----------------------------|------------|-----------------------|-------------------|--------|
| N/A             | 2          | 4530.86       | ∅                           | ∅          | ∅                     | 100               | 100    |
|                 | 1/2        | ↓             | 110.25                      | 2.4        | 2.4                   | 97.6              | 97.6   |
|                 | 1          | ↓             | 516.68                      | 11.4       | 11.4                  | 88.6              | 88.6   |
|                 | 3/4        | ↓             | 769.01                      | 17.0       | 17.0                  | 83.0              | 83.0   |
|                 | 1/2        | ↓             | 1180.62                     | 26.1       | 26.1                  | 73.9              | 73.9   |
|                 | 3/8        | ↓             | 1496.36                     | 33.0       | 33.0                  | 67.0              | 67.0   |
|                 | #4         | ↓             | 1994.47                     | 44.0       | 44.0                  | 56.0              | 56.0   |
|                 | #10        | 4530.86       | 2453.34                     | 54.1       | 54.1                  | 45.9              | 45.9   |
|                 | #40        | 154.13        | 58.32                       | 37.8       | 37.8                  | 62.2              | 28.6   |
|                 | #60        | ↓             | 95.76                       | 62.1       | 62.1                  | 37.9              | 17.4   |
|                 | #100       | ↓             | 120.06                      | 77.9       | 77.9                  | 22.1              | 10.1   |
| ↓               | #200       | ↓             | 133.36                      | 86.5       | 86.5                  | 13.5              | 6.2    |

Fineness Modules (FM) N/A (See ASTM C 136-83, Section B.2)

**MATERIALS FINER THAN NO. 200 SIEVE BY WASHING**

C=Percentage of Material Passing a 200 Sieve 13.5 %  
 D=Original Dry Weight of Sample 154.13g  
 E=Dry Weight of Sample After Washing/Sieve/33.36g  
 $C = \frac{D-E}{D} \times 100$

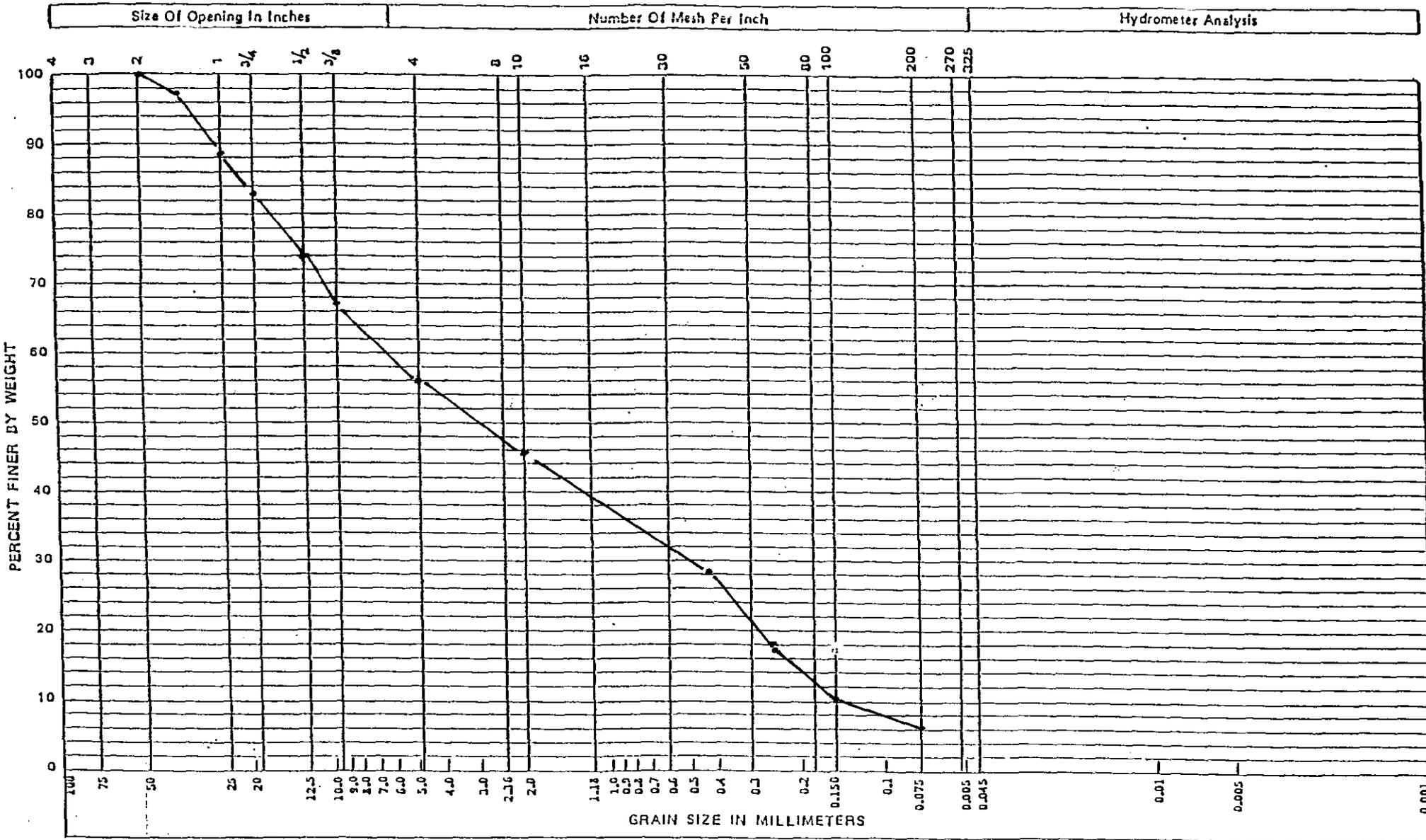
Remarks  
WASH GRADING (FMS)  
FIELD SAMPLE TOO SMALL

ALL DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS TRAINED AND USED CALIBRATED INSTRUMENTS  
 Checked By HL Bennett Date 1-11-90

92121190

9 2 1 2 1 1 1 9 1

# GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-094 Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

|  |  |   |
|--|--|---|
| Sample Description: <u>SANDY GRAVEL</u><br><u>MW-5-2</u> | Plotted by: <u>R.G. ALEXANDER</u><br>Date: <u>1-8-90</u> | Checked by: <u>HL Bonny</u><br>Date: <u>1-11-90</u> |
|--|--|---|



Company Contact J. Lindberg Telephone 65005  
 Sample Collected by R. Miller (GAI) Date 12/13-12/18/89 Time n/a  
 Sample Locations 1100-2 MW-5  
 Ice Chest No. n/a Field Logbook and Page No. WHC-N-306-3  
 Remarks samples taken during drilling of MW-5

Bill of Lading No. n/a Offsite Property No. n/a  
 Method of Shipment gov't vehicle Hand Carry  
 Shipped to Jerry Alexander, WHC, 2101-M Physical Testing Laboratory (Soils)

Sample Identification

|                           |  |
|---------------------------|--|
| MW-5-1, 2.5'              | plastic bag, grain size only             |
| MW-5-2, 6.0'              | " " , all                                |
| MW-5-3, 15.0'             | " " , grain size only                    |
| MW-5-4, 19.0'             | " " , all                                |
| MW-5-5, 35.0'             | " " , all                                |
| <del>MW-5-6, 50.25'</del> | <del>" " , <sup>can</sup> 12/20/89</del> |
| MW-5-6, 48.5'             | " " , all                                |
| MW-5-7, 50.25'            | " " , all-grain                          |
| MW-5-8, 55.0'             | " " , all-grain                          |
| MW-5-9, 66.4'             | " " , all-grain                          |
| MW-5-10, 71.75'           | " " , all-grain                          |
| MW-5-11, 76.55'           | " " , all-grain                          |
| MW-5-12, 81.5'            | " " , grain                              |
| MW-5-13, 88.65'           | acrylic tube, grain/perm.                |

Chain of Possession

|   |  |                                     |
|---|--|-------------------------------------|
| Relinquished by: <u>Rand D. Miller</u><br><u>Rand D. Miller (GAI)</u> | Received by: <u>JW Lindberg</u><br><u>JW Lindberg 12/20/89</u> | Date/Time: <u>12/20/89 1415</u>     |
| Relinquished by: <u>JW Lindberg</u><br><u>JW Lindberg</u>             | Received by: <u>RG Alexander</u><br><u>RG ALEXANDER</u>        | Date/Time: <u>12/20/89 1530 hrs</u> |
| Relinquished by:  | Received by:   | Date/Time:                          |
| Relinquished by:  | Received by:   | Date/Time:                          |

9 2 1 2 1 1 0 1 9 3

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector R.D. Miller Date Sampled 12/13-12/18 Time NA hours

Affiliation of Sampler Golder Assoc.

Address NA  
number street city state zip

Telephone (509) 376-5005 Company Contact JW Lindberg

| LABORATORY SAMPLE NUMBER | COLLECTOR'S SAMPLE NO. | TYPE OF SAMPLE* | FIELD INFORMATION** |
|--------------------------|------------------------|-----------------|---------------------|
| <u>MW-5-2</u>            | _____                  | <u>Soil</u>     | _____               |
| <u>MW-5-4</u>            | _____                  | <u>Soil</u>     | _____               |
| <u>MW-5-5</u>            | _____                  | <u>Soil</u>     | _____               |
| <u>MW-5-6</u>            | _____                  | <u>Soil</u>     | _____               |

Analysis Requested Particle Size Analysis ASTM-D-422  
Moisture Content ASTM D-2216

Special Handling and/or Storage NA

PART II: LABORATORY SECTION\*\*

Received by \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_

Analysis Required \_\_\_\_\_

\* Indicate whether sample is soil, sludge, etc.

\*\*Use back of page for additional information relative to sample location.

Figure 9-19. Example of hazardous waste sample analysis sheet.

9212110194

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics

Remarks MW-5-1  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics

Remarks MW-5-2  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics

Remarks MW-5-3  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics

Remarks MW-5-4  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-5 Date 12-11-89  
Released By [Signature] Operational Health Physics

Remarks MW-5-5  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5 Date 12/12/89  
Released By [Signature] Operational Health Physics

Remarks MW-5-6  
54-3000-022 (09/88)

9 2 1 2 1 1 0 9 5

TEST REQUEST FORM

Sample/Specimen No. 9-095 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 1-4-90

| Test Requested        | No. of Samples | Test Lab Information (Instruction Used) |
|-----------------------|----------------|---|
| <u>SIEVE ANALYSIS</u> | <u>1</u>       | <u>ETAL-07</u>                          |
| <u>HYDROMETER</u>     | <u>1</u>       | <u>ETAL-07 (IF REQ)</u>                 |
| <u>N/A</u>            | <u>N/A</u>     | <u>N/A</u>                              |
| <u>N/A</u>            | <u>N/A</u>     | <u>N/A</u>                              |

Remarks FIELD SAMPLE  
MW-5-3

Received By: R.G ALEXANDER Date 12-20-89

Approved By: R.G ALEXANDER Date 1-4-90

9212110195

## SIEVE ANALYSIS DATA SHEET

Sample ID 9-095 Page 1 of 1

Tested By R.G ALEXANDER Date 1-4-90

Procedure ETAL-07 Rev 1 Date Issued 11-15-89

| EQUIPMENT ITEM | CALIBRATION NO. | DATE DUE       |
|----------------|-----------------|----------------|
| Balance        | <u>3304</u>     | <u>3-25-90</u> |
| Thermometer    | <u>0006</u>     | <u>2-6-90</u>  |
| <u>N/A</u>     | <u>N/A</u>      | <u>N/A</u>     |

Sample Description SANDY GRAVEL Sieve Time 10 (min)

reduced by  splitting  quartering  stockpile

(B) BEFORE TEST WT. N/A (A) AFTER TEST WT. N/A  $\frac{B-A}{B} \times 100 = \frac{N/A}{N/A} \% \text{ LOSS}$

| Sieve ID Number | Sieve Size  | Sample Weight  | Cumulative Wt. Retained (g) | % Retained  | Cumulative % Retained | Cumulative % Pass | % Pass      |
|-----------------|-------------|----------------|-----------------------------|-------------|-----------------------|-------------------|-------------|
| <u>N/A</u>      | <u>2</u>    | <u>4269.65</u> | <u>∅</u>                    | <u>∅</u>    | <u>∅</u>              | <u>100</u>        | <u>100</u>  |
|                 | <u>1/2</u>  |                | <u>295.58</u>               | <u>6.9</u>  | <u>6.9</u>            | <u>93.1</u>       | <u>93.1</u> |
|                 | <u>1</u>    |                | <u>543.92</u>               | <u>12.7</u> | <u>12.7</u>           | <u>87.3</u>       | <u>87.3</u> |
|                 | <u>3/4</u>  |                | <u>930.78</u>               | <u>21.8</u> | <u>21.8</u>           | <u>78.2</u>       | <u>78.2</u> |
|                 | <u>1/2</u>  |                | <u>1298.75</u>              | <u>30.4</u> | <u>30.4</u>           | <u>69.6</u>       | <u>69.6</u> |
|                 | <u>3/8</u>  |                | <u>1460.37</u>              | <u>34.2</u> | <u>34.2</u>           | <u>65.8</u>       | <u>65.8</u> |
|                 | <u>#4</u>   |                | <u>1843.37</u>              | <u>43.2</u> | <u>43.2</u>           | <u>56.8</u>       | <u>56.8</u> |
|                 | <u>#10</u>  | <u>4269.65</u> | <u>2090.64</u>              | <u>49.0</u> | <u>49.0</u>           | <u>51.0</u>       | <u>51.0</u> |
|                 | <u>#40</u>  | <u>163.43</u>  | <u>104.76</u>               | <u>64.1</u> | <u>64.1</u>           | <u>35.9</u>       | <u>18.3</u> |
|                 | <u>#60</u>  |                | <u>126.01</u>               | <u>77.1</u> | <u>77.1</u>           | <u>22.9</u>       | <u>11.7</u> |
|                 | <u>#100</u> |                | <u>135.46</u>               | <u>82.9</u> | <u>82.9</u>           | <u>17.1</u>       | <u>8.7</u>  |
|                 | <u>#200</u> |                | <u>142.25</u>               | <u>87.0</u> | <u>87.0</u>           | <u>13.0</u>       | <u>6.6</u>  |

Fines Modules (FM) N/A (See ASTM C 136-83, Section B.2)

**MATERIALS FINER THAN NO. 200 SIEVE BY WASHING**

C=Percentage of Material Passing a 200 Sieve 13.0%  
 D=Original Dry Weight of Sample 163.43 g  
 E=Dry Weight of Sample After Washing/Sieve 142.25 g  
 $C = \frac{D-E}{D} \times 100$

**Remarks**

WASH FINE GRADING  
UNDER SIZE FIELD  
SAMPLE

ALL DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS TRAINED AND USED CALIBRATED INSTRUMENTS

Checked By H. Bonny Date 1-11-90

9212110107





Company Contact J. Lindberg Telephone 65005  
 Sample Collected by R. Miller (GAI) Date 12/13 - 12/18/89 Time n/a  
 Sample Locations 1100-2 MW-5  
 Ice Chest No. n/a Field Logbook and Page No. WHC-N-306-3  
 Remarks samples taken during drilling of MW-5

Bill of Lading No. n/a Offsite Property No. n/a  
 Method of Shipment gov't vehicle Hand Carry  
 Shipped to Jerry Alexander, WHC, 2101-M Physical Testing Laboratory (Soils)

Sample Identification

|   |  |
|---|--|
| MW-5-1, 2.5', plastic bag, grain size only      |  |
| MW-5-2, 6.0', " " , all                         |  |
| MW-5-3, 15.0', " " , grain size only            |  |
| MW-5-4, 19.0', " " , all                        |  |
| MW-5-5, <sup>21.0'</sup> 35.0', " " , all       |  |
| MW-5-6, 50.25', " " , <sup>Open</sup> 12/20/89  |  |
| MW-5-6, 48.5', " " , all                        |  |
| MW-5-7, 50.25', " " , all-grain                 |  |
| MW-5-8, 55.0', " " , all-grain                  |  |
| MW-5-9, <sup>51.0'</sup> 66.4', " " , all-grain |  |
| MW-5-10, 71.75', " " , all-grain                |  |
| MW-5-11, 76.55', " " , all-grain                |  |
| MW-5-12, 81.5', " " , grain                     |  |
| MW-5-13, 88.65', acrylic tube, grain / perm.    |  |

Chain of Possession

|   |  |                                     |
|---|--|-------------------------------------|
| Relinquished by: <u>Rand D. Miller</u><br><u>Rand D. Miller (GAI)</u> | Received by: <u>JW Lindberg</u><br><u>JW Lindberg</u> 12/20/89 | Date/Time: <u>12/20/89 1415</u>     |
| Relinquished by: <u>JW Lindberg</u>                                   | Received by: <u>R.G. Alexander</u><br><u>R.G. ALEXANDER</u>    | Date/Time: <u>12/26/89 1530 hrs</u> |
| Relinquished by:  | Received by:   | Date/Time:                          |
| Relinquished by:  | Received by:   | Date/Time:                          |

9212100



RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-1  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-2  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-3  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-4  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-5 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-5  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5 Date 12/12/89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-6  
54-3000-022 (09/88)

9 2 1 2 1 1 0 2

TEST REQUEST FORM

Sample/Specimen No. 9-096 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LIJBERG Date 1-5-90

| Test Requested        | No. of Samples | Test Lab Information (Instruction Used) |
|-----------------------|----------------|---|
| <u>SIEVE ANALYSIS</u> | <u>1</u>       | <u>ETAL-07</u>                          |
| <u>HYDROMETER</u>     | <u>1</u>       | <u>ETAL 07 (SF REQ)</u>                 |
| <u>MOISTURE</u>       | <u>1</u>       | <u>ETAL-14</u>                          |
| <u>N/A</u>            | <u>N/A</u>     | <u>N/A</u>                              |

Remarks FIELD SAMPLE  
MW-5-4

Received By: RG ALEXANDER Date 12-20-89

Approved By: RG ALEXANDER Date 1-5-90

921211703

## SIEVE ANALYSIS DATA SHEET

Sample ID 9-096

Page 1 of 1

Tested By RG ALEXANDER Date 1-5-90

Procedure ETAL-07 Rev 1 Date Issued 11-15-89

| EQUIPMENT ITEM | CALIBRATION NO. | DATE DUE       |
|----------------|-----------------|----------------|
| Balance        | <u>3304</u>     | <u>3-25-90</u> |
| Thermometer    | <u>0606</u>     | <u>2-6-90</u>  |
| <u>N/A</u>     | <u>N/A</u>      | <u>N/A</u>     |

Sample Description SANDY GRAVEL Sieve Time 10 (min)

reduced by  splitting  quartering  stockpile

(B) BEFORE TEST WT. N/A (A) AFTER TEST WT. N/A  $\frac{B-A}{B} \times 100 = \underline{N/A} \% \text{ LOSS}$

| Sieve ID Number | Sieve Size  | Sample Weight  | Cumulative Wt. Retained (g) | % Retained  | Cumulative % Retained | Cumulative % Pass | % Pass      |
|-----------------|-------------|----------------|-----------------------------|-------------|-----------------------|-------------------|-------------|
| <u>N/A</u>      | <u>2</u>    | <u>3096.33</u> | <u>∅</u>                    | <u>∅</u>    | <u>∅</u>              | <u>100</u>        | <u>100</u>  |
|                 | <u>1/2</u>  |                | <u>∅</u>                    | <u>∅</u>    | <u>∅</u>              | <u>100</u>        | <u>100</u>  |
|                 | <u>1</u>    |                | <u>326.32</u>               | <u>10.5</u> | <u>10.5</u>           | <u>89.5</u>       | <u>89.5</u> |
|                 | <u>3/4</u>  |                | <u>447.80</u>               | <u>14.5</u> | <u>14.5</u>           | <u>85.5</u>       | <u>85.5</u> |
|                 | <u>1/2</u>  |                | <u>822.64</u>               | <u>26.6</u> | <u>26.6</u>           | <u>73.4</u>       | <u>73.4</u> |
|                 | <u>3/8</u>  |                | <u>923.10</u>               | <u>29.8</u> | <u>29.8</u>           | <u>70.2</u>       | <u>70.2</u> |
|                 | <u>#4</u>   |                | <u>1085.62</u>              | <u>35.1</u> | <u>35.1</u>           | <u>64.9</u>       | <u>64.9</u> |
|                 | <u>#10</u>  | <u>3096.33</u> | <u>1215.91</u>              | <u>39.3</u> | <u>39.3</u>           | <u>60.7</u>       | <u>60.7</u> |
|                 | <u>#40</u>  | <u>149.69</u>  | <u>80.15</u>                | <u>53.5</u> | <u>53.5</u>           | <u>46.5</u>       | <u>28.2</u> |
|                 | <u>#60</u>  |                | <u>113.78</u>               | <u>76.0</u> | <u>76.0</u>           | <u>24.0</u>       | <u>14.4</u> |
|                 | <u>#100</u> |                | <u>131.72</u>               | <u>88.0</u> | <u>88.0</u>           | <u>12.0</u>       | <u>7.3</u>  |
|                 | <u>#200</u> |                | <u>138.12</u>               | <u>92.3</u> | <u>92.3</u>           | <u>7.7</u>        | <u>4.7</u>  |

Finess Modules (FM) N/A (See ASTM C 136-83, Section 8.2)

### MATERIALS FINER THAN NO. 200 SIEVE BY WASHING

C=Percentage of Material Passing a 200 Sieve 7.7 %  
 D=Original Dry Weight of Sample 149.69g  
 E=Dry Weight of Sample After Washing/Sieve 138.12g  
 $C = \frac{D-E}{D} \times 100$

### Remarks

WASH FINE GRAVING  
UNDER SIZE FIELD  
SAMPLES

ALL DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS TRAINED AND USED CALIBRATED INSTRUMENTS

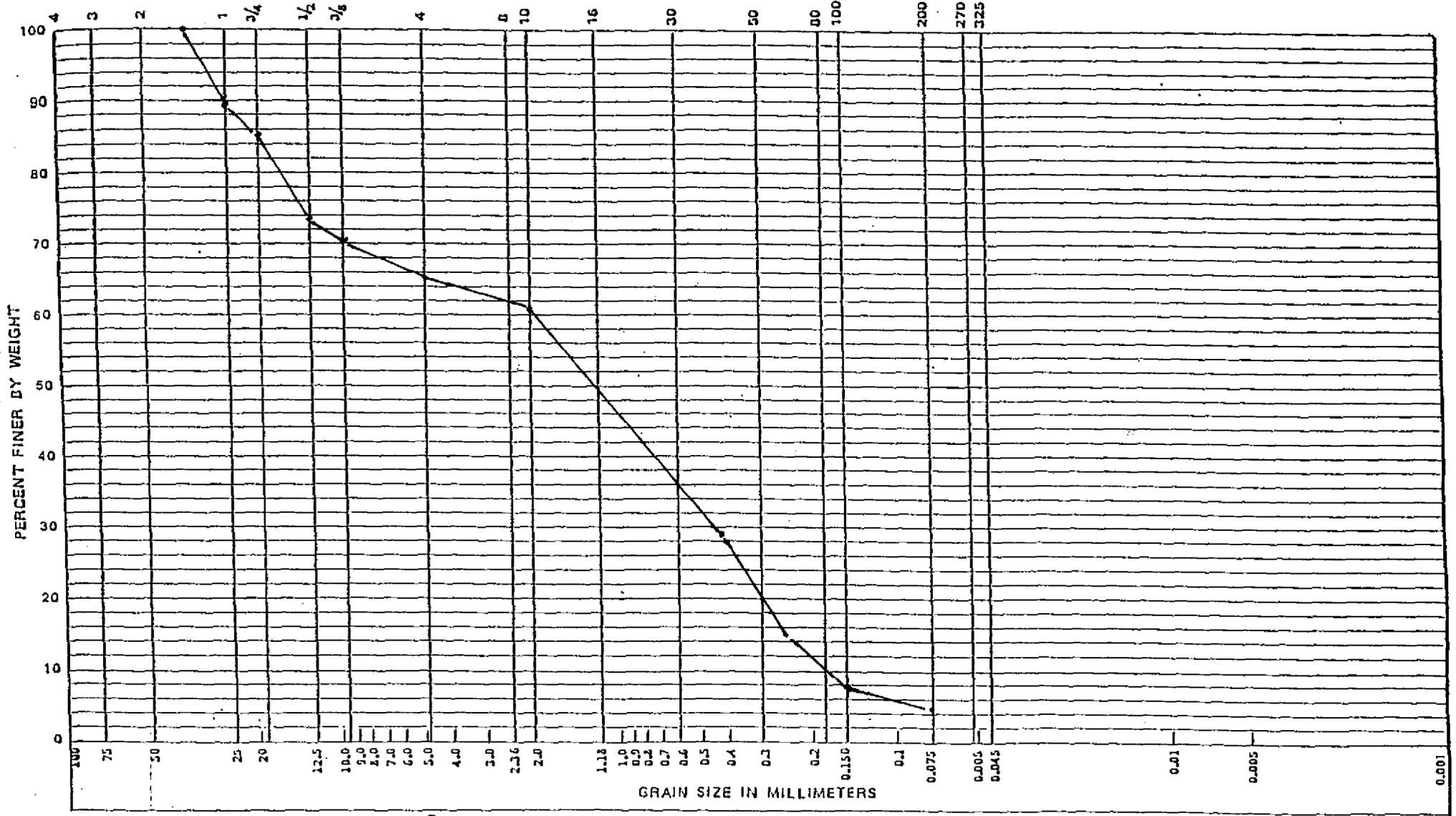
Checked By HL Bonny Date 1/11/90

9 2 1 2 1 1 0 4

9 2 1 2 1 1 0 5

GRAIN SIZE ANALYSIS PLOT

|                           |                         |                     |
|---------------------------|-------------------------|---------------------|
| Size Of Opening In Inches | Number Of Mesh Per Inch | Hydrometer Analysis |
|---------------------------|-------------------------|---------------------|



Specimen No. 9-096 Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

|  |  |   |
|--|--|---|
| Sample Description: <u>SANDY GRAVEL</u><br><u>MW-5-4</u> | Plotted by: <u>RG ALEXANDER</u><br>Date: <u>1-8-90</u> | Checked by: <u>HL Bennett</u><br>Date: <u>1-11-90</u> |
|--|--|---|



Company Contact J. Lindberg Telephone 65005  
 Sample Collected by R. Miller (GAI) Date 12/13 - 12/18/89 Time n/a  
 Sample Locations 1100-2 MW-5  
 Ice Chest No. n/a Field Logbook and Page No. WHC-N-306-3  
 Remarks samples taken during drilling of MW-5

Bill of Lading No. n/a Offsite Property No. n/a  
 Method of Shipment govt vehicle Hand Carry  
 Shipped to Jerry Alexander, WHC, 2101-M Physical Testing Laboratory (Soils)

Sample Identification

|                           |                |                 |
|---------------------------|----------------|-----------------|
| MW-5-1, 2.5'              | plastic bag,   | grain size only |
| MW-5-2, 6.0'              | " "            | all             |
| MW-5-3, 15.0'             | " "            | grain size only |
| MW-5-4, 19.0'             | " "            | all             |
| MW-5-5, 35.0'             | " "            | all             |
| <del>MW-5-6, 50.25'</del> | <del>" "</del> | <del>all</del>  |
| MW-5-6, 48.5'             | " "            | all             |
| MW-5-7, 50.25'            | " "            | all-grain       |
| MW-5-8, 55.0'             | " "            | all-grain       |
| MW-5-9, 66.4'             | " "            | all-grain       |
| MW-5-10, 71.75'           | " "            | all-grain       |
| MW-5-11, 76.55'           | " "            | all-grain       |
| MW-5-12, 81.5'            | " "            | grain           |
| MW-5-13, 88.65'           | acrylic tube,  | grain/perm.     |

Chain of Possession

|   |  |  |
|---|--|--|
| Relinquished by: <u>Rand D. Miller</u><br><u>Rand D. Miller (GAI)</u> | Received by: <u>JW Lindberg</u><br><u>JW Lindberg</u> 12/20/89 | Date/Time: <u>12/20/89</u> <u>1415</u>     |
| Relinquished by: <u>JW Lindberg</u>                                   | Received by: <u>RG Alexander</u><br><u>RG ALEXANDER</u>        | Date/Time: <u>12/20/89</u> <u>1530 hrs</u> |
| Relinquished by:  | Received by:   | Date/Time:                                 |
| Relinquished by:  | Received by:   | Date/Time:                                 |

9212

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector R.D. Miller Date Sampled 12/13-12/18 Time NA hours

Affiliation of Sampler Golder Assoc.

Address NA  
 number street city state zip

Telephone (509) 376-5005 Company Contact JW Lindberg

| LABORATORY SAMPLE NUMBER | COLLECTOR'S SAMPLE NO. | TYPE OF SAMPLE* | FIELD INFORMATION** |
|--------------------------|------------------------|-----------------|---------------------|
| <u>MW-5-2</u>            | _____                  | <u>Soil</u>     | _____               |
| <u>MW-5-4</u>            | _____                  | <u>Soil</u>     | _____               |
| <u>MW-5-5</u>            | _____                  | <u>Soil</u>     | _____               |
| <u>MW-5-6</u>            | _____                  | <u>Soil</u>     | _____               |

Analysis Requested Particle Size Analysis ASTM-D-422  
Moisture Content ASTM D-2216

Special Handling and/or Storage NA

PART II: LABORATORY SECTION\*\*

Received by \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_

Analysis Required \_\_\_\_\_

\* Indicate whether sample is soil, sludge, etc.

\*\*Use back of page for additional information relative to sample location.

Figure 9-19. Example of hazardous waste sample analysis sheet.

9 2 1 2 1 0 3



TEST REQUEST FORM

Sample/Specimen No. 9-097 Cost Code/Work Order No. ED332

Requested By: Org. 80232 Person J. LINDBERG Date 1-11-90

| Test Requested        | No. of Samples | Test Lab Information (Instruction Used) |
|-----------------------|----------------|---|
| <u>SIEVE ANALYSIS</u> | <u>1</u>       | <u>ETAL-07</u>                          |
| <u>HYDROMETER</u>     | <u>1</u>       | <u>ETAL-07 (IF REQ)</u>                 |
| <u>MOISTURE</u>       | <u>1</u>       | <u>ETAL-14</u>                          |
| <u>N/A</u>            | <u>N/A</u>     | <u>N/A</u>                              |

Remarks FIELD SAMPLE  
MW-5-5

Received By: R.G. ALEXANDER Date 12-20-89

Approved By: R.G. ALEXANDER Date 1-11-90

9212110010

## SIEVE ANALYSIS DATA SHEET

Sample ID 9-097 Page 1 of 1

Tested By RG ALEXANDER Date 1-11-90

Procedure ETAL-07 Rev 1 Date Issued 11-15-89

| EQUIPMENT ITEM | CALIBRATION NO. | DATE DUE       |
|----------------|-----------------|----------------|
| Balance        | <u>3304</u>     | <u>3-25-90</u> |
| Thermometer    | <u>0006</u>     | <u>2-6-90</u>  |
| <u>N/A</u>     | <u>N/A</u>      | <u>N/A</u>     |

Sample Description SANDY GRAVEL Sieve Time 10 (min)

reduced by  splitting  quartering  stockpile

(B) BEFORE TEST WT. N/A (A) AFTER TEST WT. N/A  $\frac{B-A}{B} \times 100 = \underline{N/A} \% \text{ LOSS}$

| Sieve ID Number | Sieve Size  | Sample Weight  | Cumulative Wt. Retained (g) | % Retained  | Cumulative % Retained | Cumulative % Pass | % Pass      |
|-----------------|-------------|----------------|-----------------------------|-------------|-----------------------|-------------------|-------------|
| <u>N/A</u>      | <u>2</u>    | <u>3068.21</u> | <u>∅</u>                    | <u>∅</u>    | <u>∅</u>              | <u>100</u>        | <u>100</u>  |
|                 | <u>1/2</u>  |                | <u>528.49</u>               | <u>17.2</u> | <u>17.2</u>           | <u>82.8</u>       | <u>82.8</u> |
|                 | <u>1</u>    |                | <u>971.39</u>               | <u>31.7</u> | <u>31.7</u>           | <u>68.3</u>       | <u>68.3</u> |
|                 | <u>3/4</u>  |                | <u>1121.10</u>              | <u>36.5</u> | <u>36.5</u>           | <u>63.5</u>       | <u>63.5</u> |
|                 | <u>1/2</u>  |                | <u>1487.51</u>              | <u>48.5</u> | <u>48.5</u>           | <u>51.5</u>       | <u>51.5</u> |
|                 | <u>3/8</u>  |                | <u>1685.16</u>              | <u>54.9</u> | <u>54.9</u>           | <u>45.1</u>       | <u>45.1</u> |
|                 | <u>#4</u>   |                | <u>2057.24</u>              | <u>66.4</u> | <u>66.4</u>           | <u>33.6</u>       | <u>33.6</u> |
|                 | <u>#10</u>  | <u>3068.21</u> | <u>2320.99</u>              | <u>75.6</u> | <u>75.6</u>           | <u>24.4</u>       | <u>24.4</u> |
|                 | <u>#40</u>  | <u>122.75</u>  | <u>52.53</u>                | <u>42.8</u> | <u>42.8</u>           | <u>57.2</u>       | <u>14.0</u> |
|                 | <u>#60</u>  |                | <u>84.63</u>                | <u>68.9</u> | <u>68.9</u>           | <u>31.1</u>       | <u>7.6</u>  |
|                 | <u>#100</u> |                | <u>96.05</u>                | <u>78.2</u> | <u>78.2</u>           | <u>21.8</u>       | <u>5.3</u>  |
|                 | <u>#200</u> |                | <u>105.14</u>               | <u>85.7</u> | <u>85.7</u>           | <u>14.3</u>       | <u>3.5</u>  |

Finess Modules (FM) N/A (See ASTM C 136-83, Section B.2)

### MATERIALS FINER THAN NO. 200 SIEVE BY WASHING

C=Percentage of Material Passing a 200 Sieve \_\_\_\_\_%

D=Original Dry Weight of Sample 122.75g

E=Dry Weight of Sample After Washing/Sieve \_\_\_\_\_g

$$C = \frac{D-E}{D} \times 100$$

### Remarks

UNDER SIZE FIELD

SAMPLE.

WASH FINE GRADING

ALL DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS TRAINED AND USED CALIBRATED INSTRUMENTS  
Checked By \_\_\_\_\_ Date \_\_\_\_\_

921211011

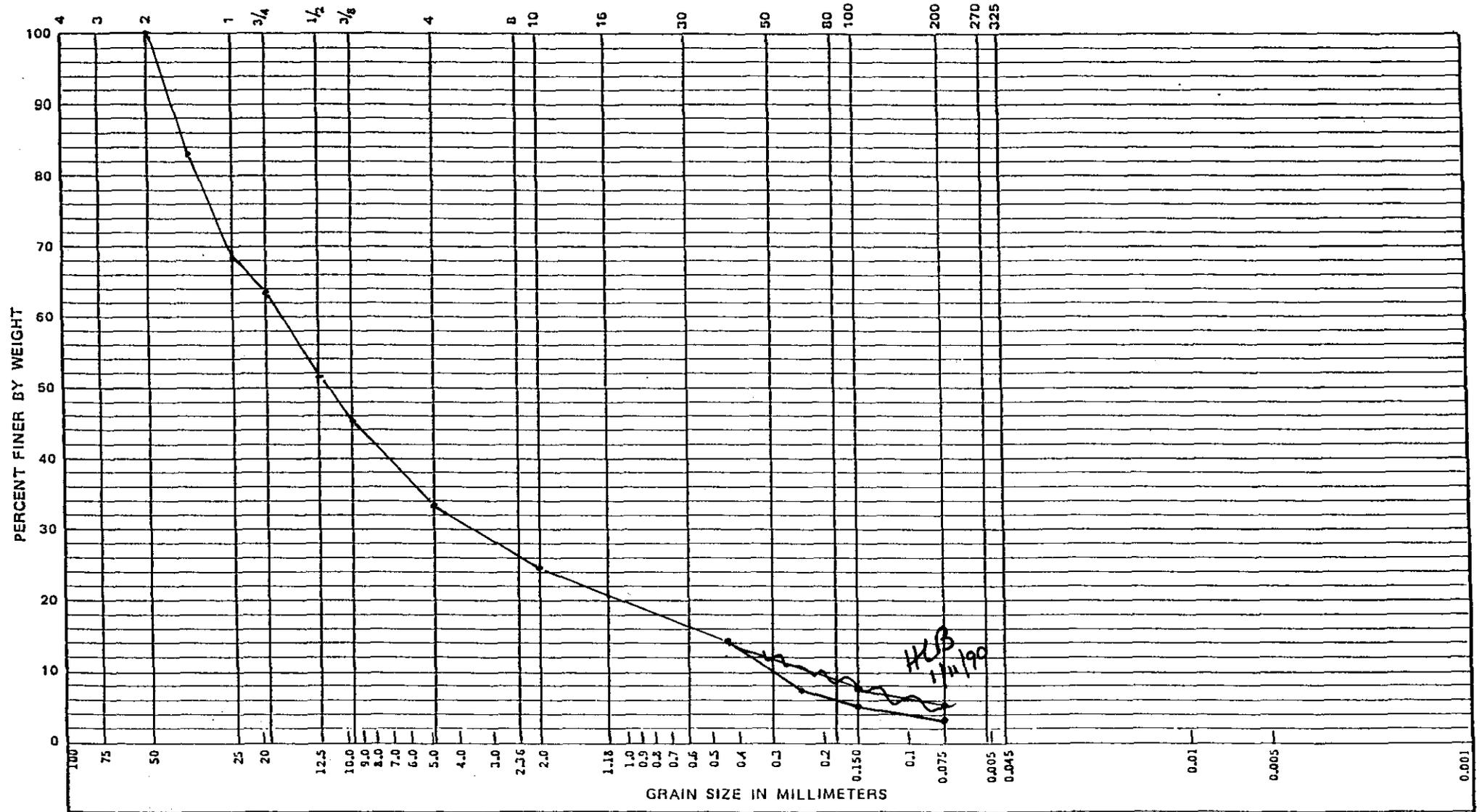
9 2 1 2 1 1 1 1 2

# GRAIN SIZE ANALYSIS PLOT

Size Of Opening In Inches

Number Of Mesh Per Inch

Hydrometer Analysis



HLB  
1/11/90

Specimen No. 9-097

Procedure No. ETAL-07

Rev. 1

Date Issued 11-15-89

Sample Description:

SANDY GRAVEL  
MW-5-5

Plotted by: R.G. ALEXANDER

Checked by: HL Benny

Date: 1-15-90

Date: 1/11/90



Company Contact J. Lindberg Telephone 65005  
 Sample Collected by R. Miller (GAI) Date 12/13 - 12/18/89 Time n/a  
 Sample Locations 1100-2 MW-5  
 Ice Chest No. n/a Field Logbook and Page No. WHC-N-306-3  
 Remarks samples taken during drilling of MW-5

Bill of Lading No. n/a Offsite Property No. n/a  
 Method of Shipment quit vehicle Hand Carry  
 Shipped to Jerry Alexander, WHC, 2101-M Physical Testing Laboratory (Soils)

Sample Identification

|                 |  |
|-----------------|--|
| MW-5-1, 2.5'    | plastic bag, grain size only                             |
| MW-5-2, 6.0'    | " " , all  |
| MW-5-3, 15.0'   | " " , grain size only                                    |
| MW-5-4, 19.0'   | " " , all  |
| MW-5-5, 35.0'   | " " , all  |
| MW-5-6, 50.25'  | " " , <del>all</del> <sup>Open</sup> <sub>12/20/89</sub> |
| MW-5-6, 48.5'   | " " , all  |
| MW-5-7, 50.25'  | " " , all-grain  |
| MW-5-8, 55.0'   | " " , all-grain  |
| MW-5-9, 66.4'   | " " , all-grain  |
| MW-5-10, 71.75' | " " , all-grain  |
| MW-5-11, 76.55' | " " , all-grain  |
| MW-5-12, 81.5'  | " " , grain  |
| MW-5-13, 88.65' | acrylic tube, grain / perm.                              |

Chain of Possession

|   |  |                                     |
|---|--|-------------------------------------|
| Relinquished by: <u>Rand D. Miller</u><br><u>Rand D. Miller (GAI)</u> | Received by: <u>JW Lindberg</u><br><u>JW Lindberg</u> 12/20/89 | Date/Time: <u>12/20/89 1415</u>     |
| Relinquished by: <u>JW Lindberg</u>                                   | Received by: <u>RG Alexander</u><br><u>RG ALEXANDER</u>        | Date/Time: <u>12/20/89 1530 hrs</u> |
| Relinquished by:  | Received by:   | Date/Time:                          |
| Relinquished by:  | Received by:   | Date/Time:                          |

921201A

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector R.D. Miller Date Sampled 12/13-12/18 Time NA hours

Affiliation of Sampler Golder Assoc.

Address NA  
 number street city state zip

Telephone (509) 376-5005 Company Contact JW Lindberg

| LABORATORY SAMPLE NUMBER | COLLECTOR'S SAMPLE NO. | TYPE OF SAMPLE* | FIELD INFORMATION** |
|--------------------------|------------------------|-----------------|---------------------|
| <u>MW-5-2</u>            | _____                  | <u>Soil</u>     | _____               |
| <u>MW-5-4</u>            | _____                  | <u>Soil</u>     | _____               |
| <u>MW-5-5</u>            | _____                  | <u>Soil</u>     | _____               |
| <u>MW-5-6</u>            | _____                  | <u>Soil</u>     | _____               |

Analysis Requested Particle Size Analysis ASTM-D-422  
Moisture Content ASTM D-2216

Special Handling and/or Storage NA

PART II: LABORATORY SECTION\*\*

Received by \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_

Analysis Required \_\_\_\_\_

\* Indicate whether sample is soil, sludge, etc.

\*\*Use back of page for additional information relative to sample location.

Figure 9-19. Example of hazardous waste sample analysis sheet.

9212110015

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-1  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-2  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-3  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-4  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-5 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-5  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5 Date 12/12/89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-6  
54-3000-022 (09/88)

9212110516

TEST REQUEST FORM

Sample/Specimen No. 9-098 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 1-11-90

| Test Requested        | No. of Samples | Test Lab Information (Instruction Used) |
|-----------------------|----------------|---|
| <u>SIEVE ANALYSIS</u> | <u>1</u>       | <u>ETAL-07</u>                          |
| <u>HYDRIMETER</u>     | <u>1</u>       | <u>ETAL-07 (IF REQ)</u>                 |
| <u>N/A</u>            | <u>N/A</u>     | <u>N/A</u>                              |
| <u>N/A</u>            | <u>N/A</u>     | <u>N/A</u>                              |

Remarks FIELD SAMPLE  
NW-5-6

Received By: RG ALEXANDER Date 12-20-89

Approved By: RG ALEXANDER Date 1-11-90

9212110017

## SIEVE ANALYSIS DATA SHEET

Sample ID 9-098 Page 1 of 1

Tested By R.G. ALEXANDER Date 1-11-90

Procedure ETAL-07 Rev. 1 Date Issued 11-15-89

| EQUIPMENT ITEM | CALIBRATION NO. | DATE DUE |
|----------------|-----------------|----------|
| Balance        | 3304            | 3-25-90  |
| Thermometer    | 0006            | 2-6-90   |
| N/A            | N/A             | N/A      |

Sample Description SANDY GRAVEL Sieve Time 10 (min)

reduced by  splitting  quartering  stockpile

(B) BEFORE TEST WT. N/A (A) AFTER TEST WT. N/A  $\frac{B-A}{B} \times 100 = \frac{N/A}{N/A} \times 100 = \frac{N/A}{N/A} \% \text{ LOSS}$

| Sieve ID Number | Sieve Size | Sample Weight | Cumulative Wt. Retained (g) | % Retained | Cumulative % Retained | Cumulative % Pass | % Pass |
|-----------------|------------|---------------|-----------------------------|------------|-----------------------|-------------------|--------|
| N/A             | 2          | 2998.01       | 0                           | 0          | 0                     | 100               | 100    |
|                 | 1/2        |               | 372.39                      | 12.4       | 12.4                  | 87.6              | 87.6   |
|                 | 1          |               | 491.43                      | 16.4       | 16.4                  | 83.6              | 83.6   |
|                 | 3/4        |               | 702.34                      | 23.4       | 23.4                  | 76.6              | 76.6   |
|                 | 1/2        |               | 1153.54                     | 38.5       | 38.5                  | 61.5              | 61.5   |
|                 | 3/8        |               | 1379.15                     | 46.0       | 46.0                  | 54.0              | 54.0   |
|                 | #4         |               | 1832.91                     | 61.1       | 61.1                  | 38.9              | 38.9   |
|                 | #10        | 2998.01       | 2149.08                     | 71.7       | 71.7                  | 28.3              | 28.3   |
|                 | #40        | 103.95        | 35.66                       | 34.3       | 34.3                  | 65.7              | 18.6   |
|                 | #60        |               | 55.25                       | 53.2       | 53.2                  | 46.8              | 13.2   |
|                 | #100       |               | 68.60                       | 66.0       | 66.0                  | 34.0              | 9.6    |
|                 | #200       |               | 79.81                       | 76.3       | 76.3                  | 23.7              | 6.7    |

Finess Modules (FM) N/A (See ASTM C 136-83, Section B.2)

**MATERIALS FINER THAN NO. 200 SIEVE BY WASHING**

C=Percentage of Material Passing a 200 Sieve \_\_\_\_\_ %  
 D=Original Dry Weight of Sample 103.95g  
 E=Dry Weight of Sample After Washing/Sieve \_\_\_\_\_ g  
 $C = \frac{(D-E)}{D} \times 100$

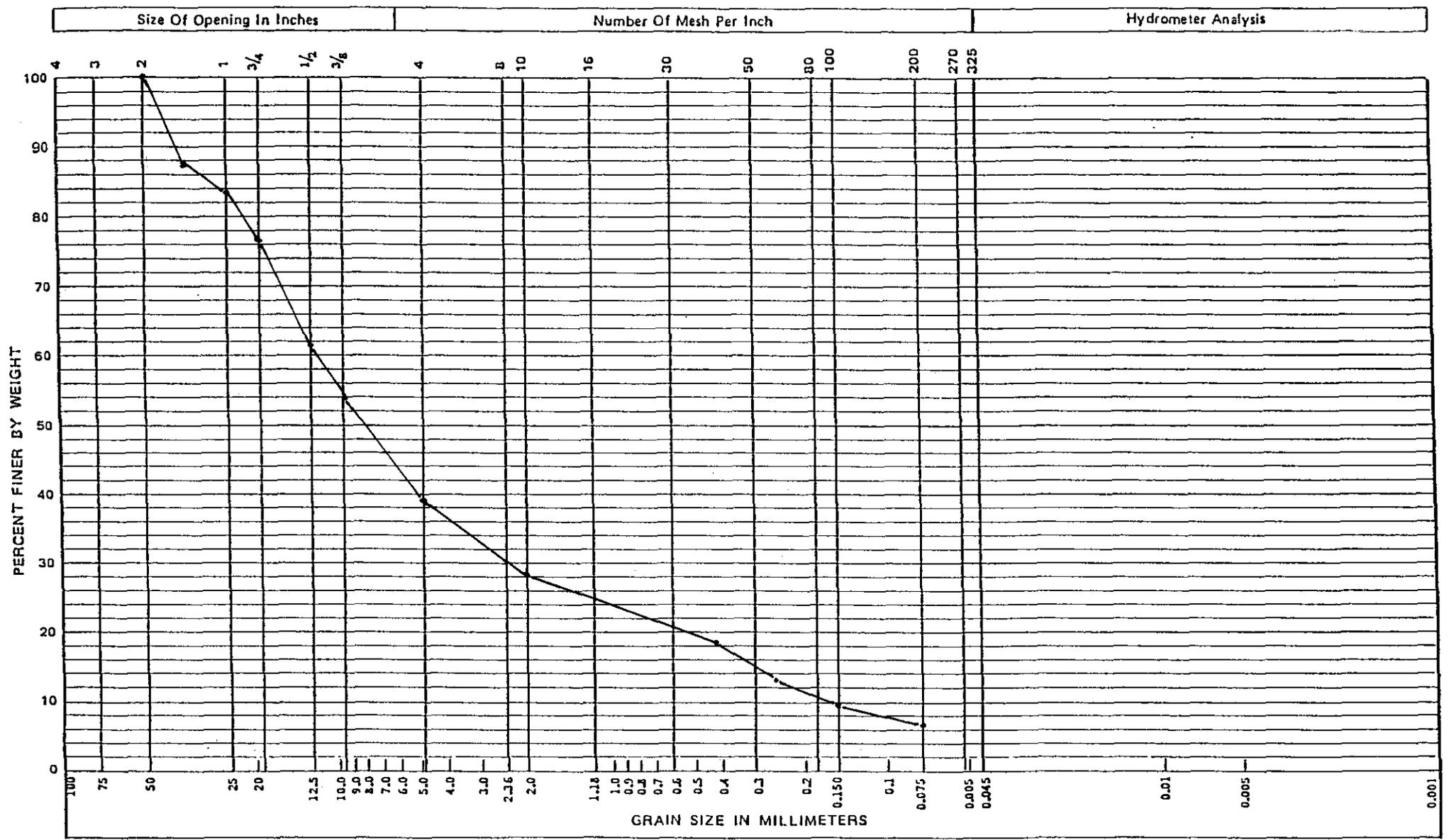
Remarks  
SMALL FIELD SAMPLE  
WASH FINE GRADING

ALL DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS TRAINED AND USED CALIBRATED INSTRUMENTS.

Checked By Harold A. Benay Date 01/11/90

9212110013

9 2 1 2 1 1 1 9  
GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-098 Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

|  |  |  |
|--|--|--|
| Sample Description: <u>SANDY GRAVEL</u><br><u>MW-5-6</u> | Plotted by: <u>R. G. ALEXANDER</u><br>Date: <u>1-11-90</u> | Checked by: <u>Harold L. Bonny</u><br>Date: <u>1-11-90</u> |
|--|--|--|



Westinhouse Hanford Company

CHAIN OF CUSTODY

Company Contact J. Lindberg Telephone 65005  
 Sample Collected by R. Miller (GAI) Date 12/13 - 12/18/89 Time n/a  
 Sample Locations 1100-2 MW-5  
 Ice Chest No. n/a Field Logbook and Page No. WHC-N-306-3  
 Remarks samples taken during drilling of MW-5

Bill of Lading No. n/a Offsite Property No. n/a  
 Method of Shipment govt vehicle Hand Carry  
 Shipped to Jerry Alexander, WHC, 2101-M Physical Testing Laboratory (Soils)

Sample Identification

|   |  |
|---|--|
| MW-5-1, 2.5', plastic bag, grain size only                |  |
| MW-5-2, 6.0', " " , all                                   |  |
| MW-5-3, 15.0', " " , grain size only                      |  |
| MW-5-4, 19.0', " " , all                                  |  |
| MW-5-5, <sup>20.0'</sup> 35.0', " " , all                 |  |
| <del>MW-5-6, 50.25', " " , <sup>don't collect</sup></del> |  |
| MW-5-6, 48.5', " " , all                                  |  |
| MW-5-7, 50.25', " " , all-grain                           |  |
| MW-5-8, 55.0', " " , all-grain                            |  |
| MW-5-9, <sup>55.0'</sup> 66.4', " " , all-grain           |  |
| MW-5-10, 71.75', " " , all-grain                          |  |
| MW-5-11, 76.55', " " , all-grain                          |  |
| MW-5-12, 81.5', " " , grain                               |  |
| MW-5-13, 88.65', acrylic tube, grain/perm.                |  |

Chain of Possession

|   |  |                                     |
|---|--|-------------------------------------|
| Relinquished by: <u>Rand D. Miller</u><br><u>Rand D. Miller (GAI)</u> | Received by: <u>JW Lindberg</u><br><u>JW Lindberg 12/20/89</u> | Date/Time: <u>12/20/89 1415</u>     |
| Relinquished by: <u>JW Lindberg</u>                                   | Received by: <u>RG Alexander</u><br><u>RG ALEXANDER</u>        | Date/Time: <u>12/20/89 1530 hrs</u> |
| Relinquished by:  | Received by:   | Date/Time:                          |
| Relinquished by:  | Received by:   | Date/Time:                          |

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector R.D. Miller Date Sampled 12/13-12/18 Time NA hours

Affiliation of Sampler Golder Assoc.

Address NA  
number street city state zip

Telephone (509) 376-5005 Company Contact JW Lindberg

| LABORATORY SAMPLE NUMBER | COLLECTOR'S SAMPLE NO. | TYPE OF SAMPLE* | FIELD INFORMATION** |
|--------------------------|------------------------|-----------------|---------------------|
| <u>MW-5-2</u>            | _____                  | <u>Soil</u>     | _____               |
| <u>MW-5-4</u>            | _____                  | <u>Soil</u>     | _____               |
| <u>MW-5-5</u>            | _____                  | <u>Soil</u>     | _____               |
| <u>MW-5-6</u>            | _____                  | <u>Soil</u>     | _____               |

Analysis Requested Particle Size Analysis ASTM-D-422  
Moisture Content ASTM D-2216

Special Handling and/or Storage NA

PART II: LABORATORY SECTION\*\*

Received by \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_

Analysis Required \_\_\_\_\_

\* Indicate whether sample is soil, sludge, etc.  
 \*\*Use back of page for additional information relative to sample location.

Figure 9-19. Example of hazardous waste sample analysis sheet.

9212110002

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-1  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-2  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-3  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-4  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-5 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-5  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5 Date 12/12/89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-6  
54-3000-022 (09/88)

9212103

TEST REQUEST FORM

Sample/Specimen No. 9-099 Cost Code/Work Order No. ED332

Requested By: Org. 80232 Person J. LINDBERG Date 1-11-90

| Test Requested        | No. of Samples | Test Lab Information (Instruction Used) |
|-----------------------|----------------|---|
| <u>SIEVE ANALYSIS</u> | <u>1</u>       | <u>ETAL-07</u>                          |
| <u>HYDROMETER</u>     | <u>1</u>       | <u>ETAL-01 (IF REQ)</u>                 |
| <u>N/A</u>            | <u>N/A</u>     | <u>N/A</u>                              |
| <u>N/A</u>            | <u>N/A</u>     | <u>N/A</u>                              |

Remarks FIELD SAMPLE  
MW-5-7

Received By: R.G. ALEXANDER Date 12-20-89

Approved By: R.G. ALEXANDER Date 1-11-90

9212110024

## SIEVE ANALYSIS DATA SHEET

Sample ID 9-099 Page 1 of 1

Tested By RG ALEXANDER Date 1-11-90

Procedure ETA-07 Rev 1 Date Issued 11-15-89

| EQUIPMENT ITEM | CALIBRATION NO. | DATE DUE       |
|----------------|-----------------|----------------|
| Balance        | <u>3304</u>     | <u>3-25-90</u> |
| Thermometer    | <u>0006</u>     | <u>2-6-90</u>  |
| <u>N/A</u>     | <u>N/A</u>      | <u>N/A</u>     |

Sample Description SANDY GRAVEL Sieve Time 10 (min)

reduced by  splitting  quartering  stockpile

(B) BEFORE TEST WT. N/A (A) AFTER TEST WT. N/A  $\frac{B-A}{B} \times 100 = \frac{N/A}{N/A} \% \text{ LOSS}$

| Sieve ID Number | Sieve Size  | Sample Weight  | Cumulative Wt. Retained (g) | % Retained  | Cumulative % Retained | Cumulative % Pass | % Pass      |
|-----------------|-------------|----------------|-----------------------------|-------------|-----------------------|-------------------|-------------|
| <u>N/A</u>      | <u>2</u>    | <u>2726.84</u> | <u>385.80</u>               | <u>14.1</u> | <u>14.1</u>           | <u>85.9</u>       | <u>85.9</u> |
|                 | <u>1/2</u>  |                | <u>695.77</u>               | <u>25.5</u> | <u>25.5</u>           | <u>74.5</u>       | <u>74.5</u> |
|                 | <u>1</u>    |                | <u>873.87</u>               | <u>32.0</u> | <u>32.0</u>           | <u>68.0</u>       | <u>68.0</u> |
|                 | <u>3/4</u>  |                | <u>1035.18</u>              | <u>38.0</u> | <u>38.0</u>           | <u>62.0</u>       | <u>62.0</u> |
|                 | <u>1/2</u>  |                | <u>1249.02</u>              | <u>45.8</u> | <u>45.8</u>           | <u>54.2</u>       | <u>54.2</u> |
|                 | <u>3/8</u>  |                | <u>1378.04</u>              | <u>50.5</u> | <u>50.5</u>           | <u>49.5</u>       | <u>49.5</u> |
|                 | <u>#4</u>   |                | <u>1741.41</u>              | <u>63.9</u> | <u>63.9</u>           | <u>36.1</u>       | <u>36.1</u> |
|                 | <u>#10</u>  | <u>2726.84</u> | <u>2010.34</u>              | <u>73.7</u> | <u>73.7</u>           | <u>26.3</u>       | <u>26.3</u> |
|                 | <u>#40</u>  | <u>122.78</u>  | <u>25.10</u>                | <u>20.4</u> | <u>20.4</u>           | <u>79.6</u>       | <u>26.9</u> |
|                 | <u>#60</u>  |                | <u>68.31</u>                | <u>55.6</u> | <u>55.6</u>           | <u>44.4</u>       | <u>11.7</u> |
|                 | <u>#100</u> |                | <u>93.89</u>                | <u>76.5</u> | <u>76.5</u>           | <u>23.5</u>       | <u>6.2</u>  |
|                 | <u>#200</u> |                | <u>105.17</u>               | <u>85.7</u> | <u>85.7</u>           | <u>14.3</u>       | <u>3.8</u>  |

Fineness Modules (FM) N/A (See ASTM C 136-83, Section B.2)

**MATERIALS FINER THAN NO. 200 SIEVE BY WASHING**

C=Percentage of Material Passing a 200 Sieve 14.3 %  
 D=Original Dry Weight of Sample 122.78 g  
 E=Dry Weight of Sample After Washing/Sieve 105.17 g  
 $C = \frac{D-E}{D} \times 100$

**Remarks**

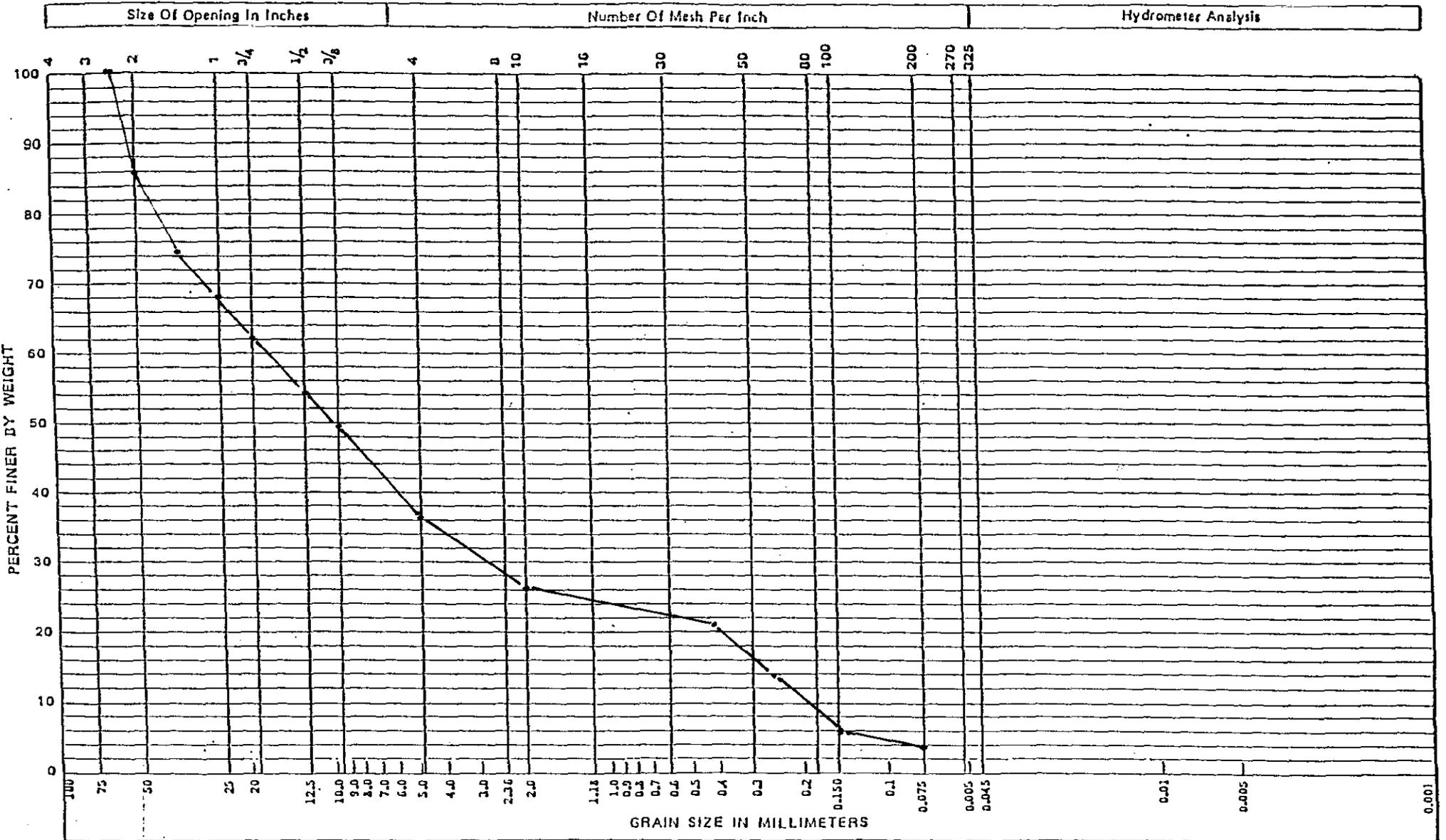
SMALL FIELD SAMPLE  
WASH FINE GRADING

ALL DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS TRAINED AND USED CALIBRATED INSTRUMENTS  
 Checked By J. P. Reilly Date 1-18-90

9 2 1 2 1 1 0 0 2 5

9 2 1 2 1 1 2 6

# GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-099

Procedure No. ETAL-07

Rev. 1

Date Issued 11-15-89

Sample Description: SANDY GRAVEL  
MW-5-7

Plotted by: RG ALEXANDER  
Date: 1-15-90

Checked by: J. A. Rehyen  
Date: 1-18-90



Company Contact J. Lindberg Telephone 65005  
 Sample Collected by R. Miller (GAI) Date 12/13 - 12/18/89 Time n/a  
 Sample Locations 1100-2 MW-5  
 Ice Chest No. n/a Field Logbook and Page No. WHC-N-306-3  
 Remarks samples taken during drilling of MW-5

Bill of Lading No. n/a Offsite Property No. n/a  
 Method of Shipment gov't vehicle Hand Carry  
 Shipped to Jerry Alexander, WHC, 2101-M Physical Testing Laboratory (Soils)

Sample Identification

|  |  |
|--|--|
| MW-5-1, 2.5', plastic bag, grain size only                       |  |
| MW-5-2, 6.0', " " , all  |  |
| MW-5-3, 15.0', " " , grain size only                             |  |
| MW-5-4, 19.0', " " , all   |  |
| MW-5-5, <sup>dom. filter</sup> 35.0', " " , all                  |  |
| <del>MW-5-6, 50.25', " " , <sup>dom. filter</sup></del>          |  |
| MW-5-6, 48.5', " " , all   |  |
| MW-5-7, 50.25', " " , all-grain                                  |  |
| MW-5-8, 55.0', " " , all-grain                                   |  |
| <del>MW-5-9, <sup>dom. filter</sup> 66.4', " " , all-grain</del> |  |
| MW-5-10, 71.75', " " , all-grain                                 |  |
| MW-5-11, 76.55', " " , all-grain                                 |  |
| MW-5-12, 81.5', " " , grain                                      |  |
| MW-5-13, 88.65', acrylic tube, grain/perm.                       |  |

Chain of Possession

|   |  |                                     |
|---|--|-------------------------------------|
| Relinquished by: <u>Rand D. Miller</u><br><u>Rand D. Miller (GAI)</u> | Received by: <u>JW Lindberg</u><br><u>JW Lindberg</u> 12/20/89 | Date/Time: <u>12/20/89 1415</u>     |
| Relinquished by: <u>JW Lindberg</u>                                   | Received by: <u>R.G. Alexander</u><br><u>R.G. ALEXANDER</u>    | Date/Time: <u>12/26/89 1530 hrs</u> |
| Relinquished by:  | Received by:   | Date/Time:                          |
| Relinquished by:  | Received by:   | Date/Time:                          |

9 2 1 2 1 1 0 1 2 3

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics

Remarks MW-5-1  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-A Date 12-11-89  
Released By [Signature] Operational Health Physics

Remarks MW-5-2  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics

Remarks MW-5-3  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-A Date 12-11-89  
Released By [Signature] Operational Health Physics

Remarks MW-5-4  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-5 Date 12-11-89  
Released By [Signature] Operational Health Physics

Remarks MW-5-5  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5 Date 12/12/89  
Released By [Signature] Operational Health Physics

Remarks MW-5-6  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5 Date 12/13/89  
Released By [Signature] Operational Health Physics

Remarks MW-5-7  
54-3000-022 (09/88)

RADIATION RELEASE

Well MW-11-5 Date 12-14-89  
Released By [Signature] Operational Health Physics

Remarks MW-5-8  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5 Date 12/18/89  
Released By [Signature] Operational Health Physics

Remarks MW-5-9  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5 Date 12/18/89  
Released By [Signature] Operational Health Physics

Remarks MW-5-10  
54-3000-022 (09/88)

6  
2  
1  
2  
6



TEST REQUEST FORM

Sample/Specimen No. 9-100 Cost Code/Work Order No. ED332

Requested By: Org. 80232 Person J. LINDBERG Date 1-11-90

| Test Requested        | No. of Samples | Test Lab Information<br>(Instruction Used) |
|-----------------------|----------------|--|
| <u>SIEVE ANALYSIS</u> | <u>1</u>       | <u>ETAL-07</u>                             |
| <u>HYDRONETER</u>     | <u>1</u>       | <u>ETAL-67 (IF REQ)</u>                    |
| <u>N/A</u>            | <u>N/A</u>     | <u>N/A</u>                                 |
| <u>N/A</u>            | <u>N/A</u>     | <u>N/A</u>                                 |

Remarks FIELD SAMPLE  
MW -5-B

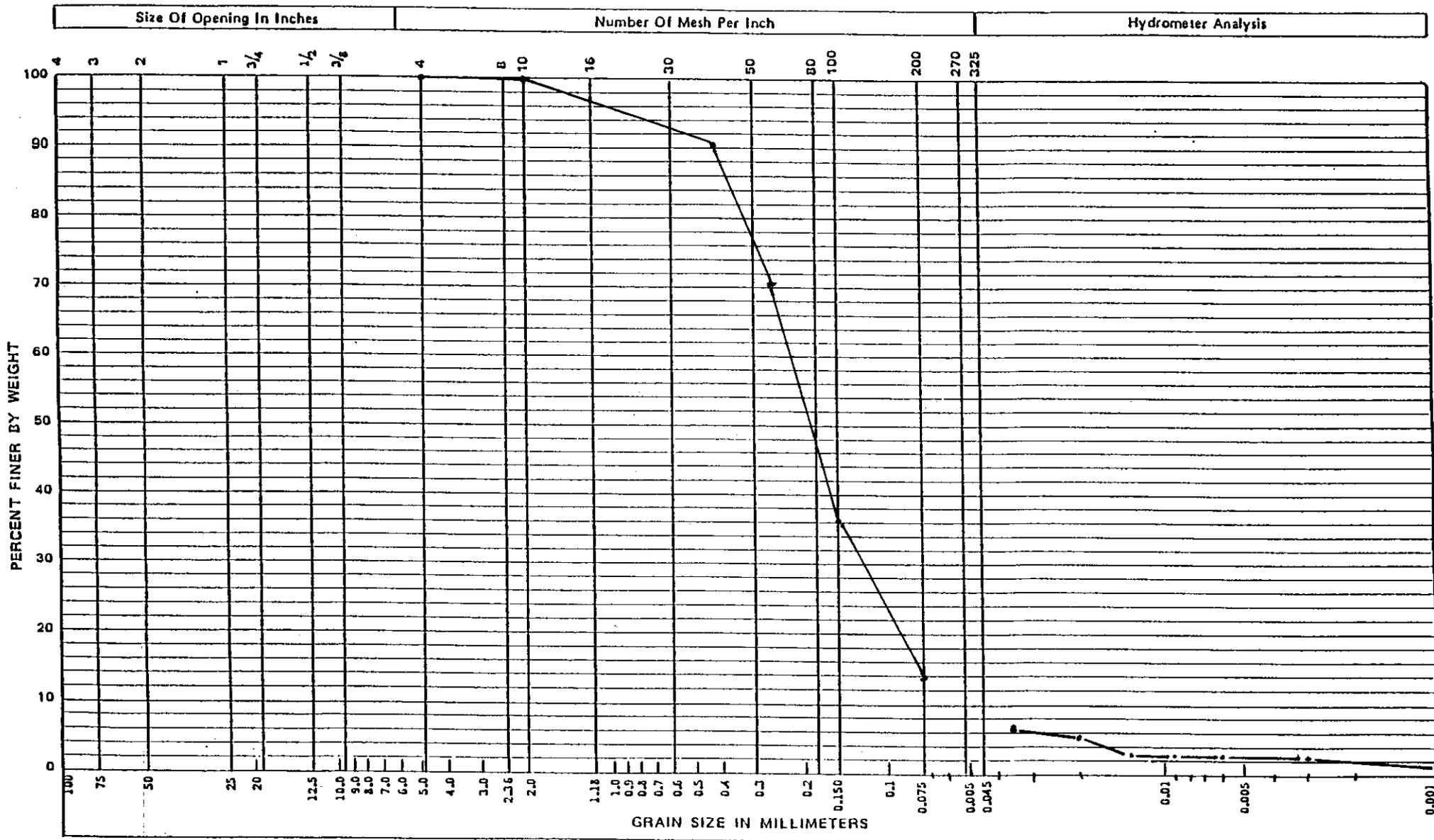
Received By: R.G ALEXANDER Date 12-20-89

Approved By: RG ALEXANDER Date 1-11-90

921211031



9 2 1 2 1 1 0 3 3  
GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-600 Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

|  |   |   |
|--|---|---|
| Sample Description: <u>SAND</u><br><u>MW-5-8</u> | Plotted by: <u>RG ALEXANDER</u><br>Date: <u>1-12-90</u> | Checked by: <u>J. J. Rehyen</u><br>Date: <u>1-18-90</u> |
|--|---|---|

# SPECIFIC GRAVITY OF SOILS DATA SHEET

Specimen/Sample No. 9-100 Page 1 of 1

|                                     |                |
|-------------------------------------|----------------|
| Test Operator <u>R. G ALEXANDER</u> | <u>2-26-90</u> |
| <u>EQUIPMENT ITEM</u>               | <u>NO.</u>     |
| <u>DATE DUE</u>                     |                |
| Balance                             | <u>3304</u>    |
| Oven Thermometer                    | <u>0007</u>    |
| Thermometer                         | <u>0002</u>    |
| Pycnometer                          | <u>2554</u>    |
|                                     | <u>3-25-90</u> |
|                                     | <u>8-16-90</u> |
|                                     | <u>2-9-91</u>  |
|                                     | <u>N/A</u>     |

Wetting Agent "G" WATER

| DETERMINATION NO. |   | 1      | 2   | 3   |
|-------------------|---|--------|-----|-----|
|                   | Drying Container No.                                | N/A    | N/A | N/A |
|                   | Wt. Container + Oven Dry Soil, ± 0.01g              | N/A    | --- | --- |
|                   | Wt. Container, ± 0.01g                              | N/A    | --- | --- |
| *                 | W <sub>0</sub> Wt. Oven Dry Soil, g                 | 40.00  | --- | --- |
|                   | Pycnometer No.                                      | 2554   | --- | --- |
|                   | Wt. Pycnometer, g                                   | 135.72 | --- | --- |
| W <sub>3</sub>    | Wt. Pycnometer + Wetting Agent, g                   | 387.06 | --- | --- |
| W <sub>b</sub>    | Wt. Pycnometer + Wetting Agent + Soil, g            | 432.22 | --- | --- |
|                   | Temperature, T <sub>x</sub> at W <sub>b</sub> , °C  | 25.6 C | --- | --- |
| G <sub>w</sub>    | Specific Gravity of Wetting Agent at T <sub>x</sub> | 1.00   | --- | --- |
| G <sub>t</sub>    | Specific Gravity of Soil at T <sub>x</sub>          | 2.70   | --- | --- |
| G <sub>s</sub>    | Specific Gravity of Soil at 20°C                    | 2.69   | --- | --- |

\* LIGHT TAN SILTY SAND

$$G_t = \frac{G_w \cdot \gamma_w \cdot W_0}{W_0 + (W_a - W_b)}$$

$\gamma_w$  = Unit Weight Of Water (g/cc)

\*G<sub>s</sub> = K · G<sub>t</sub>

K values found in ASTM D854-58, Table 1

\*NOTE G<sub>s</sub> = G<sub>t</sub> When Test Run at 20 °C

|                                  |             |
|----------------------------------|-------------|
| Average Specific Gravity At 20°C | <u>2.69</u> |
|----------------------------------|-------------|

ALL REQUIRED DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS APPROPRIATELY TRAINED AND UTILIZED CALIBRATED TEST INSTRUMENTS AS INDICATED ABOVE. APPROVED TEST PROCEDURES WERE FOLLOWED TO PRODUCE THE ABOVE DATA.

Checked By HL Benny Date 3-1-90

921211034

# HYDROMETER ANALYSIS DATA SHEET

Sample ID 9-100

Page 1 of 1

Tested By HL Berry Date 2-28-90  
 Procedure ETAL 07 Rev 1 Date Issued 11-15-89

| EQUIPMENT ITEM           | NO.              | CALIBRATION DUE DATE |
|--------------------------|------------------|----------------------|
| Hydrometer               | <u>ETAL-1000</u> | <u>2-16-91</u>       |
| Balance                  | <u>ETAL-3304</u> | <u>3-25-90</u>       |
| Thermometer/Thermocouple | <u>ETAL-0002</u> | <u>2-9-91</u>        |

Specific gravity of Sample 2.69  
 % Passing No. 10 Sieve 99.9 (%)  
 Hygroscopic Correction Factor ∅

### HYGROSCOPIC MOISTURE CONTENT

Wt. Container + Air Dry Soil NA (g)  
 Wt. Container + Oven Dry Soil NA (g)  
 Wt. Container NA (g)  
 Water Content NA (%)

### WEIGHT OF SAMPLE

Wt. Container + Soil NA (g)  
 Wt. Container NA (g)  
 Wt. Soil 74.76 (g)

### REMARKS

Tube C  
w = 74.8%

### COMPOSITE CORRECTION

1st Reading 6 at 23.8 °C  
 2nd Reading NA at NA °C

9 2 1 2 1 0 0 3 5

| Date    | Clock time              | Elapsed time (min)                   | Hydrometer reading | Hydrometer with composite correction | Temp. (°C) | Soil in suspension (%) | Particle diameter (mm) |
|---------|-------------------------|--------------------------------------|--------------------|--------------------------------------|------------|------------------------|------------------------|
| 2-28-90 | 1202                    | 2.0                                  | 11                 | 5                                    | 24.9       | 6.6                    | 0.035                  |
|         | 1205                    | 5.0                                  | 10                 | 4                                    | 24.9       | 5.3                    | 0.022                  |
|         | 1215                    | 15.0                                 | 8                  | 2                                    | 24.3       | 2.6                    | 0.013                  |
|         | 1230                    | 30.0                                 | 8                  | 2                                    | 24.1       | 2.6                    | 0.009                  |
|         | 1300                    | 60.0                                 | 8                  | 2                                    | 23.7       | 2.6                    | 0.006                  |
| ↓       | <del>1418</del><br>1418 | 250.00<br><small>HLB 2-28-90</small> | 8                  | 2                                    | 22.8       | 2.6                    | 0.003                  |
| 3-1-90  | 12:00                   | 1,440.0                              | 7                  | 1                                    | 22.7       | 1.3                    | 0.001                  |

Formulas and Tables used to calculate percent Soil in suspension, particle diameter and hygroscopic correction factor are found in ASTM D422.

ALL REQUIRED DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS APPROPRIATELY TRAINED AND UTILIZED CALIBRATED TEST INSTRUMENTS AS INDICATED ABOVE. APPROVED TEST PROCEDURES WERE FOLLOWED TO PRODUCE THE ABOVE DATA.

Checked By R.G. Alexander Date 3-5-90



SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector R.D. Miller Date Sampled 12/13-12/18 Time NA hours  
1989

Affiliation of Sampler Golder Assoc.

Address NA  
number street city state zip

Telephone (509) 374-5005 Company Contact J.W. Lindberg

| LABORATORY SAMPLE NUMBER | COLLECTOR'S SAMPLE NO. | TYPE OF SAMPLE* | FIELD INFORMATION** |
|--------------------------|------------------------|-----------------|---------------------|
| <u>MW-5-1</u>            | <u></u>                | <u>Soil</u>     | <u>Plastic Bags</u> |
| <u>MW-5-3</u>            | <u></u>                | <u>Soil</u>     | <u>Plastic Bags</u> |
| <u>MW-5-7</u>            | <u></u>                | <u>Soil</u>     | <u>Plastic Bags</u> |
| <u>MW-5-8</u>            | <u></u>                | <u>Soil</u>     | <u>Plastic Bags</u> |

Analysis Requested Particle Size Analysis ASTM D-422

Special Handling and/or Storage NA

PART II: LABORATORY SECTION\*\*

Received by \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_

Analysis Required \_\_\_\_\_

\* Indicate whether sample is soil, sludge, etc.  
\*\*Use back of page for additional information relative to sample location.

Figure 9-19. Example of hazardous waste sample analysis sheet.

921210037

Company Contact J. Lindberg Telephone 65005  
 Sample Collected by R. Miller (GAI) Date 12/13-12/18/89 Time n/a  
 Sample Locations 1100-2 MW-5  
 Ice Chest No. n/a Field Logbook and Page No. WHC-N-306-3  
 Remarks samples taken during drilling of MW-5

Bill of Lading No. n/a Offsite Property No. n/a  
 Method of Shipment gov't vehicle Hand Carry  
 Shipped to Jerry Alexander, WHC, 2101-M Physical Testing Laboratory (Soils)

Sample Identification

|                 |                                       |
|-----------------|---------------------------------------|
| MW-5-1, 2.5'    | plastic bag, grain size only          |
| MW-5-2, 6.0'    | " " , all                             |
| MW-5-3, 15.0'   | " " , grain size only                 |
| MW-5-4, 19.0'   | " " , all                             |
| MW-5-5, 35.0'   | " " , all                             |
| MW-5-6, 50.25'  | " " , <del>Open</del> <sup>Open</sup> |
| MW-5-6, 48.5'   | " " , all                             |
| MW-5-7, 50.25'  | " " , all-grain                       |
| MW-5-8, 55.0'   | " " , all-grain                       |
| MW-5-9, 66.4'   | " " , all-grain                       |
| MW-5-10, 71.75' | " " , all-grain                       |
| MW-5-11, 76.55' | " " , all-grain                       |
| MW-5-12, 81.5'  | " " , grain                           |
| MW-5-13, 88.65' | acrylic tube, grain/perm.             |

Chain of Possession

|   |  |                                     |
|---|--|-------------------------------------|
| Relinquished by: <u>Rand D. Miller</u><br><u>Rand D. Miller (GAI)</u> | Received by: <u>JW Lindberg</u><br><u>JW Lindberg</u> 12/20/89 | Date/Time: <u>12/20/89 1415</u>     |
| Relinquished by: <u>JW Lindberg</u>                                   | Received by: <u>R.G. Alexander</u><br><u>R.G. ALEXANDER</u>    | Date/Time: <u>12/20/89 1530 hrs</u> |
| Relinquished by:  | Received by:   | Date/Time:                          |
| Relinquished by:  | Received by:   | Date/Time:                          |

92121033

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-1  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-2  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-3  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-4  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-5 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-5  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5 Date 12/12/89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-6  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5 Date 12/13/89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-7  
54-3000-022 (09/88)

RADIATION RELEASE

Well MW-5 Date 12-14-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-8  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5 Date 12/18/89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-9  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5 Date 12/18/89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-10  
54-3000-022 (09/88)

1 2 3 9

9 2 1 2

TEST REQUEST FORM

Sample/Specimen No. 9-101 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 1-11-90

| Test Requested        | No. of Samples | Test Lab Information (Instruction Used) |
|-----------------------|----------------|---|
| <u>SIEVE ANALYSIS</u> | <u>1</u>       | <u>ETAL-07</u>                          |
| <u>HYDROMETER</u>     | <u>1</u>       | <u>ETAL-07 (IF RED)</u>                 |
| <u>N/A</u>            | <u>N/A</u>     | <u>N/A</u>                              |
| <u>N/A</u>            | <u>N/A</u>     | <u>N/A</u>                              |

Remarks FIELD SAMPLE  
MW-5-9

Received By: R.G ALEXANDER Date 12-20-89

Approved By: RG ALEXANDER Date 1-11-90

921210040

## SIEVE ANALYSIS DATA SHEET

Sample ID 9-101 Page 1 of 1

Tested By RG ALEXANDER Date 1-11-90

Procedure ETAL-07 Rev 1 Date Issued 11-15-89

| EQUIPMENT ITEM | CALIBRATION NO. | DATE DUE       |
|----------------|-----------------|----------------|
| Balance        | <u>3304</u>     | <u>3-25-90</u> |
| Thermometer    | <u>0006</u>     | <u>2-6-90</u>  |
| <u>N/A</u>     | <u>N/A</u>      | <u>N/A</u>     |

Sample Description SANDY GRAVEL Sieve Time 10 (min)

reduced by  splitting  quartering  stockpile

(B) BEFORE TEST WT. N/A (A) AFTER TEST WT. N/A  $\frac{B-A}{B} \times 100 = \underline{N/A} \% \text{ LOSS}$

| Sieve ID Number | Sieve Size  | Sample Weight  | Cumulative Wt. Retained (g) | % Retained  | Cumulative % Retained | Cumulative % Pass | % Pass      |
|-----------------|-------------|----------------|-----------------------------|-------------|-----------------------|-------------------|-------------|
| <u>N/A</u>      | <u>2</u>    | <u>3992.8</u>  | <u>346.58</u>               | <u>8.7</u>  | <u>8.7</u>            | <u>91.3</u>       | <u>91.3</u> |
|                 | <u>1/2</u>  |                | <u>915.72</u>               | <u>22.9</u> | <u>22.9</u>           | <u>77.1</u>       | <u>77.1</u> |
|                 | <u>1</u>    |                | <u>1587.88</u>              | <u>39.8</u> | <u>39.8</u>           | <u>60.2</u>       | <u>60.2</u> |
|                 | <u>3/4</u>  |                | <u>1981.86</u>              | <u>49.6</u> | <u>49.6</u>           | <u>50.4</u>       | <u>50.4</u> |
|                 | <u>1/2</u>  |                | <u>2440.42</u>              | <u>61.1</u> | <u>61.1</u>           | <u>38.9</u>       | <u>38.9</u> |
|                 | <u>3/8</u>  |                | <u>2662.27</u>              | <u>66.7</u> | <u>66.7</u>           | <u>33.3</u>       | <u>33.3</u> |
|                 | <u>#4</u>   | <u>3992.86</u> | <u>2914.37</u>              | <u>73.0</u> | <u>73.0</u>           | <u>27.0</u>       | <u>27.0</u> |
|                 | <u>#10</u>  | <u>3992.86</u> | <u>3061.80</u>              | <u>76.7</u> | <u>76.7</u>           | <u>23.3</u>       | <u>23.3</u> |
|                 | <u>#40</u>  | <u>133.10</u>  | <u>22.30</u>                | <u>16.7</u> | <u>16.8</u>           | <u>83.2</u>       | <u>19.4</u> |
|                 | <u>#60</u>  |                | <u>73.77</u>                | <u>18.5</u> | <u>55.4</u>           | <u>44.6</u>       | <u>10.4</u> |
|                 | <u>#100</u> |                | <u>105.31</u>               | <u>26.4</u> | <u>79.1</u>           | <u>20.9</u>       | <u>4.9</u>  |
|                 | <u>#200</u> |                | <u>115.94</u>               | <u>29.1</u> | <u>87.1</u>           | <u>12.9</u>       | <u>3.0</u>  |

Fines Modules (FM) N/A (See ASTM C 136-B3, Section 8.2)

### MATERIALS FINER THAN NO. 200 SIEVE BY WASHING

C=Percentage of Material Passing a 200 Sieve 12.9 %  
 D=Original Dry Weight of Sample 133.10 g  
 E=Dry Weight of Sample After Washing/Sieve 115.94 g  
 $C = \frac{D-E}{D} \times 100$

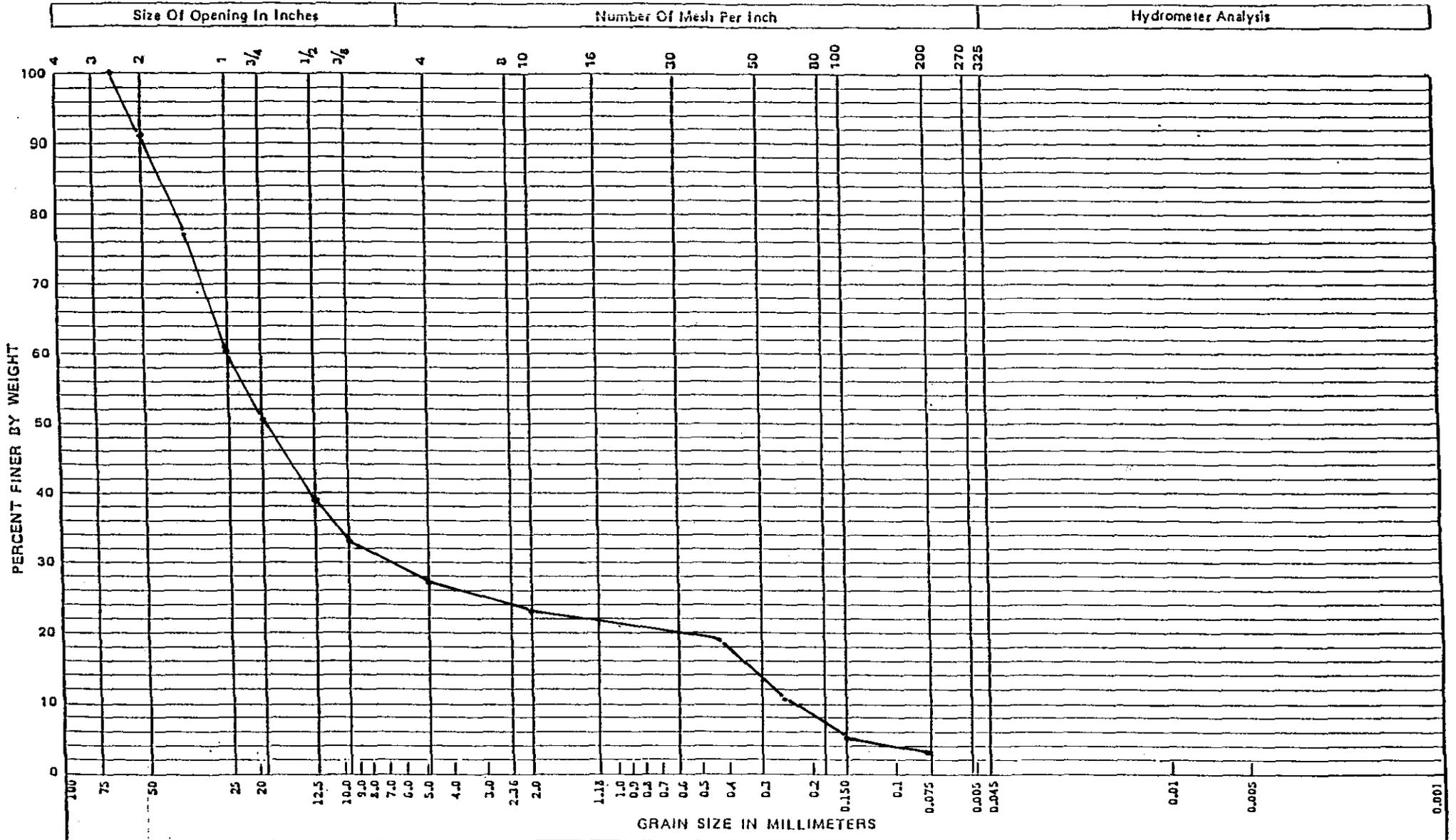
Remarks  
SMALL FIELD SAMPLE  
WASH FINE GRADING

ALL DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS TRAINED AND USED CALIBRATED INSTRUMENTS  
 Checked By J. F. Relyea Date 1/18/90

9212110041

9 2 1 2 1 0 1 2

# GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-101 Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

Sample Description: SANDY GRAVEL  
MW-5-9

Plotted by: R.G. ALEXANDER  
Date: 1-12-90

Checked by: J. A. Reyes  
Date: 1-18-90



Company Contact J. Lindberg Telephone 65005  
 Sample Collected by R. Miller (GAI) Date 12/13 - 12/18/89 Time n/a  
 Sample Locations 1100-2 MW-5  
 Ice Chest No. n/a Field Logbook and Page No. WHC-N-306-3  
 Remarks samples taken during drilling of MW-5

Bill of Lading No. n/a Offsite Property No. n/a  
 Method of Shipment govt vehicle Hand Carry  
 Shipped to Jerry Alexander, WHC, 2101-M Physical Testing Laboratory (Soils)

Sample Identification

|   |  |
|---|--|
| MW-5-1, 2.5', plastic bag, grain size only                |  |
| MW-5-2, 6.0', " " , all                                   |  |
| MW-5-3, 15.0', " " , grain size only                      |  |
| MW-5-4, 19.0', " " , all                                  |  |
| MW-5-5, 35.0', " " , all                                  |  |
| <del>MW-5-6, 50.25', " " , <sup>open</sup> 12/20/89</del> |  |
| MW-5-6, 48.5', " " , all                                  |  |
| MW-5-7, 50.25', " " , all-grain                           |  |
| MW-5-8, 55.0', " " , all-grain                            |  |
| <del>MW-5-9, 66.4', " " , all-grain</del>                 |  |
| MW-5-10, 71.75', " " , all-grain                          |  |
| MW-5-11, 76.55', " " , all-grain                          |  |
| MW-5-12, 81.5', " " , grain                               |  |
| MW-5-13, 88.65', acrylic tube, grain/perm.                |  |

Chain of Possession

|  |  |                                     |
|--|--|-------------------------------------|
| Relinquished by: <u>Rand D. Miller</u><br><u>Rand Miller (GAI)</u> | Received by: <u>JW Lindberg</u><br><u>JW Lindberg 12/20/89</u> | Date/Time: <u>12/20/89 1415</u>     |
| Relinquished by: <u>JW Lindberg</u><br><u>JW Lindberg</u>          | Received by: <u>RG Alexander</u><br><u>RG ALEXANDER</u>        | Date/Time: <u>12/20/89 1530 hrs</u> |
| Relinquished by:   | Received by:   | Date/Time:                          |
| Relinquished by:   | Received by:   | Date/Time:                          |

92121144

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector R-D, Miller Date Sampled 12/13-12/18 Time NA hours  
 1989

Affiliation of Sampler Golder Assoc

Address NA  
 number street city state zip

Telephone (309) 376-5005 Company Contact JW Lindberg

| LABORATORY<br>SAMPLE<br>NUMBER | COLLECTOR'S<br>SAMPLE NO. | TYPE OF<br>SAMPLE* | FIELD INFORMATION** |
|--------------------------------|---------------------------|--------------------|---------------------|
| <u>MW-5-9</u>                  |                           | <u>Soil</u>        |                     |
| <u>MW-5-10</u>                 |                           | <u>Soil</u>        |                     |
| <u>MW-5-11</u>                 |                           | <u>Soil</u>        |                     |
| <u>MW-5-12</u>                 |                           | <u>Soil</u>        |                     |

Analysis Requested Particle Size Analysis ASTM D-422

Special Handling and/or Storage NA

PART II: LABORATORY SECTION\*\*

Received by \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_

Analysis Required \_\_\_\_\_

\* Indicate whether sample is soil, sludge, etc.

\*\*Use back of page for additional information relative to sample location.

Figure 9-19. Example of hazardous waste sample analysis sheet.

9212110145

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics

Remarks MW-5-1  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics

Remarks MW-5-2  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics

Remarks MW-5-3  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics

Remarks MW-5-4  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-5 Date 12-11-89  
Released By [Signature] Operational Health Physics

Remarks MW-5-5  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5 Date 12/12/89  
Released By [Signature] Operational Health Physics

Remarks MW-5-6  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5 Date 12/13/89  
Released By [Signature] Operational Health Physics

Remarks MW-5-7  
54-3000-022 (09/88)

RADIATION RELEASE

Well M-W-5 Date 12-14-89  
Released By [Signature] Operational Health Physics

Remarks MW-5-8  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5 Date 12/18/89  
Released By [Signature] Operational Health Physics

Remarks MW-5-9  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5 Date 12/18/89  
Released By [Signature] Operational Health Physics

Remarks MW-5-10  
54-3000-022 (09/88)

9212 1245

TEST REQUEST FORM

Sample/Specimen No. 9-102 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 1-11-90

| Test Requested        | No. of Samples | Test Lab Information (Instruction Used) |
|-----------------------|----------------|---|
| <u>SIEVE ANALYSIS</u> | <u>1</u>       | <u>ETAL-07</u>                          |
| <u>HYDROMETER</u>     | <u>1</u>       | <u>ETAL-07 (IF REQ)</u>                 |
| <u>N/A</u>            | <u>N/A</u>     | <u>N/A</u>                              |
| <u>N/A</u>            | <u>N/A</u>     | <u>N/A</u>                              |

Remarks FIELD SAMPLE  
MW-5-10

Received By: RG ALEXANDER Date 12-20-89

Approved By: RG ALEXANDER Date 1-11-90

9212110047

## SIEVE ANALYSIS DATA SHEET

Sample ID 9-102 Page 1 of 1

Tested By RG ALEXANDER Date 1-11-90

Procedure ETAL-07 Rev. 1 Date Issued 11-15-89

| EQUIPMENT ITEM | CALIBRATION NO. | DATE DUE       |
|----------------|-----------------|----------------|
| Balance        | <u>3304</u>     | <u>3-25-90</u> |
| Thermometer    | <u>0006</u>     | <u>2-6-90</u>  |
| <u>N/A</u>     | <u>N/A</u>      | <u>N/A</u>     |

Sample Description SANDY GRAVEL Sieve Time 10 (min)

reduced by  splitting  quartering  stockpile

(B) BEFORE TEST WT. N/A (A) AFTER TEST WT. N/A  $\frac{B-A}{B} \times 100 = \frac{N/A}{N/A} \% \text{ LOSS}$

| Sieve ID Number | Sieve Size  | Sample Weight  | Cumulative Wt. Retained (g) | % Retained  | Cumulative % Retained | Cumulative % Pass | % Pass      |
|-----------------|-------------|----------------|-----------------------------|-------------|-----------------------|-------------------|-------------|
| <u>N/A</u>      | <u>2</u>    | <u>4560.76</u> | <u>700.25</u>               | <u>15.4</u> | <u>15.4</u>           | <u>84.6</u>       | <u>84.6</u> |
|                 | <u>1/2</u>  |                | <u>1120.47</u>              | <u>24.6</u> | <u>24.6</u>           | <u>75.4</u>       | <u>75.4</u> |
|                 | <u>1</u>    |                | <u>1806.80</u>              | <u>39.6</u> | <u>39.6</u>           | <u>60.4</u>       | <u>60.4</u> |
|                 | <u>3/4</u>  |                | <u>2157.31</u>              | <u>47.3</u> | <u>47.3</u>           | <u>52.7</u>       | <u>52.7</u> |
|                 | <u>1/2</u>  |                | <u>2533.93</u>              | <u>55.6</u> | <u>55.6</u>           | <u>44.4</u>       | <u>44.4</u> |
|                 | <u>3/8</u>  |                | <u>2813.31</u>              | <u>61.7</u> | <u>61.7</u>           | <u>38.3</u>       | <u>38.3</u> |
|                 | <u>#4</u>   |                | <u>3384.30</u>              | <u>74.2</u> | <u>74.2</u>           | <u>25.8</u>       | <u>25.8</u> |
|                 | <u>#10</u>  | <u>4560.76</u> | <u>3788.09</u>              | <u>83.1</u> | <u>83.1</u>           | <u>16.9</u>       | <u>16.9</u> |
|                 | <u>#40</u>  | <u>126.07</u>  | <u>38.88</u>                | <u>30.8</u> | <u>30.8</u>           | <u>69.2</u>       | <u>11.7</u> |
|                 | <u>#60</u>  |                | <u>63.71</u>                | <u>50.5</u> | <u>50.5</u>           | <u>49.5</u>       | <u>8.4</u>  |
|                 | <u>#100</u> |                | <u>86.72</u>                | <u>68.8</u> | <u>68.8</u>           | <u>31.2</u>       | <u>5.3</u>  |
|                 | <u>#200</u> |                | <u>101.50</u>               | <u>80.4</u> | <u>80.4</u>           | <u>19.6</u>       | <u>3.3</u>  |

Fines Modules (FM) N/A (See ASTM C 136-83, Section 8.2)

**MATERIALS FINER THAN NO. 200 SIEVE BY WASHING**

C=Percentage of Material Passing a 200 Sieve 19.6 %  
 D=Original Dry Weight of Sample 126.07 g  
 E=Dry Weight of Sample After Washing/Sieve 1000 g  
 $C = \frac{D-E}{D} \times 100$

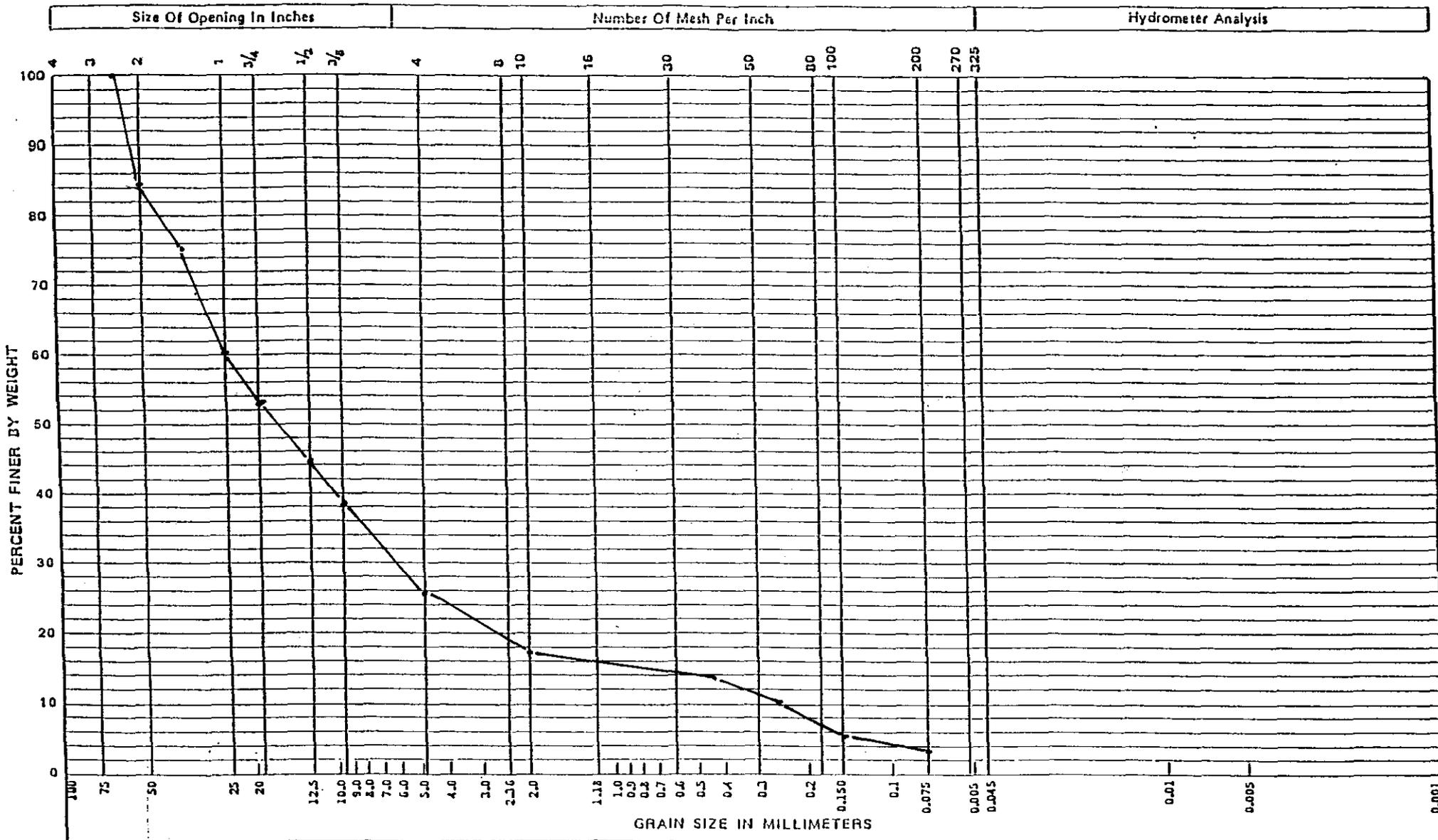
Remarks  
SMALL FIELD SAMPLE  
WASH FINE GRADING

ALL DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS TRAINED AND USED CALIBRATED INSTRUMENTS  
 Checked By J. Reizer Date 1-18-90

9212110049

9 2 1 2 1 0 4 9

GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-102 Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

|   |   |   |
|---|---|---|
| <p>Sample Description: <u>SANDY GRAVEL</u><br/><u>MW-5-10</u></p> | <p>Plotted by: <u>R.G. ALEXANDER</u><br/>Date: <u>1-12-90</u></p> | <p>Checked by: <u>J. F. Reagen</u><br/>Date: <u>1-18-90</u></p> |
|---|---|---|



Company Contact J. Lindberg Telephone 65005  
 Sample Collected by R. Miller (GAI) Date 12/13 - 12/18/89 Time n/a  
 Sample Locations 1100-2 MW-5  
 Ice Chest No. n/a Field Logbook and Page No. WHC-N-306-3  
 Remarks samples taken during drilling of MW-5

Bill of Lading No. n/a Offsite Property No. n/a  
 Method of Shipment gov't vehicle Hand Carry  
 Shipped to Jerry Alexander, WHC, 2101-M Physical Testing Laboratory (Soils)

Sample Identification

|   |  |
|---|--|
| MW-5-1, 2.5', plastic bag, grain size only                            |  |
| MW-5-2, 6.0', " " , all   |  |
| MW-5-3, 15.0', " " , grain size only                                  |  |
| MW-5-4, 19.0', " " , all  |  |
| MW-5-5, <sup>20.0' - 22.0'</sup> 35.0', " " , all                     |  |
| <del>MW-5-6, 50.25', " " , <sup>Open</sup> <del>retrieved</del></del> |  |
| MW-5-6, 48.5', " " , all  |  |
| MW-5-7, 50.25', " " , all-grain                                       |  |
| MW-5-8, 55.0', " " , all-grain  |  |
| <sup>50.0' - 52.0'</sup> MW-5-9, 66.4', " " , all-grain               |  |
| MW-5-10, 71.75', " " , all-grain                                      |  |
| MW-5-11, 76.55', " " , all-grain                                      |  |
| MW-5-12, 81.5', " " , grain   |  |
| MW-5-13, 88.65', acrylic tube, grain/perm.                            |  |

Chain of Possession

|   |  |                                     |
|---|--|-------------------------------------|
| Relinquished by: <u>Rand D. Miller</u><br><u>Rand D. Miller (GAI)</u> | Received by: <u>JW Lindberg</u><br><u>JW Lindberg</u> 12/20/89 | Date/Time: <u>12/20/89 1415</u>     |
| Relinquished by: <u>JW Lindberg</u>                                   | Received by: <u>R.G. Alexander</u><br><u>R.G. ALEXANDER</u>    | Date/Time: <u>12/20/89 1530 hrs</u> |
| Relinquished by:  | Received by:   | Date/Time:                          |
| Relinquished by:  | Received by:   | Date/Time:                          |

92121015

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector R.D. Miller Date Sampled 12/13-12/18 Time NA hours  
1989

Affiliation of Sampler Golder Assoc

Address NA  
number street city state zip

Telephone (509) 376-5005 Company Contact JW Lindberg

| LABORATORY SAMPLE NUMBER | COLLECTOR'S SAMPLE NO. | TYPE OF SAMPLE* | FIELD INFORMATION** |
|--------------------------|------------------------|-----------------|---------------------|
| <u>MW-5-9</u>            | _____                  | <u>Soil</u>     | _____               |
| <u>MW-5-10</u>           | _____                  | <u>Soil</u>     | _____               |
| <u>MW-5-11</u>           | _____                  | <u>Soil</u>     | _____               |
| <u>MW-5-12</u>           | _____                  | <u>Soil</u>     | _____               |

Analysis Requested Particle Size Analysis ASTM D-422

Special Handling and/or Storage NA

PART II: LABORATORY SECTION\*\*

Received by \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_

Analysis Required \_\_\_\_\_

\* Indicate whether sample is soil, sludge, etc.  
\*\*Use back of page for additional information relative to sample location.

Figure 9-19. Example of hazardous waste sample analysis sheet.

9212110252

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-1  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-2  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-3  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-4 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-4  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-5 Date 12-11-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-5  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5 Date 12/12/89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-6  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5 Date 12/13/89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-7  
54-3000-022 (09/88)

RADIATION RELEASE

Well MW-5 Date 12-14-89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-8  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5 Date 12/18/89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-9  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5 Date 12/18/89  
Released By [Signature] Operational Health Physics  
Remarks MW-5-10  
54-3000-022 (09/88)

3  
5  
0  
1  
1  
2  
2  
9

TEST REQUEST FORM

Sample/Specimen No. 9-103 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 1-11-90

| Test Requested        | No. of Samples | Test Lab Information<br>(Instruction Used) |
|-----------------------|----------------|--|
| <u>SIEVE ANALYSIS</u> | <u>1</u>       | <u>ETAL-07</u>                             |
| <u>HYDROMETER</u>     | <u>1</u>       | <u>ETAL-07 (FFREQ)</u>                     |
| <u>N/A</u>            | <u>N/A</u>     | <u>N/A</u>                                 |
| <u>N/A</u>            | <u>N/A</u>     | <u>N/A</u>                                 |

Remarks FIELD SAMPLE  
MW-5-11

Received By: R.G. ALEXANDER Date 12-20-89

Approved By: R.G. ALEXANDER Date 1-11-90

9212110254

## SIEVE ANALYSIS DATA SHEET

Sample ID 9-103 Page 1 of 1

Tested By R.G. ALEXANDER Date 1-11-90

Procedure ETAL-07 Rev 1 Date Issued 11-15-90

| EQUIPMENT ITEM | CALIBRATION NO. | DATE DUE       |
|----------------|-----------------|----------------|
| Balance        | <u>3304</u>     | <u>3-25-90</u> |
| Thermometer    | <u>0006</u>     | <u>2-6-90</u>  |
| <u>N/A</u>     | <u>N/A</u>      | <u>N/A</u>     |

Sample Description SANDY GRAVEL Sieve Time 10 (min)

reduced by  splitting  quartering  stockpile

(B) BEFORE TEST WT. N/A (A) AFTER TEST WT. N/A  $\frac{B-A}{B} \times 100 = \underline{N/A} \% \text{ LOSS}$

| Sieve ID Number | Sieve Size   | Sample Weight  | Cumulative Wt. Retained (g) | % Retained  | Cumulative % Retained | Cumulative % Pass | % Pass      |
|-----------------|--------------|----------------|-----------------------------|-------------|-----------------------|-------------------|-------------|
| <u>N/A</u>      | <u>2 1/2</u> | <u>3425.92</u> | <u>536.54</u>               | <u>15.7</u> | <u>15.7</u>           | <u>84.3</u>       | <u>84.3</u> |
|                 | <u>2</u>     |                | <u>815.96</u>               | <u>23.8</u> | <u>23.8</u>           | <u>76.2</u>       | <u>76.2</u> |
|                 | <u>1 1/2</u> |                | <u>1238.65</u>              | <u>36.2</u> | <u>36.2</u>           | <u>63.8</u>       | <u>63.8</u> |
|                 | <u>1</u>     |                | <u>1491.13</u>              | <u>43.5</u> | <u>43.5</u>           | <u>56.5</u>       | <u>56.5</u> |
|                 | <u>3/4</u>   |                | <u>1818.10</u>              | <u>53.1</u> | <u>53.1</u>           | <u>46.9</u>       | <u>46.9</u> |
|                 | <u>1/2</u>   |                | <u>2250.83</u>              | <u>65.7</u> | <u>65.7</u>           | <u>34.3</u>       | <u>34.3</u> |
|                 | <u>3/8</u>   |                | <u>2397.58</u>              | <u>70.0</u> | <u>70.0</u>           | <u>30.0</u>       | <u>30.0</u> |
|                 | <u>#4</u>    |                | <u>2634.55</u>              | <u>76.9</u> | <u>76.9</u>           | <u>23.1</u>       | <u>23.1</u> |
|                 | <u>#10</u>   | <u>3425.92</u> | <u>2795.55</u>              | <u>81.6</u> | <u>81.6</u>           | <u>18.4</u>       | <u>18.4</u> |
|                 | <u>#40</u>   | <u>135.65</u>  | <u>38.30</u>                | <u>28.2</u> | <u>28.2</u>           | <u>71.8</u>       | <u>13.2</u> |
|                 | <u>#60</u>   |                | <u>55.49</u>                | <u>40.9</u> | <u>40.9</u>           | <u>59.1</u>       | <u>10.9</u> |
|                 | <u>#100</u>  |                | <u>76.87</u>                | <u>56.7</u> | <u>56.7</u>           | <u>43.3</u>       | <u>8.0</u>  |
|                 | <u>#200</u>  |                | <u>97.46</u>                | <u>71.8</u> | <u>71.8</u>           | <u>28.2</u>       | <u>5.2</u>  |

Fines Modules (FM) N/A (See ASTM C 136-83, Section 8.2)

**MATERIALS FINER THAN NO. 200 SIEVE BY WASHING**

C=Percentage of Material Passing a 200 Sieve 28.2 %  
 D=Original Dry Weight of Sample 135.65 g  
 E=Dry Weight of Sample After Washing/Sieve 97.46 g  
 $C = \frac{D-E}{D} \times 100$

**Remarks**

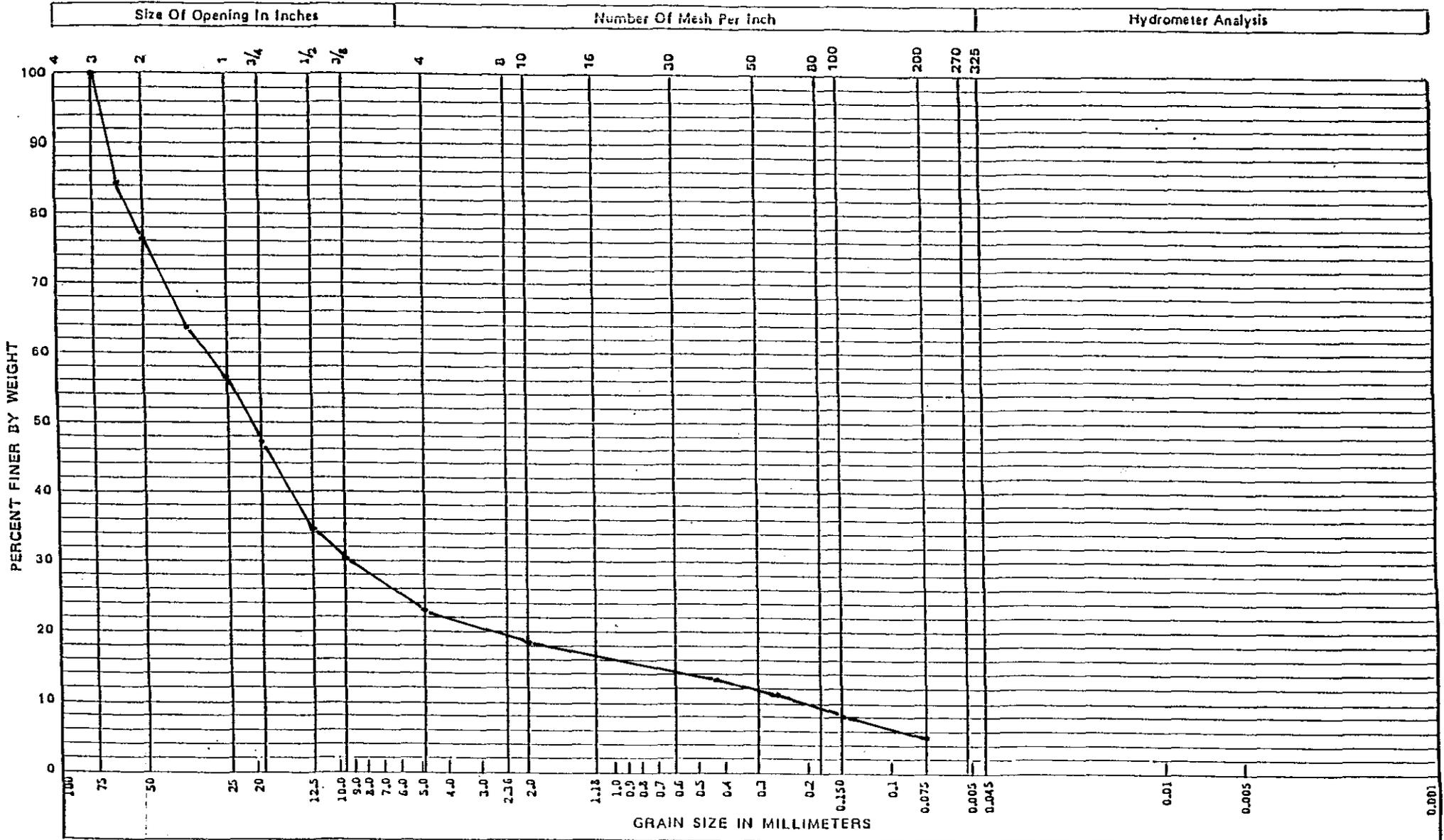
SMALL FIELD SAMPLE  
WASH FINE GRAVING

ALL DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS TRAINED AND USED CALIBRATED INSTRUMENTS  
 Checked By J.P. Kalyan Date 1-18-90

9212110955

9 2 1 2 1 1 0 2 5 6

GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-103 Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

|   |   |  |
|---|---|--|
| <p>Sample Description: <u>SANDY GRAVEL</u><br/><u>MW-5-11</u></p> | <p>Plotted by: <u>R.G. ALEXANDER</u><br/>Date: <u>1-12-90</u></p> | <p>Checked by: <u>J. F. Rehya</u><br/>Date: <u>1-18-90</u></p> |
|---|---|--|



Company Contact J. Lindberg Telephone 65005  
 Sample Collected by R. Miller (GAI) Date 12/13-12/18/89 Time n/a  
 Sample Locations 1100-2 MW-5  
 Ice Chest No. n/a Field Logbook and Page No. WHC-N-306-3  
 Remarks samples taken during drilling of MW-5

Bill of Lading No. n/a Offsite Property No. n/a  
 Method of Shipment gov't vehicle Hand Carry  
 Shipped to Jerry Alexander, WHC, 2101-M Physical Testing Laboratory (Soils)

Sample Identification

|                           |  |
|---------------------------|--|
| MW-5-1, 2.5'              | plastic bag, grain size only                       |
| MW-5-2, 6.0'              | " " , all  |
| MW-5-3, 15.0'             | " " , grain size only                              |
| MW-5-4, 19.0'             | " " , all  |
| MW-5-5, 35.0'             | " " , all  |
| <del>MW-5-6, 50.25'</del> | <del>" " , <sup>open</sup> <del>recess</del></del> |
| MW-5-6, 48.5'             | " " , all  |
| MW-5-7, 50.25'            | " " , all-grain                                    |
| MW-5-8, 55.0'             | " " , all-grain                                    |
| MW-5-9, 66.4'             | " " , all-grain                                    |
| MW-5-10, 71.75'           | " " , all-grain                                    |
| MW-5-11, 76.55'           | " " , all-grain                                    |
| MW-5-12, 81.5'            | " " , grain  |
| MW-5-13, 88.65'           | acrylic tube, grain/perm.                          |

Chain of Possession

|   |  |                                     |
|---|--|-------------------------------------|
| Relinquished by: <u>Rand D. Miller</u><br><u>Rand D. Miller (GAI)</u> | Received by: <u>JW Lindberg</u><br><u>JW Lindberg 12/20/89</u> | Date/Time: <u>12/20/89 1415</u>     |
| Relinquished by: <u>JW Lindberg</u>                                   | Received by: <u>R.G. Alexander</u><br><u>R.G. ALEXANDER</u>    | Date/Time: <u>12/26/89 1530 hrs</u> |
| Relinquished by:  | Received by:   | Date/Time:                          |
| Relinquished by:  | Received by:   | Date/Time:                          |

9 2 1 2 1 1 3 5 8

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector R.D. Miller Date Sampled 12/13-12/18 Time NA hours  
1989  
 Affiliation of Sampler Golder Assoc  
 Address NA  
number street city state zip  
 Telephone (309) 376-5005 Company Contact JW Lindberg

| LABORATORY SAMPLE NUMBER | COLLECTOR'S SAMPLE NO. | TYPE OF SAMPLE* | FIELD INFORMATION** |
|--------------------------|------------------------|-----------------|---------------------|
| <u>MW-5-9</u>            |                        | <u>Soil</u>     |                     |
| <u>MW-5-10</u>           |                        | <u>Soil</u>     |                     |
| <u>MW-5-11</u>           |                        | <u>Soil</u>     |                     |
| <u>MW-5-12</u>           |                        | <u>Soil</u>     |                     |

Analysis Requested Particle Size Analysis ASTM D-422

Special Handling and/or Storage NA

PART II: LABORATORY SECTION\*\*

Received by \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_  
 Analysis Required \_\_\_\_\_

\* Indicate whether sample is soil, sludge, etc.  
 \*\*Use back of page for additional information relative to sample location.

Figure 9-19. Example of hazardous waste sample analysis sheet.

9212110159

RADIATION RELEASE

Bldg. MW-5 Date 12-18-89  
Released By [Signature]  
Operational Health Physics

Remarks MW5-11  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5 Date 12/18/89  
Released By [Signature]  
Operational Health Physics

Remarks MW-5-12  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-13 Date 12-19-89  
Released By M. Coelander  
Operational Health Physics

Remarks 1 silt samples  
54-3000-022 (09/88)

9212110160

TEST REQUEST FORM

Sample/Specimen No. 9-104 Cost Code/Work Order No. ED332

Requested By: Org. 80232 Person J. LINDBERG Date 1-11-90

| Test Requested        | No. of Samples | Test Lab Information (Instruction Used) |
|-----------------------|----------------|---|
| <u>SIEVE ANALYSIS</u> | <u>1</u>       | <u>ETAL-07</u>                          |
| <u>HYDROMETER</u>     | <u>1</u>       | <u>ETAL-07 (IF REQ)</u>                 |
| <u>N/A</u>            | <u>N/A</u>     | <u>N/A</u>                              |
| <u>N/A</u>            | <u>N/A</u>     | <u>N/A</u>                              |

Remarks FIELD SAMPLE  
MW-5-12

Received By: R.G ALEXANDER Date 12-26-89

Approved By: R.G ALEXANDER Date 1-11-90

9212110061

## SIEVE ANALYSIS DATA SHEET

Sample ID 9-104

Page 1 of 1

Tested By R.G. ALEXANDER Date 1-11-90

Procedure ETAL-07 Rev 1 Date Issued 11-15-84

| EQUIPMENT ITEM | CALIBRATION NO. | DATE DUE       |
|----------------|-----------------|----------------|
| Balance        | <u>3304</u>     | <u>3-25-90</u> |
| Thermometer    | <u>0006</u>     | <u>2-6-90</u>  |
| <u>N/A</u>     | <u>N/A</u>      | <u>N/A</u>     |

Sample Description SANDY GRAVEL Sieve Time 10 (min)

reduced by  splitting  quartering  stockpile

(B) BEFORE TEST WT. N/A (A) AFTER TEST WT. N/A  $\frac{B-A}{B} \times 100 = \underline{N/A}$  % LOSS

| Sieve ID Number | Sieve Size  | Sample Weight  | Cumulative Wt. Retained (g) | % Retained  | Cumulative % Retained | Cumulative % Pass | % Pass      |
|-----------------|-------------|----------------|-----------------------------|-------------|-----------------------|-------------------|-------------|
| <u>N/A</u>      | <u>2</u>    | <u>4325.84</u> | <u>469.93</u>               | <u>10.9</u> | <u>10.9</u>           | <u>89.1</u>       | <u>89.1</u> |
|                 | <u>1/2</u>  |                | <u>1188.04</u>              | <u>27.5</u> | <u>27.5</u>           | <u>72.5</u>       | <u>72.5</u> |
|                 | <u>1</u>    |                | <u>1631.14</u>              | <u>37.7</u> | <u>37.7</u>           | <u>62.3</u>       | <u>62.3</u> |
|                 | <u>3/4</u>  |                | <u>2040.70</u>              | <u>47.2</u> | <u>47.2</u>           | <u>52.8</u>       | <u>52.8</u> |
|                 | <u>1/2</u>  |                | <u>2367.19</u>              | <u>54.7</u> | <u>54.7</u>           | <u>45.3</u>       | <u>45.3</u> |
|                 | <u>3/8</u>  |                | <u>2531.51</u>              | <u>58.5</u> | <u>58.5</u>           | <u>41.5</u>       | <u>41.5</u> |
|                 | <u>#4</u>   |                | <u>2833.65</u>              | <u>65.5</u> | <u>65.5</u>           | <u>34.5</u>       | <u>34.5</u> |
|                 | <u>#10</u>  | <u>4325.84</u> | <u>3147.98</u>              | <u>72.8</u> | <u>72.8</u>           | <u>27.2</u>       | <u>27.2</u> |
|                 | <u>#40</u>  | <u>155.82</u>  | <u>34.27</u>                | <u>22.0</u> | <u>22.0</u>           | <u>78.0</u>       | <u>21.2</u> |
|                 | <u>#60</u>  |                | <u>62.27</u>                | <u>40.0</u> | <u>40.0</u>           | <u>60.0</u>       | <u>16.3</u> |
|                 | <u>#100</u> |                | <u>107.92</u>               | <u>69.3</u> | <u>69.3</u>           | <u>30.7</u>       | <u>8.4</u>  |
|                 | <u>#200</u> |                | <u>131.54</u>               | <u>84.4</u> | <u>84.4</u>           | <u>15.6</u>       | <u>4.2</u>  |

Finess Modules (FM) N/A (See ASTM C 136-83, Section 8.2)

**MATERIALS FINER THAN NO. 200 SIEVE BY WASHING**

C=Percentage of Material Passing a 200 Sieve 15.6 %

D=Original Dry Weight of Sample 155.82 g

E=Dry Weight of Sample After Washing/Sieve 131.54 g

$$C = \frac{D-E}{D} \times 100$$

Remarks

SMALL FIELD SAMPLE  
WASH FINE GRADING

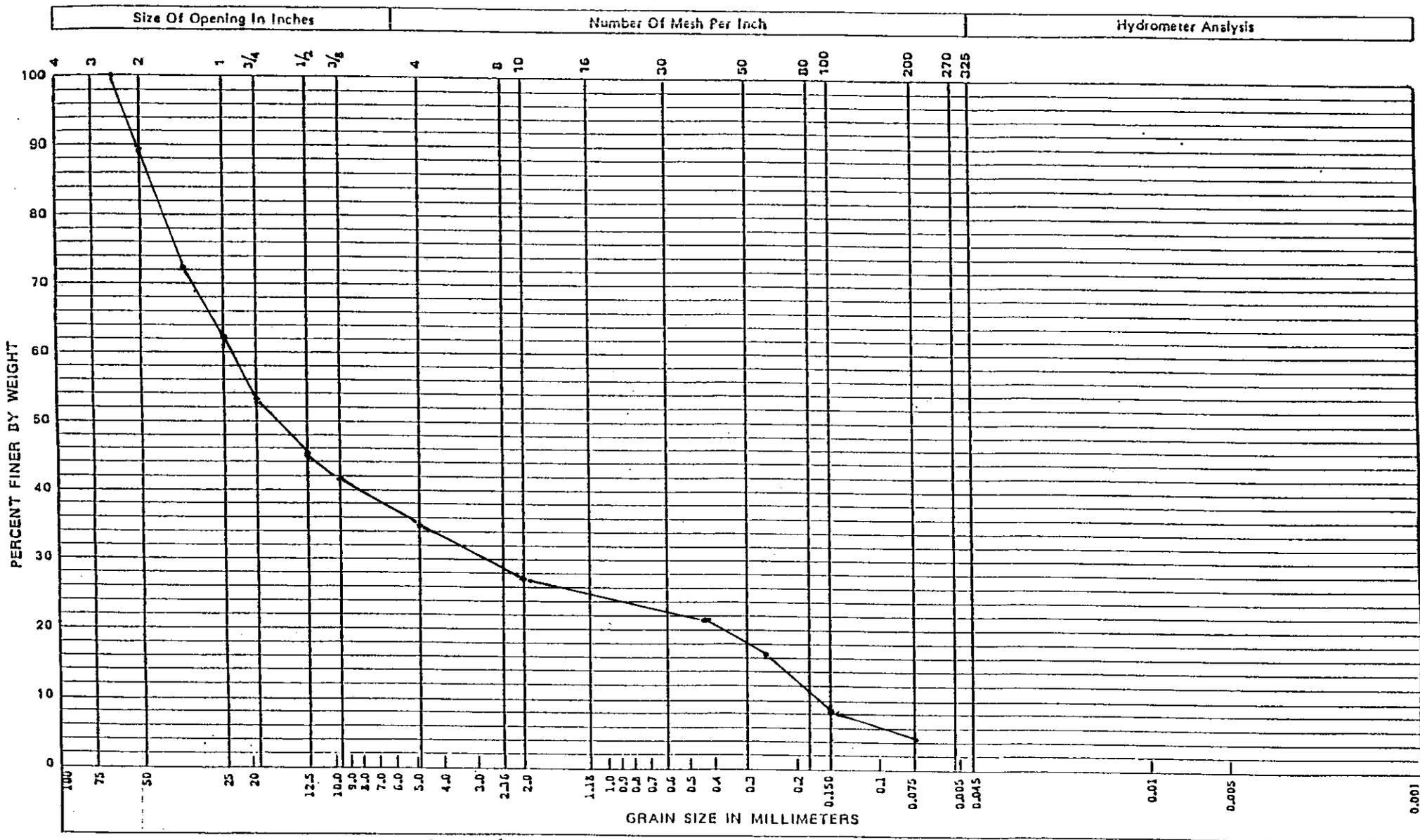
ALL DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS TRAINED AND USED CALIBRATED INSTRUMENTS

Checked By J. Reizen Date 1-18-90

9 2 1 2 1 1 0 6 2

9 2 1 2 1 1 0 2 6 3

GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-104 Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

|   |   |   |
|---|---|---|
| <p>Sample Description: <u>SANDY GRAVEL</u><br/><u>MW-5-12</u></p> | <p>Plotted by: <u>R.G. ALEXANDER</u><br/>Date: <u>1-11-90</u></p> | <p>Checked by: <u>J. F. Relyea</u><br/>Date: <u>1-18-90</u></p> |
|---|---|---|



Company Contact J. Lindberg Telephone 65005  
 Sample Collected by R. Miller (GAI) Date 12/13-12/18/89 Time n/a  
 Sample Locations 1100-2 MW-5  
 Ice Chest No. n/a Field Logbook and Page No. WHC-N-306-3  
 Remarks samples taken during drilling of MW-5

Bill of Lading No. n/a Offsite Property No. n/a  
 Method of Shipment quit vehicle Hand Carry  
 Shipped to Jerry Alexander, WHC, 2101-M Physical Testing Laboratory (Soils)

Sample Identification

|   |  |
|---|--|
| MW-5-1, 2.5', plastic bag, grain size only                        |  |
| MW-5-2, 6.0', " " , all   |  |
| MW-5-3, 15.0', " " , grain size only                              |  |
| MW-5-4, 19.0', " " , all  |  |
| MW-5-5, <sup>down to 12/20/89</sup> 35.0', " " , all              |  |
| MW-5-6, <sup>down to 12/20/89</sup> 50.25', " " , <sup>Open</sup> |  |
| MW-5-6, 48.5', " " , all  |  |
| MW-5-7, 50.25', " " , all-grain                                   |  |
| MW-5-8, 55.0', " " , all-grain                                    |  |
| MW-5-9, <sup>down to 12/20/89</sup> 66.4', " " , all-grain        |  |
| MW-5-10, 71.75', " " , all-grain                                  |  |
| MW-5-11, 76.55', " " , all-grain                                  |  |
| MW-5-12, 81.5', " " , grain                                       |  |
| MW-5-13, 88.65', acrylic tube, grain/perm.                        |  |

Chain of Possession

|   |  |                                     |
|---|--|-------------------------------------|
| Relinquished by: <u>Rand D. Miller</u><br><u>Rand D. Miller (GAI)</u> | Received by: <u>JW Lindberg</u><br><u>JW Lindberg</u> 12/20/89 | Date/Time: <u>12/20/89 1415</u>     |
| Relinquished by: <u>JW Lindberg</u>                                   | Received by: <u>R.G. Alexander</u><br><u>R.G. ALEXANDER</u>    | Date/Time: <u>12/20/89 1530 hrs</u> |
| Relinquished by:  | Received by:   | Date/Time:                          |
| Relinquished by:  | Received by:   | Date/Time:                          |

9212011005

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector R.D. Miller Date Sampled 12/13-12/18 Time NA hours  
 1989

Affiliation of Sampler Golder Assoc

Address NA  
 number street city state zip

Telephone (309) 376-5005 Company Contact JW Lindberg

| LABORATORY SAMPLE NUMBER | COLLECTOR'S SAMPLE NO. | TYPE OF SAMPLE* | FIELD INFORMATION** |
|--------------------------|------------------------|-----------------|---------------------|
| <u>MW-5-9</u>            | _____                  | <u>Soil</u>     | _____               |
| <u>MW-5-10</u>           | _____                  | <u>Soil</u>     | _____               |
| <u>MW-5-11</u>           | _____                  | <u>Soil</u>     | _____               |
| <u>MW-5-12</u>           | _____                  | <u>Soil</u>     | _____               |

Analysis Requested Particle Size Analysis ASTM D-422

Special Handling and/or Storage NA

PART II: LABORATORY SECTION\*\*

Received by \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_

Analysis Required \_\_\_\_\_

\* Indicate whether sample is soil, sludge, etc.  
 \*\*Use back of page for additional information relative to sample location.

Figure 9-19. Example of hazardous waste sample analysis sheet.

9212110166

RADIATION RELEASE

Bldg. MW-5 / Date 12-18-89  
Released By [Signature]  
Operational Health Physics

Remarks MW5-11  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5 / Date 12/18/89  
Released By [Signature]  
Operational Health Physics

Remarks MW-5-12  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-13 / Date 12-19-89  
Released By M. Cleveland  
Operational Health Physics

Remarks 1 silt samples  
54-3000-022 (09/88)

9212110067

TEST REQUEST FORM

Sample/Specimen No. 9-105 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 1-11-90

| Test Requested                | No. of Samples | Test Lab Information (Instruction Used) |
|-------------------------------|----------------|---|
| <u>STIEVE ANALYSIS</u>        | <u>1</u>       | <u>ETAL-07</u>                          |
| <u>HYDROMETER</u>             | <u>1</u>       | <u>ETAL-07 (IF REQ)</u>                 |
| <u>ATTERBERG LIMITS</u>       | <u>1</u>       | <u>ETAL-18</u>                          |
| <u>HYDRAULIC CONDUCTIVITY</u> | <u>1</u>       | <u>ETAL-09</u>                          |

Remarks FIELD SAMPLE  
MW-5-18

Received By: RG ALEXANDER Date 12-20-89

Approved By: RG ALEXANDER Date 1-11-90

9212110968





# HYDROMETER ANALYSIS DATA SHEET

Sample ID 9-105

Page 1 of 1

| Tested By <u>HLBenny</u>       |             | Date <u>3-8-90</u>   |
|--------------------------------|-------------|----------------------|
| Procedure _____                | Rev _____   | Date Issued _____    |
| EQUIPMENT ITEM                 | NO.         | CALIBRATION DUE DATE |
| Hydrometer _____               | <u>1000</u> | <u>2-16-91</u>       |
| Balance _____                  | <u>3304</u> | <u>3-25-90</u>       |
| Thermometer/Thermocouple _____ | <u>0002</u> | <u>2-9-91</u>        |

Specific gravity of Sample 2.63  
 % Passing No. 10 Sieve 98.9 (%)  
 Hygroscopic Correction Factor ∅

### HYGROSCOPIC MOISTURE CONTENT

Wt. Container + Air Dry Soil NA (g)  
 Wt. Container + Oven Dry Soil NA (g)  
 Wt. Container NA (g)  
 Water Content NA (%)

### WEIGHT OF SAMPLE

Wt. Container + Soil NA (g)  
 Wt. Container NA (g)  
 Wt. Soil 69.67 (g)

### REMARKS

Tube E

W = 70.45

### COMPOSITE CORRECTION

1st Reading 7 at 24.2 °C  
 2nd Reading NA at NA °C

| Date           | Clock time  | Elapsed time (min) | Hydrometer reading | Hydrometer with composite correction | Temp. (°C)  | Soil in suspension (%) | Particle diameter (mm) |
|----------------|-------------|--------------------|--------------------|--------------------------------------|-------------|------------------------|------------------------|
| <u>08-8-90</u> | <u>1007</u> | 2.0                | <u>34</u>          | <u>27</u>                            | <u>23.7</u> | <u>38.3</u>            | <u>0.030</u>           |
|                | <u>1010</u> | 5.0                | <u>28</u>          | <u>21</u>                            | <u>23.7</u> | <u>29.8</u>            | <u>0.020</u>           |
|                | <u>1020</u> | 15.0               | <u>22</u>          | <u>15</u>                            | <u>23.3</u> | <u>21.3</u>            | <u>0.012</u>           |
|                | <u>1035</u> | 30.0               | <u>19</u>          | <u>12</u>                            | <u>22.9</u> | <u>17.0</u>            | <u>0.009</u>           |
|                | <u>1105</u> | 60.0               | <u>16</u>          | <u>9</u>                             | <u>22.5</u> | <u>12.8</u>            | <u>0.006</u>           |
| <u>✓</u>       | <u>1415</u> | 250.00             | <u>13</u>          | <u>6</u>                             | <u>22.5</u> | <u>8.5</u>             | <u>0.003</u>           |
| <u>3-9-90</u>  | <u>1005</u> | 1,440.0            | <u>10</u>          | <u>3</u>                             | <u>22.2</u> | <u>4.3</u>             | <u>0.001</u>           |

Formulas and Tables used to calculate percent Soil in suspension, particle diameter and hygroscopic correction factor are found in ASTM D422.

ALL REQUIRED DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS APPROPRIATELY TRAINED AND UTILIZED CALIBRATED TEST INSTRUMENTS AS INDICATED ABOVE. APPROVED TEST PROCEDURES WERE FOLLOWED TO PRODUCE THE ABOVE DATA.

Checked By R.G. Alford Date 3-14-90

# SPECIFIC GRAVITY OF SOILS DATA SHEET

Specimen/Sample No. 9-105 Page 1 of 1

|                                     |                |
|-------------------------------------|----------------|
| Test Operator <u>R.G. ALEXANDER</u> | <u>3-5-90</u>  |
| <u>EQUIPMENT ITEM</u>               | <u>NO.</u>     |
| <u>DATE DUE</u>                     |                |
| Balance                             | <u>3304</u>    |
| Oven Thermometer                    | <u>0007</u>    |
| Thermometer                         | <u>0002</u>    |
| Pycnometer                          | <u>2554</u>    |
|                                     | <u>3-25-90</u> |
|                                     | <u>8-16-90</u> |
|                                     | <u>2-9-91</u>  |
|                                     | <u>N/A</u>     |

Wetting Agent "Q" WATER

| DETERMINATION NO. |   | 1      | 2   | 3   |
|-------------------|---|--------|-----|-----|
|                   | Drying Container No.                                | N/A    | N/A | N/A |
|                   | Wt. Container + Oven Dry Soil, ± 0.01g              | N/A    | --- | --- |
|                   | Wt. Container, ± 0.01g                              | N/A    | --- | --- |
| W <sub>o</sub>    | Wt. Oven Dry Soil, g                                | 40.00  | --- | --- |
|                   | Pycnometer No.                                      | 2554   |     |     |
|                   | Wt. Pycnometer, g                                   | 135.72 | --- | --- |
| W <sub>a</sub>    | Wt. Pycnometer + Wetting Agent, g                   | 387.10 | --- | --- |
| W <sub>b</sub>    | Wt. Pycnometer + Wetting Agent + Soil, g            | 411.91 | --- | --- |
|                   | Temperature, T <sub>x</sub> at W <sub>b</sub> , °C  | 24.2C  |     |     |
| G <sub>w</sub>    | Specific Gravity of Wetting Agent at T <sub>x</sub> | 1.00   | --- | --- |
| G <sub>t</sub>    | Specific Gravity of Soil at T <sub>x</sub>          | 2.63   | --- | --- |
| G <sub>s</sub>    | Specific Gravity of Soil at 20°C                    | 2.63   | --- | --- |

$$G_t = \frac{G_w \cdot V_w + W_o}{W_o + (W_a - W_b)}$$

Y<sub>w</sub> = Unit Weight Of Water (g/cc)

\*G<sub>s</sub> = K · G<sub>t</sub>

K values found in ASTM D854-58, Table 1

\*NOTE G<sub>s</sub> = G<sub>t</sub> When Test Run at 20 °C

|                                  |             |
|----------------------------------|-------------|
| Average Specific Gravity At 20°C | <u>2.63</u> |
|----------------------------------|-------------|

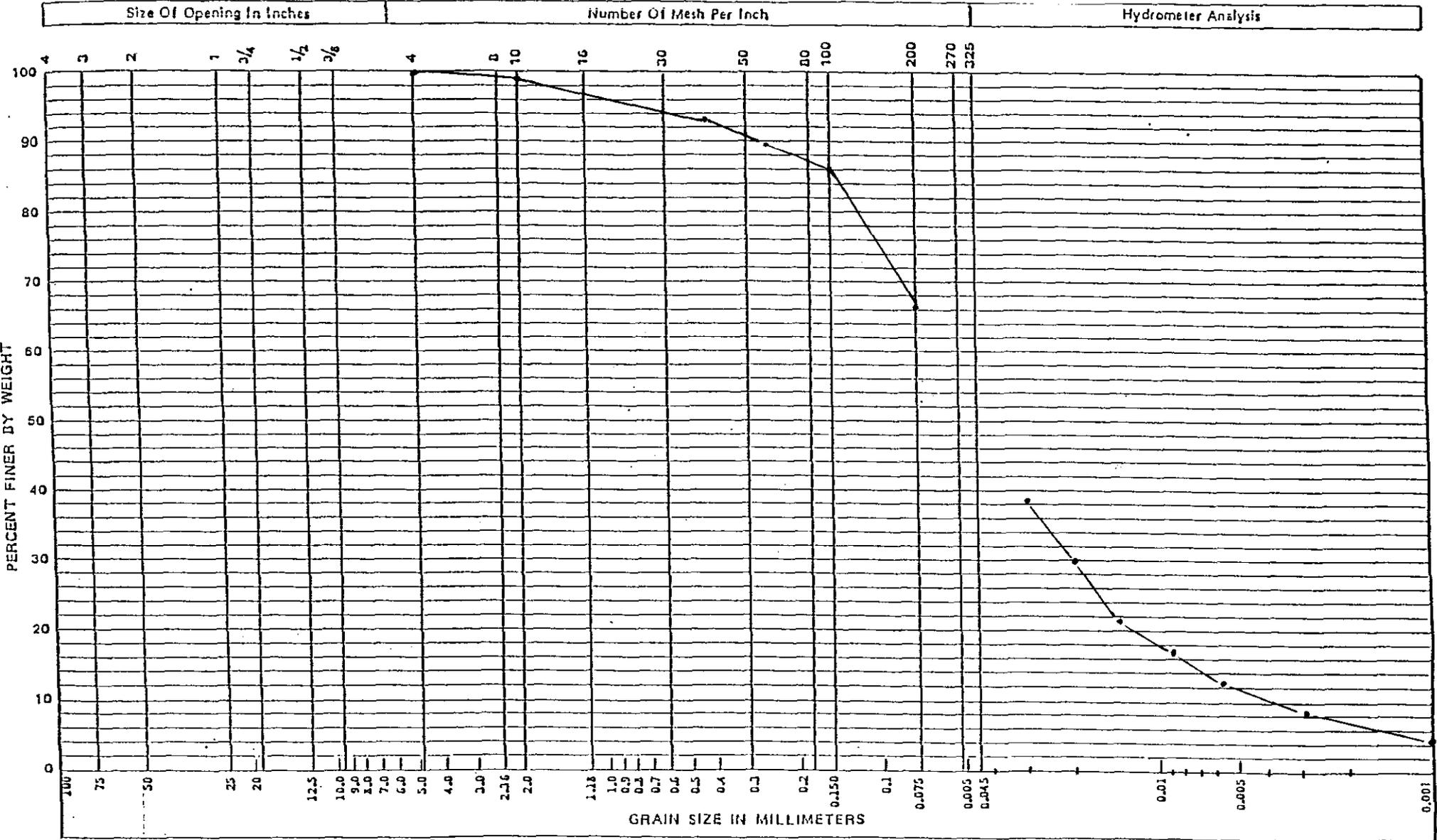
ALL REQUIRED DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS APPROPRIATELY TRAINED AND UTILIZED CALIBRATED TEST INSTRUMENTS AS INDICATED ABOVE. APPROVED TEST PROCEDURES WERE FOLLOWED TO PRODUCE THE ABOVE DATA.

Checked By Harold Benny Date 3-7-90

92123110172

9 2 1 2 1 1 7 3

GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-105 Procedure No. ETAL-67 Rev. 1 Date Issued 11-15-89

|   |  |   |
|---|--|---|
| <p>Sample Description: <u>SANDY GRAVEL</u><br/><u>MW-5-13</u></p> | <p>Plotted by: <u>R.G ALEXANDER</u><br/>Date: <u>1-11-90</u></p> | <p>Checked by: <u>HL Benny</u><br/>Date: <u>1-18-90</u></p> |
|---|--|---|

HYDRAULIC CONDUCTIVITY OF SOILS DATA SHEET

Sample No. 9-105

Page 1 Of 5

Test Operator R.G. ALEXANDER Date 1-11-90

| <u>EQUIPMENT ITEM</u>  | <u>NO.</u>  | <u>DATE DUE</u> |
|------------------------|-------------|-----------------|
| Balance                | <u>3304</u> | <u>3-25-90</u>  |
| Oven Thermometer       | <u>0006</u> | <u>2-6-90</u>   |
| Thermometer            | <u>N/A</u>  | <u>N/A</u>      |
| Thermocouple           |             |                 |
| Temperature Controller |             |                 |
| Pressure Gauge         |             |                 |
| Pressure Transducer    |             |                 |
| Pressure Transducer    |             |                 |
| Back Pressure Gauge    |             |                 |
| Pressure Transducer    |             |                 |
| Pressure Transducer    |             |                 |
| Calipers               | <u>5623</u> | <u>8-16-90</u>  |
| Load Frame             | <u>N/A</u>  | <u>N/A</u>      |
| Data Logger            |             |                 |
| <u>N/A</u>             |             |                 |
| <u>N/A</u>             |             |                 |
| <u>N/A</u>             |             |                 |

Immediate (User) Calibration Performed. (Documentation To Be Attached)

Sample Preparation

PARTICLE SIZE  
(Sieve Mesh Range)

|            |    |            |
|------------|----|------------|
| <u>N/A</u> | To | <u>N/A</u> |
|            | To |            |

WEIGHT

|            |       |
|------------|-------|
| <u>N/A</u> | %     |
|            | %     |
|            | %     |
|            | %     |
|            | %     |
|            | %     |
|            | %     |
|            | %     |
|            | %     |
| Total      | 100 % |

OTHER COMPONENTS

|            |
|------------|
| <u>N/A</u> |
|            |
|            |

|            |       |
|------------|-------|
| <u>N/A</u> | %     |
|            | %     |
|            | %     |
| Total      | 100 % |

ALL REQUIRED DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS APPROPRIATELY TRAINED AND UTILIZED CALIBRATED TEST INSTRUMENTS AS INDICATED ABOVE. APPROVED TEST PROCEDURES WERE FOLLOWED TO PRODUCE THE ABOVE DATA.

Checked By HL Benny Date 1-18-90

9212110074

**SAMPLE PREPARATION**

Determine Weight of Samples in Container

|                              |               |
|------------------------------|---------------|
| Container No.                | <u>2</u>      |
| Wt. of Sample + Container, g | <u>581.80</u> |
| Wt. of Container, g          | <u>310.50</u> |
| Wt. of Sample, g             | <u>221.30</u> |

Determine the Water Content of the "Air Dry" Sample

|                                     |               |
|-------------------------------------|---------------|
| Container No.                       | <u>2</u>      |
| Wt. Container & Wet Soil (A), g     | <u>581.80</u> |
| Wt. Container & Dry Soil (B), g     | <u>472.06</u> |
| Wt. of Water, g                     | <u>59.74</u>  |
| Wt. of Container (C), g             | <u>310.50</u> |
| Wt. of Dry Soil, W <sub>s</sub> , g | <u>161.56</u> |
| Water Content (W), %                | <u>36.98</u>  |

$$W = \left( \frac{A - B}{B - C} \right) 100$$

| SAMPLE COMPONENT | SPECIFIC GRAVITY, G | LABORATORY NOTEBOOK DATA LOCATION |
|------------------|---------------------|-----------------------------------|
| <u>N/A</u>       | <u>N/A</u>          | <u>N/A</u>                        |
| <u>N/A</u>       | <u>N/A</u>          | <u>N/A</u>                        |
| <u>N/A</u>       | <u>N/A</u>          | <u>N/A</u>                        |

ALL REQUIRED DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS APPROPRIATELY TRAINED AND UTILIZED CALIBRATED TEST INSTRUMENTS AS INDICATED ABOVE. APPROVED TEST PROCEDURES WERE FOLLOWED TO PRODUCE THE ABOVE DATA.

Checked By HL Benny Date 1-18-90

921211075







Company Contact J. Lindberg Telephone 65005  
 Sample Collected by R. Miller (GAI) Date 12/13 - 12/18/89 Time n/a  
 Sample Locations 1100-2 MW-5  
 Ice Chest No. n/a Field Logbook and Page No. WHC-N-306-3  
 Remarks samples taken during drilling of MW-5

Bill of Lading No. n/a Offsite Property No. n/a  
 Method of Shipment port vehicle Hand Carry  
 Shipped to Jerry Alexander, WHC, 2101-M Physical Testing Laboratory (Soils)

Sample Identification

|                           |   |
|---------------------------|---|
| MW-5-1, 2.5'              | plastic bag, grain size only                          |
| MW-5-2, 6.0'              | " " , all   |
| MW-5-3, 15.0'             | " " , grain size only                                 |
| MW-5-4, 19.0'             | " " , all   |
| MW-5-5, 35.0'             | " " , all   |
| <del>MW-5-6, 50.25'</del> | <del>" " , <sup>Open</sup> <del>recovered</del></del> |
| MW-5-6, 48.5'             | " " , all   |
| MW-5-7, 50.25'            | " " , all-grain                                       |
| MW-5-8, 55.0'             | " " , all-grain                                       |
| <del>MW-5-9, 66.4'</del>  | <del>" " , all-grain</del>                            |
| MW-5-10, 71.75'           | " " , all-grain                                       |
| MW-5-11, 76.55'           | " " , all-grain                                       |
| MW-5-12, 81.5'            | " " , grain   |
| MW-5-13, 88.65'           | acrylic tube, grain/perm.                             |

Chain of Possession

|   |  |                                     |
|---|--|-------------------------------------|
| Relinquished by: <u>Rand D. Miller</u><br><u>Rand D. Miller (GAI)</u> | Received by: <u>JW Lindberg</u><br><u>JW Lindberg</u> 12/20/89 | Date/Time: <u>12/20/89 1415</u>     |
| Relinquished by: <u>JW Lindberg</u>                                   | Received by: <u>R.G. Alexander</u><br><u>R.G. ALEXANDER</u>    | Date/Time: <u>12/20/89 1530 hrs</u> |
| Relinquished by:  | Received by:   | Date/Time:                          |
| Relinquished by:  | Received by:   | Date/Time:                          |

9210129

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector R.D. Miller Date Sampled 12/13-12/18 Time \_\_\_\_\_ hours

Affiliation of Sampler Golder Assoc.

Address NA  
number street city state ZIP

Telephone (509) 376-5005 Company Contact JW Lindberg

| LABORATORY SAMPLE NUMBER | COLLECTOR'S SAMPLE NO. | TYPE OF SAMPLE*          | FIELD INFORMATION** |
|--------------------------|------------------------|--------------------------|---------------------|
| <u>MW-5-13</u>           | _____                  | <u>Soil</u>              | _____               |
| _____                    | _____                  | <u>Soil JWS 12/20/89</u> | _____               |
| _____                    | _____                  | <u>Soil JWS 12/20/89</u> | _____               |
| _____                    | _____                  | <u>Soil JWS 12/20/89</u> | _____               |

Analysis Requested Particle Size Analysis, Liquid & Plastic Limits and Plasticity Index, and Permeability

Special Handling and/or Storage tube cracked

PART II: LABORATORY SECTION\*\*

Received by \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_

Analysis Required \_\_\_\_\_

\* Indicate whether sample is soil, sludge, etc.

\*\*Use back of page for additional information relative to sample location.

Figure 9-19. Example of hazardous waste sample analysis sheet.

9212110030

RADIATION RELEASE

Bldg. MW-5 Date 12-18-89  
Released By [Signature]  
Operational Health Physics

Remarks MW5-11  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5 Date 12/18/89  
Released By [Signature]  
Operational Health Physics

Remarks MW-5-12  
54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-5-13 Date 12-19-89  
Released By M. C. [Signature]  
Operational Health Physics

Remarks 1 silt samples  
54-3000-022 (09/88)

9 2 1 2 1 1 0 3 1