

TEST REQUEST FORM

Sample/Specimen No. 0-055 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 2-12-90

Test Requested	No. of Samples	Test Lab Information (Instruction Used)
<u>STOVE 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>NA</u>	<u>N/A</u>

Remarks FIELD SAMPLE
MW-17-1

Received By: R.G. ALEXANDER Date 2-2-90

Approved By: R.G. ALEXANDER Date 2-12-90



9212110365

SIEVE ANALYSIS DATA SHEET

Sample ID 0-055 Page 1 of 1

Tested By R.G. ALEXANDER Date 2-12-90

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>Rev 2-17-90</small>
Thermometer	<u>0007</u>	<u>8-16-90</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>3</u>	<u>4533.05</u>	<u>1051.50</u>	<u>23.2</u>	<u>23.2</u>	<u>76.8</u>	<u>76.8</u>
	<u>2 1/2</u>		<u>1051.50</u>	<u>23.2</u>	<u>23.2</u>	<u>76.8</u>	<u>76.8</u>
	<u>2</u>		<u>1051.50</u>	<u>23.2</u>	<u>23.2</u>	<u>76.8</u>	<u>76.8</u>
	<u>1 1/2</u>		<u>1051.50</u>	<u>23.2</u>	<u>23.2</u>	<u>76.8</u>	<u>76.8</u>
	<u>1</u>		<u>1545.88</u>	<u>34.1</u>	<u>34.1</u>	<u>65.9</u>	<u>65.9</u>
	<u>3/4</u>		<u>1706.79</u>	<u>37.7</u>	<u>37.7</u>	<u>62.3</u>	<u>62.3</u>
	<u>1/2</u>		<u>1881.35</u>	<u>41.5</u>	<u>41.5</u>	<u>58.5</u>	<u>58.5</u>
	<u>3/8</u>		<u>1980.21</u>	<u>43.7</u>	<u>43.7</u>	<u>56.3</u>	<u>56.3</u>
	<u>#4</u>	↓	<u>2224.32</u>	<u>49.1</u>	<u>49.1</u>	<u>50.9</u>	<u>50.9</u>
	<u>#10</u>	<u>4533.05</u>	<u>2565.47</u>	<u>56.6</u>	<u>56.6</u>	<u>43.4</u>	<u>43.4</u>
	<u>#40</u>	<u>115.01</u>	<u>33.11</u>	<u>28.8</u>	<u>28.8</u>	<u>71.2</u>	<u>30.9</u>
	<u>#60</u>		<u>52.25</u>	<u>45.4</u>	<u>45.4</u>	<u>54.6</u>	<u>23.7</u>
	<u>#100</u>		<u>69.00</u>	<u>60.0</u>	<u>60.0</u>	<u>40.0</u>	<u>17.4</u>
	<u>#200</u>	↓	<u>83.30</u>	<u>72.4</u>	<u>72.4</u>	<u>27.6</u>	<u>12.0</u>

Fines Modules (FM) N/A (See ASTM C 136-B3, Section B.2)

MATERIALS FINER THAN NO. 200 SIEVE BY WASHING

C=Percentage of Material Passing a 200 Sieve 27.6 %
 D=Original Dry Weight of Sample 115.01 g
 E=Dry Weight of Sample After Washing/Sieve 8330 g
 $C = \frac{D-E}{D} \times 100$

Remarks

WASH FINE GRADING
SMALL FIELD
SAMPLE

ALL DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS TRAINED AND USED CALIBRATED INSTRUMENTS
 Checked By H.L. Benny Date 2-13-90

9 2 1 2 0 7 6 6

HYDROMETER ANALYSIS DATA SHEET

Sample ID 0-055

Page 1 of 1

Tested By <u>HL Benny</u>		Date <u>3/8/90</u>
Procedure _____	Rev _____	Date Issued _____
<u>EQUIPMENT ITEM</u>	<u>NO.</u>	<u>CALIBRATION DUE DATE</u>
<u>Hydrometer</u>	<u>1200</u>	<u>2-16-91</u>
<u>Balance</u>	<u>3304</u>	<u>3-25-90</u>
<u>Thermometer/Thermocouple</u>	<u>0002</u>	<u>2-9-91</u>

Specific gravity of Sample 2.74
 % Passing No. 10 Sieve 43.4 (%)
 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 67.93 (g)

REMARKS

Tube A
W=156.52

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)
3-8-90	0837	2.0	24	174 ^{HLB} ₃₋₈₋₉₀	23.0	10.6	0.032
	0840	5.0	22	15	22.8	9.4	0.020
	0850	15.0	18	11	22.7	6.9	0.012
	0905	30.0	16	9	23.4	5.6	0.009
	0935	60.0	13	6	22.5	3.8	0.006
	1245	250.00	10	3	22.7	1.9	0.003
3-9-90	0835	1,440.0	8	1	22.4	0.6	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 3-14-90

SPECIFIC GRAVITY OF SOILS DATA SHEET

Specimen/Sample No. 0-055 Page 1 of 1

Test Operator <u>R. G. ALEXANDER</u>	Date <u>3-5-90</u>
EQUIPMENT ITEM	NO.
Balance	<u>3304</u>
Oven Thermometer	<u>0007</u>
Thermometer	<u>0002</u>
Pycnometer	<u>2554</u>
	DATE DUE
	<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.	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
	Wt. Container + Oven Dry Soil, ± 0.01g	<u>N/A</u>	<u>---</u>	<u>---</u>
	Wt. Container, ± 0.01g	<u>N/A</u>	<u>---</u>	<u>---</u>
W_o	Wt. Oven Dry Soil, g	<u>40.00</u>	<u>---</u>	<u>---</u>
	Pycnometer No.	<u>2554</u>		
	Wt. Pycnometer, g	<u>135.12</u>	<u>---</u>	<u>---</u>
W_a	Wt. Pycnometer + Wetting Agent, g	<u>387.11</u>	<u>---</u>	<u>---</u>
W_b	Wt. Pycnometer + Wetting Agent + Soil, g	<u>412.58</u>	<u>---</u>	<u>---</u>
	Temperature, T_x at W_b , °C	<u>26.20</u>		
G_w	Specific Gravity of Wetting Agent at T_x	<u>1.00</u>	<u>---</u>	<u>---</u>
G_t	Specific Gravity of Soil at T_x	<u>2.75</u>	<u>---</u>	<u>---</u>
G_s	Specific Gravity of Soil at 20°C	<u>2.74</u>	<u>---</u>	<u>---</u>

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

γ_w = Unit Weight Of Water (g/cc)

* $G_s = K \cdot G_t$

K values found in ASTM D854-58, Table 1

*NOTE $G_s = G_t$ When Test Run at 20 °c

Average Specific Gravity At 20°C	<u>2.74</u>
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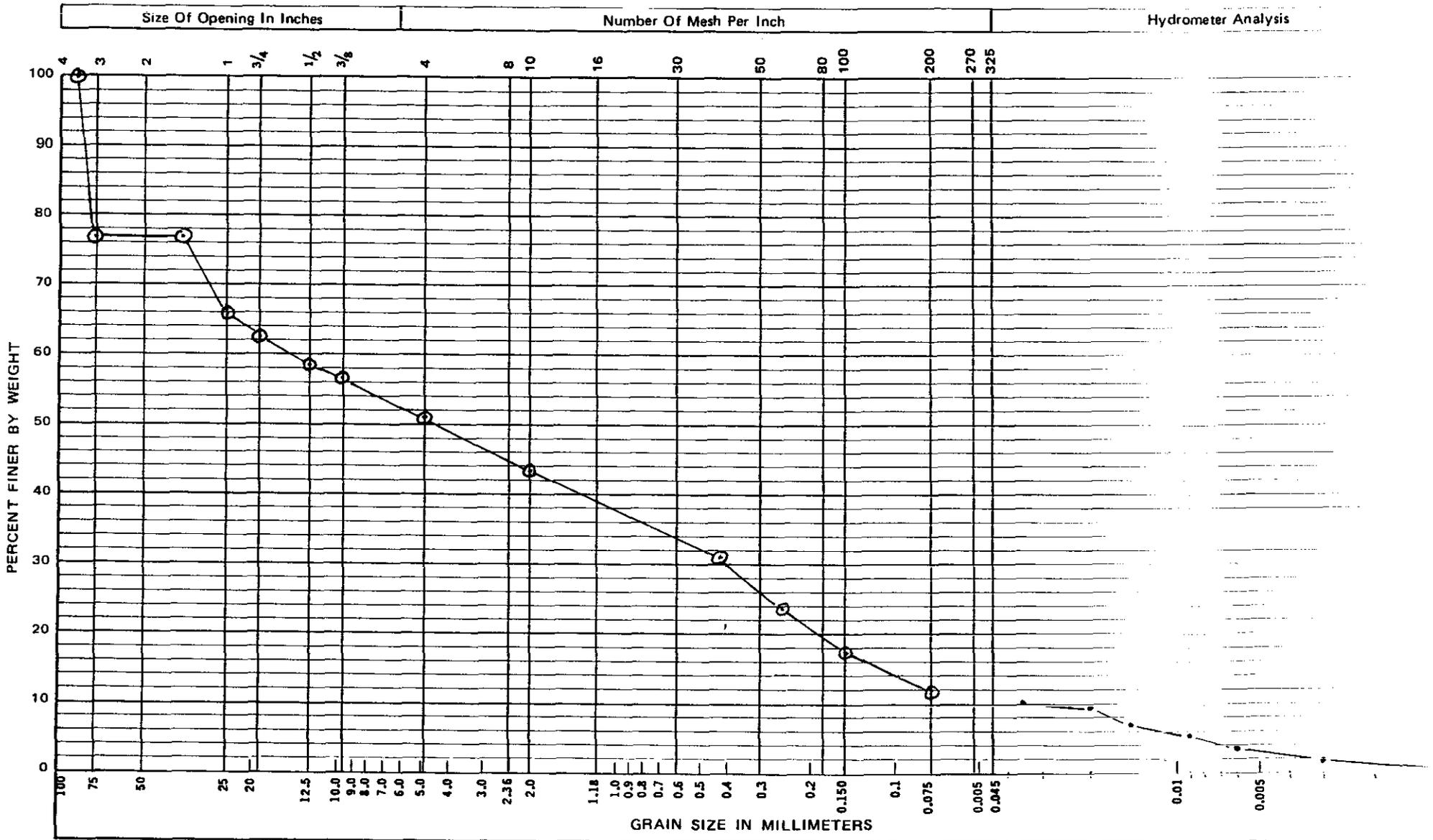
ALL REQUIRED DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS APPROPRIATELY TRAINED AND UTILIZED CALIBRATED TEST INSTRUMENTS AS INDICATED ABOVE. APPROVED TEST PROCEDURES WERE FOLLOWED TO PRODUCE THE ABOVE DATA.

Checked By HC Benny Date 3-7-90

9212110369

9 2 1 2 1 1 1 7 0

GRAIN SIZE ANALYSIS PLOT



Specimen No. D-055 Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

Sample Description: SANDY GRAVEL
MW-17-1

Plotted by: RG. ALEXANDER
Date: 2-12-90

Checked by: HL Benny
Date: 2-13-90

Approved by: NA
Date: _____

Westinhouse Hanford Company

CHAIN OF CUSTODY

Company Contact JW Lindberg Telephone 6-5005
 Sample Collected by DC Weekes Date 1/11/90 - 1/20/90 Time NA
 Sample Locations MW-17
 Ice Chest No. NA Field Logbook and Page No. WHC-N-306-2, p.27-35
 Remarks CERCLA, 1100-EM-1 Operable Unit, Groundwater Monitoring Wells
 Bill of Lading No. NA Offsite Property No. NA
 Method of Shipment Hand carry
 Shipped to Verry Alexander, WHC, 2101-M Physical Testing Laboratory

Sample Identification

MW-17-1	double-lined plastic bag	
MW-17-2	" " " "	
MW-17-3	" " " "	
MW-17-4	" " " "	
MW-17-5	" " " "	
MW-17-6	" " " "	
MW-17-7	" " " "	
MW-17-8	" " " "	
MW-17-9	" " " "	
MW-17-10	" " " "	
MW-17-11	" " " "	
MW-17-12	triple-lined plastic bag	

Chain of Possession

Relinquished by: <u>DC Weekes</u> DC Weekes	Received by: <u>RG ALEXANDER</u> RG Alexander	Date/Time: <u>2-2-90/10:20</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

92127

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector DC Weekes Date Sampled 1/11/90 Time NA hours

Affiliation of Sampler WHC

Address 450 Hills St. Richland WA 99352
number street city state zip

Telephone (509) 376-5005 Company Contact J.W. Lindberg

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	<u>MW71</u>	<u>Soil</u>	
	<u>MW72</u>	<u>"</u>	
	<u>MW73</u>	<u>"</u>	
	<u>MW74</u>	<u>"</u>	

Analysis Requested Particle Size Analysis and Moisture Contents

Special Handling and/or Storage _____

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.

921211072

RADIATION RELEASE

WELL SITE #17 DATE 01-11-90

RELEASED BY Boyd RADIATION MONITORING

REMARKS: LD B & L ON OUTSIDE OF BAG.

54-3000-022 (5-57)

MW-17-1

RADIATION RELEASE

WELL SITE #17 DATE 01-11-90

RELEASED BY Boyd RADIATION MONITORING

REMARKS: LD B & L ON OUTSIDE OF BAG.

54-3000-022 (5-57)

MW-17-2

MW-17-3 RADIATION RELEASE

WELL SITE #17 Date 01-11-90

Released By Boyd Operational Health Physics

Remarks LD B & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

RADIATION RELEASE

WELL SITE #17 Date 01-11-90

Released By Boyd Operational Health Physics

Remarks LD B & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

MW-17-4

MW-17-6 RADIATION RELEASE

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

Remarks LD B & L on outside side of bag.

54-3000-022 (09/88)

MW-17-5 RADIATION RELEASE

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

Remarks LD B & L on outside of bag.

54-3000-022 (09/88)

MW-17-7 37-38 RADIATION RELEASE

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

Remarks LD B & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

DRILL SITE RADIATION RELEASE

MW-17/300 Date 1/19/90

Released By Weeds Operational Health Physics

Remarks LD B-2 - 1 4

54-3000-022 (09/88)

MW-17-B

3
7
3
0
2
1
2
9

TEST REQUEST FORM

Sample/Specimen No. Q-056 Cost Code/Work Order No. ED332

Requested By: Org. 8023Z Person J. LINDBERG Date 2-12-90

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-17-Z

Received By: R.G. ALEXANDER Date 2-2-90

Approved By: R.G. ALEXANDER Date 2-12-90

921210074

SIEVE ANALYSIS DATA SHEET

Sample ID 0-056 Page 1 of 1

Tested By R.G. ALEXANDER Date 2-12-90

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>0007</u>	<u>8-16-90</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>4541.36</u>	<u>478.14</u>	<u>10.5</u>	<u>10.5</u>	<u>89.5</u>	<u>89.5</u>
	<u>2</u>		<u>478.14</u>	<u>10.5</u>	<u>10.5</u>	<u>89.5</u>	<u>89.5</u>
	<u>1 1/2</u>		<u>1027.06</u>	<u>22.6</u>	<u>22.6</u>	<u>77.4</u>	<u>77.4</u>
	<u>1</u>		<u>1665.32</u>	<u>36.7</u>	<u>36.7</u>	<u>43.3</u>	<u>63.3</u>
	<u>3/4</u>		<u>2068.79</u>	<u>45.6</u>	<u>45.6</u>	<u>54.4</u>	<u>54.4</u>
	<u>1/2</u>		<u>2452.06</u>	<u>54.0</u>	<u>54.0</u>	<u>46.0</u>	<u>46.0</u>
	<u>3/8</u>		<u>2681.31</u>	<u>59.0</u>	<u>59.0</u>	<u>41.0</u>	<u>41.0</u>
	<u>#4</u>		<u>3017.66</u>	<u>66.4</u>	<u>66.4</u>	<u>33.6</u>	<u>33.6</u>
	<u>#10</u>	<u>4541.56</u>	<u>3285.60</u>	<u>72.3</u>	<u>72.3</u>	<u>27.7</u>	<u>27.7</u>
	<u>#40</u>	<u>136.73</u>	<u>66.19</u>	<u>48.4</u>	<u>48.4</u>	<u>51.6</u>	<u>14.3</u>
	<u>#60</u>		<u>86.82</u>	<u>63.5</u>	<u>63.5</u>	<u>36.5</u>	<u>10.1</u>
	<u>#100</u>		<u>98.05</u>	<u>71.7</u>	<u>71.7</u>	<u>28.3</u>	<u>7.8</u>
	<u>#200</u>		<u>108.07</u>	<u>79.0</u>	<u>79.0</u>	<u>21.0</u>	<u>5.8</u>

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

MATERIALS FINER THAN NO. 200 SIEVE BY WASHING

C=Percentage of Material Passing a 200 Sieve 21.0 %
 D=Original Dry Weight of Sample 136.73 g
 E=Dry Weight of Sample After Washing/Sieve 108.07 g
 $C = \frac{D-E}{D} \times 100$

Remarks

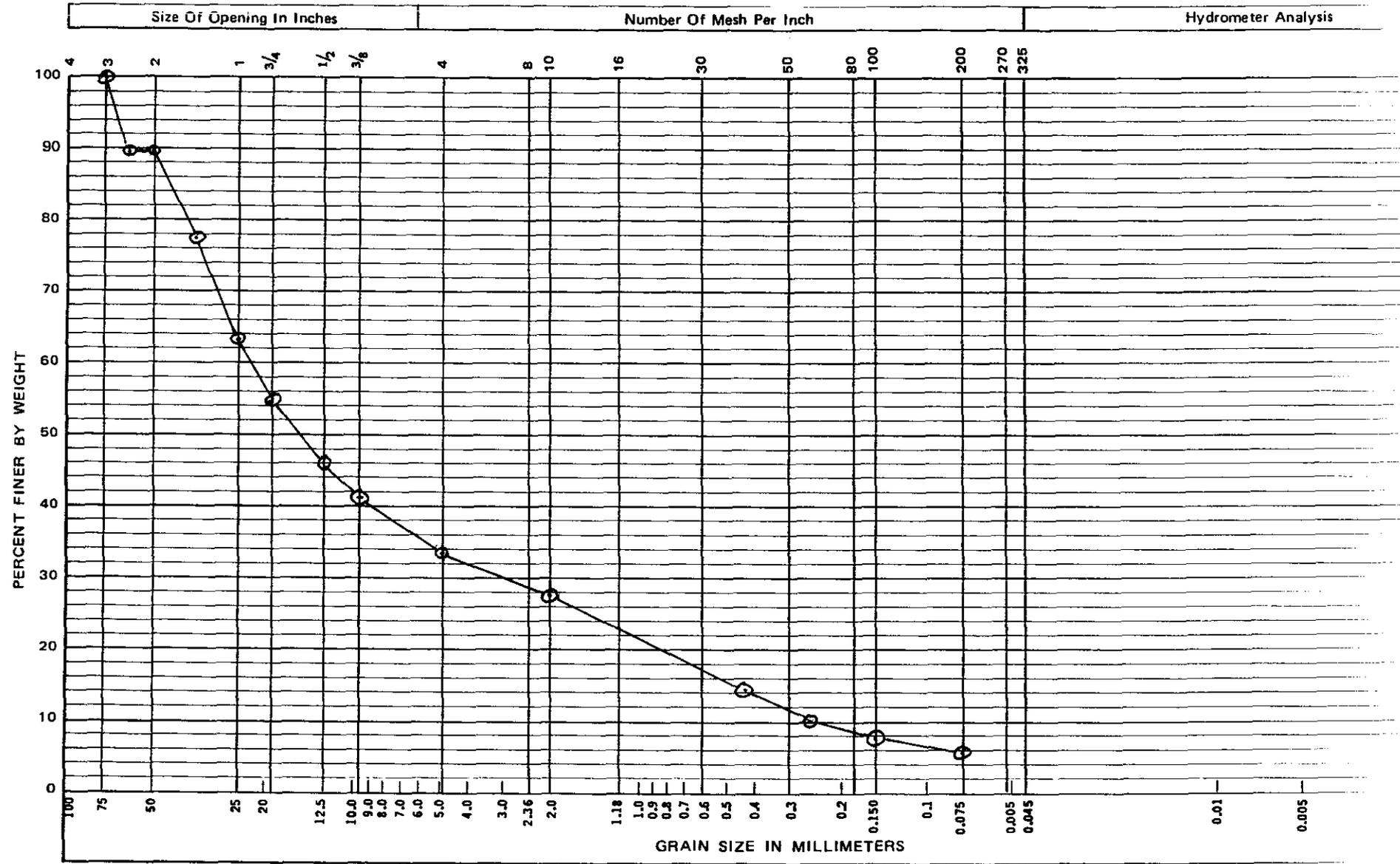
N/A FINE GRADING
SMALL FIELD
SAMPLE

ALL DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS TRAINED AND USED CALIBRATED INSTRUMENTS
 Checked By HC Berry Date 2-13-90

921211075

9 2 1 2 1 1 1 0 0 7 6

GRAIN SIZE ANALYSIS PLOT



Specimen No. D-056 Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

Sample Description: SANDY GRAVEL
MW-17-2

Plotted by: P.G. ALEXANDER
Date: 2-12-90

Checked by: H. Benny
Date: 2-13-90

Approved by: NA
Date: _____

Company Contact JW Lindberg Telephone 6-5005
 Sample Collected by DC Weekes Date 1/11/90 - 1/20/90 Time NA
 Sample Locations MW-17
 Ice Chest No. NA Field Logbook and Page No. WHC-N-306-2, p. 27-35
 Remarks CERCLA, 1100-EM-1 Operable Unit, Groundwater Monitoring Wells
 Bill of Lading No. NA Offsite Property No. NA
 Method of Shipment Hand carry
 Shipped to Verry Alexander, WHC, 2101-M Physical Testing Laboratory

Sample Identification

MW-17-1	double-lined plastic bag	
MW-17-2	" " " "	
MW-17-3	" " " "	
MW-17-4	" " " "	
MW-17-5	" " " "	
MW-17-6	" " " "	
MW-17-7	" " " "	
MW-17-8	" " " "	
MW-17-9	" " " "	
MW-17-10	" " " "	
MW-17-11	" " " "	
MW-17-12	triple-lined plastic bag	

Chain of Possession

Relinquished by: <u>DC Weekes</u> DC Weekes	Received by: <u>RG ALEXANDER</u> RG Alexander	Date/Time: <u>2-2-90 / 10:20</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

921210978

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector DC Weekes Date Sampled 1/11/90 Time NA hours

Affiliation of Sampler WHC

Address 450 Hills St. Richland WA 99352
number street city state zip

Telephone (509) 376-5005 Company Contact J.W. Lindberg

LABORATORY
SAMPLE
NUMBER

COLLECTOR'S
SAMPLE NO.

TYPE OF
SAMPLE*

FIELD INFORMATION**

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	<u>MW171</u>	<u>soil</u>	
	<u>MW172</u>	<u>"</u>	
	<u>MW173</u>	<u>"</u>	
	<u>MW174</u>	<u>"</u>	

Analysis Requested Particle Size Analysis and Moisture Contents

Special Handling and/or Storage _____

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.

921210079

RADIATION RELEASE

WELL SITE #17 DATE 01-11-90

RELEASED BY Boyd RADIATION MONITORING

REMARKS: LD B & L ON OUTSIDE OF BAG.

54-3000-022 (5-57)

MW-17-1

RADIATION RELEASE

WELL SITE #17 DATE 01-11-90

RELEASED BY Boyd RADIATION MONITORING

REMARKS: LD B & L ON OUTSIDE OF BAG.

54-3000-022 (5-57)

MW-17-2

MW-17-3

RADIATION RELEASE

WELL SITE #17 Date 01-11-90

Released By Boyd Operational Health Physics

REMARKS: LD B & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

RADIATION RELEASE

WELL SITE #17 Date 01-11-90

Released By Boyd Operational Health Physics

REMARKS: LD B & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

MW-17-4

MW-17-5

RADIATION RELEASE

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

REMARKS: LD B & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

MW-17-6

RADIATION RELEASE

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

REMARKS: LD B & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

MW-17-7 37-38

RADIATION RELEASE

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

REMARKS: LD B & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

DRILL SITE

RADIATION RELEASE

MW-17/300 Date 1/19/90

Released By Weeds Operational Health Physics

REMARKS: LD B & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

MW-17-B

TEST REQUEST FORM

Sample/Specimen No. D-057 Cost Code/Work Order No. ED-332

Requested By: Org. 80232 Person J. LUNDBERG Date 2-12-90

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>

Remarks FIELD SAMPLE
MW 17-3

Received By: R.G. ALEXANDER Date 2-2-90

Approved By: R.G. ALEXANDER Date 2-12-90

9212110381

SIEVE ANALYSIS DATA SHEET

Sample ID 0-057 Page 1 of 1

Tested By R. G. ALEXANDER Date 2-12-90

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>0007</u>	<u>8-16-90</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
N/A	2 1/2	4559.53	571.33	12.5	12.5	87.5	87.5
	2		571.33	12.5	12.5	87.5	87.5
	1 1/2		571.33	12.5	12.5	87.5	87.5
	1		1012.69	22.2	22.2	77.8	77.8
	3/4		1245.58	27.3	27.3	72.7	72.7
	1/2		1542.47	33.8	33.8	66.2	66.2
	3/8		1799.25	39.5	39.5	60.5	60.5
	#4		2012.26	44.1	44.1	55.9	55.9
	#10	4559.53	2477.84	54.3	54.3	45.7	45.7
	#40	128.74	40.57	31.5	31.5	68.5	31.5
	#60		77.68	60.3	60.3	39.7	39.7
	#100		91.73	71.3	71.3	28.7	28.7
↓	#200	↓	102.71	79.8	79.8	20.2	20.2

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 20.2 %
 D=Original Dry Weight of Sample 128.74 g
 E=Dry Weight of Sample After Washing/Sieve 102.71 g
 $C = \frac{D-E}{D} \times 100$

Remarks

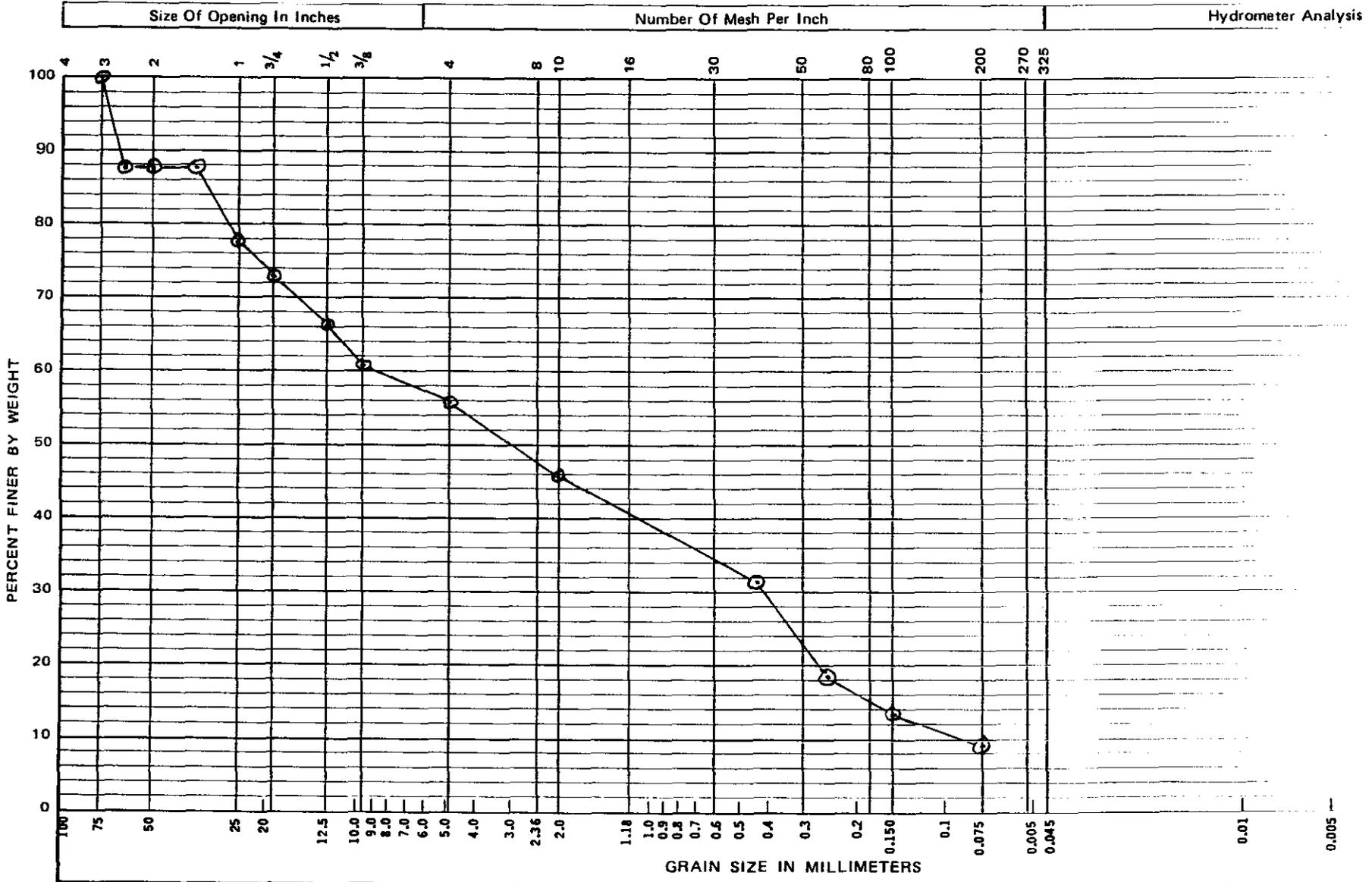
WASH FINE GRADING
SMALL FIELD
SAMPLE

ALL DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS TRAINED AND USED CALIBRATED INSTRUMENTS
 Checked By HL Benny Date 2-13-90

9212110392

9 2 1 2 1 1 0 2 3 3

GRAIN SIZE ANALYSIS PLOT



Specimen No. 0-057 Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

Sample Description: SANDY GRAVEL
MW17-3

Plotted by: R. G. ALEXANDER
Date: 2-12-90

Checked by: HLBenny
Date: 2-13-90

Approved by: NA
Date: _____

Company Contact JW Lindberg Telephone 6-5005
 Sample Collected by DC Weekes Date 1/11/90 - 1/20/90 Time NA
 Sample Locations MW-17
 Ice Chest No. NA Field Logbook and Page No. WHC-N-306-2, p. 27-35
 Remarks CERCLA, 1100-EM-1 Operable Unit, Groundwater Monitoring Wells
 Bill of Lading No. NA Offsite Property No. NA
 Method of Shipment Hand carry
 Shipped to Verry Alexander, WHC, 2101-M Physical Testing Laboratory

Sample Identification

MW-17-1	double-lined plastic bag	
MW-17-2	" " " "	
MW-17-3	" " " "	
MW-17-4	" " " "	
MW-17-5	" " " "	
MW-17-6	" " " "	
MW-17-7	" " " "	
MW-17-8	" " " "	
MW-17-9	" " " "	
MW-17-10	" " " "	
MW-17-11	" " " "	
MW-17-12	triple-lined plastic bag	

Chain of Possession

Relinquished by: <u>DC Weekes</u> DC Weekes	Received by: <u>RG ALEXANDER</u> RG Alexander	Date/Time: <u>2-2-90/10:20</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector DC Weekes Date Sampled 1/11/90 Time NA hours

Affiliation of Sampler WHC

Address 450 Hills St. Richland WA 99352
number street city state zip

Telephone (509) 376-5005 Company Contact J.W. Lindberg

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	<u>MWH1</u>	<u>soil</u>	
	<u>MWH2</u>	<u>"</u>	
	<u>MWH3</u>	<u>"</u>	
	<u>MWH4</u>	<u>"</u>	

Analysis Requested Particle Size Analysis and Moisture Contents

Special Handling and/or Storage _____

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.

9212110096

RADIATION RELEASE

WELL SITE #17 DATE 01-11-90

RELEASED BY Boyd RADIATION MONITORING

REMARKS: LD B & L ON OUTSIDE OF BAG.

54-3000-022 (5-57) MW-17-1

RADIATION RELEASE

WELL SITE #17 DATE 01-11-90

RELEASED BY Boyd RADIATION MONITORING

REMARKS: LD B & L ON OUTSIDE OF BAG.

54-3000-022 (5-57) MW-17-2

MW-17-3 RADIATION RELEASE

WELL SITE #17 Date 01-11-90

Released By Boyd Operational Health Physics

Remarks LD B & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

RADIATION RELEASE

WELL SITE #17 Date 01-11-90

Released By Boyd Operational Health Physics

Remarks LD B & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

MW-17-4 RADIATION RELEASE

MW-17-5 RADIATION RELEASE

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

Remarks LD B & L on outside of bag.

54-3000-022 (09/88)

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

Remarks LD B & L on outside of bag.

54-3000-022 (09/88)

MW-17-7 RADIATION RELEASE 37-38

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

Remarks LD B & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

RADIATION RELEASE

DRILL SITE MW-17/300 Date 1/19/90

Released By Weeds Operational Health Physics

Remarks LD B & L

54-3000-022 (09/88)

MW-17-8

7
8
9
0
1
2
3
4
5
6
7
8
9

TEST REQUEST FORM

Sample/Specimen No. D-058 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 2-12-90

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-17-4

Received By: R.G. ALEXANDER Date 2-2-90

Approved By: R.G. ALEXANDER Date 2-12-90

92121038

SIEVE ANALYSIS DATA SHEET

Sample ID 0-058 Page 1 of 1

Tested By R.G. ALEXANDER Date 2-12-90

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>0007</u>	<u>8-16-90</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>4307.37</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>100</u>	<u>100</u>
	<u>1 1/2</u>		<u>0</u>	<u>0</u>	<u>0</u>	<u>100</u>	<u>100</u>
	<u>1</u>		<u>423.80</u>	<u>9.8</u>	<u>9.8</u>	<u>91.2</u>	<u>91.2</u>
	<u>3/4</u>		<u>601.06</u>	<u>14.0</u>	<u>14.0</u>	<u>86.0</u>	<u>86.0</u>
	<u>1/2</u>		<u>817.64</u>	<u>19.0</u>	<u>19.0</u>	<u>81.0</u>	<u>81.0</u>
	<u>3/8</u>		<u>931.85</u>	<u>21.6</u>	<u>21.6</u>	<u>78.4</u>	<u>78.4</u>
	<u>#4</u>		<u>1108.54</u>	<u>25.7</u>	<u>25.7</u>	<u>74.3</u>	<u>74.3</u>
	<u>#10</u>	<u>4307.37</u>	<u>1264.26</u>	<u>29.4</u>	<u>29.4</u>	<u>70.6</u>	<u>70.6</u>
	<u>#40</u>	<u>155.49</u>	<u>30.86</u>	<u>19.8</u>	<u>19.8</u>	<u>80.2</u>	<u>56.6</u>
	<u>#60</u>		<u>106.76</u>	<u>68.7</u>	<u>68.7</u>	<u>31.3</u>	<u>22.1</u>
	<u>#100</u>		<u>131.18</u>	<u>84.4</u>	<u>84.4</u>	<u>15.6</u>	<u>11.0</u>
	<u>#200</u>		<u>142.66</u>	<u>91.7</u>	<u>91.7</u>	<u>8.3</u>	<u>5.9</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 8.3 %
 D=Original Dry Weight of Sample 15549 g
 E=Dry Weight of Sample After Washing/Sieve 14266 g
 $C = \frac{D-E}{D} \times 100$

Remarks

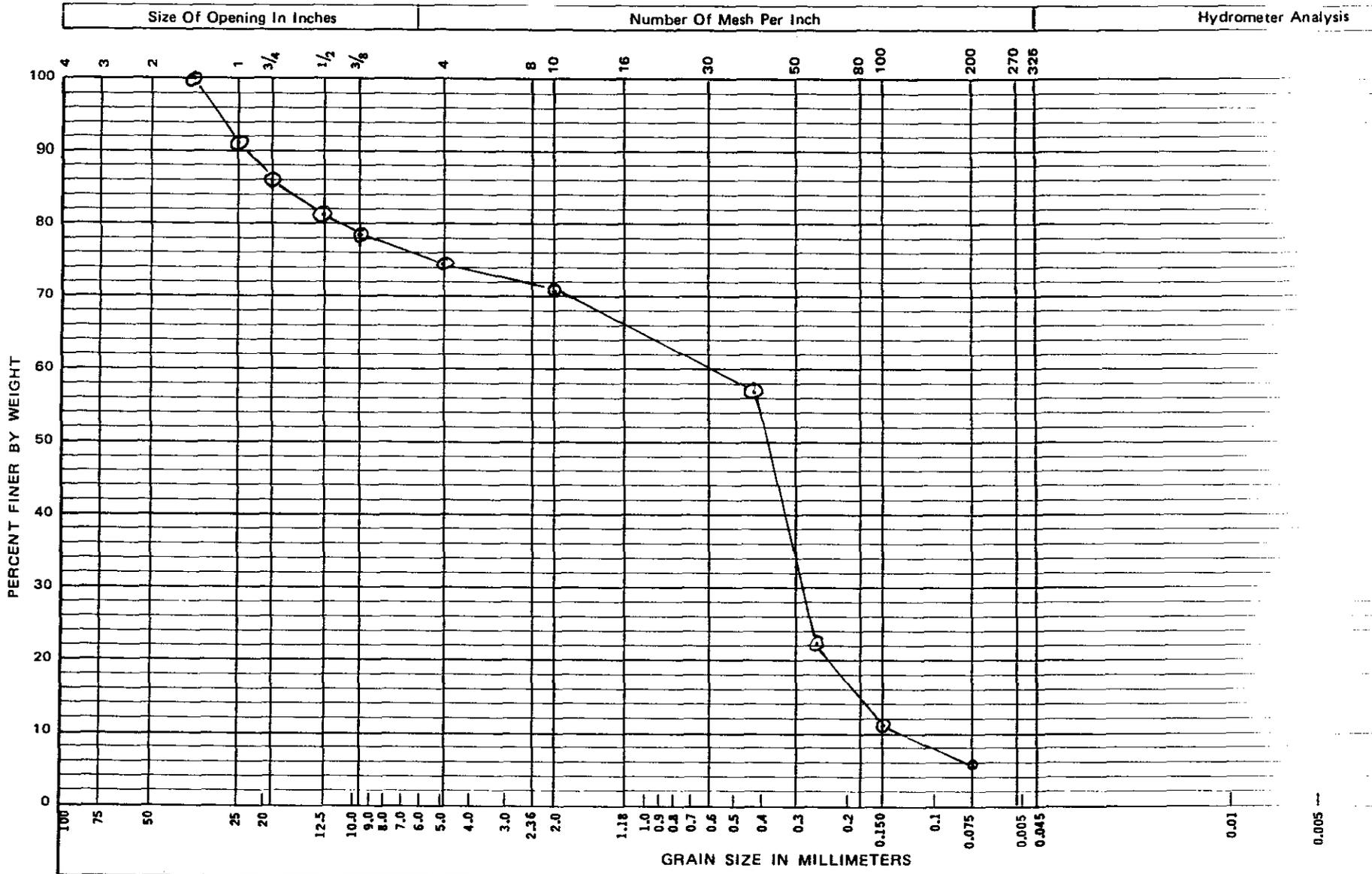
WASH FINE GRADING
SMALL FIELD SAMPLE

ALL DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS TRAINED AND USED CALIBRATED INSTRUMENTS
 Checked By HLBenn Date 2-13-90

92121110399

9 2 1 2 1 1 0 0 9 0

GRAIN SIZE ANALYSIS PLOT



Specimen No. 0-058 Procedure No. ETAC-07 Rev. 1 Date Issued 11-15-89

Sample Description: SANDY GRAVEL
MW-17-4

Plotted by: R.G. ALEXANDER
Date: 2-12-90

Checked by: HL Benny
Date: 2-13-90

Approved by: NA
Date: _____

Company Contact JW Lindberg Telephone 6-5005
 Sample Collected by DC Weekes Date 1/11/90 - 1/20/90 Time NA
 Sample Locations MW-17
 Ice Chest No. NA Field Logbook and Page No. WHC-N-306-2, p. 27-35
 Remarks CERCLA, 1100-EM-1 Operable Unit, Groundwater Monitoring Wells
 Bill of Lading No. NA Offsite Property No. NA
 Method of Shipment Hand carry
 Shipped to Verry Alexander, WHC, 2101-M Physical Testing Laboratory

Sample Identification

MW-17-1	double-lined plastic bag	
MW-17-2	" " " "	
MW-17-3	" " " "	
MW-17-4	" " " "	
MW-17-5	" " " "	
MW-17-6	" " " "	
MW-17-7	" " " "	
MW-17-8	" " " "	
MW-17-9	" " " "	
MW-17-10	" " " "	
MW-17-11	" " " "	
MW-17-12	triple-lined plastic bag	

Chain of Possession

Relinquished by: <u>DC Weekes</u> DC Weekes	Received by: <u>RG ALEXANDER</u> R.G. Alexander	Date/Time: <u>2-2-90 / 10:20</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector DC Weekes Date Sampled 7/11/90 Time NA hours

Affiliation of Sampler WHC

Address 450 Hills St. Richland WA 99352
number street city state zip

Telephone (509) 376-5005 Company Contact J.W. Lindberg

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	<u>MW11</u>	<u>Soil</u>	
	<u>MW11-2</u>	<u>"</u>	
	<u>MW11-3</u>	<u>"</u>	
	<u>MW11-4</u>	<u>"</u>	

Analysis Requested Particle Size Analysis and Moisture Contents

Special Handling and/or Storage _____

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.

921211093

RADIATION RELEASE

WELL SITE #17 DATE 01-11-90

RELEASED BY Boyd RADIATION MONITORING

REMARKS: LD B & L ON OUTSIDE OF BAG.

54-3000-022 (5-57) MW-17-1

RADIATION RELEASE

WELL SITE #17 DATE 01-11-90

RELEASED BY Boyd RADIATION MONITORING

REMARKS: LD B & L ON OUTSIDE OF BAG.

54-3000-022 (5-57) MW-17-2

MW-17-3 RADIATION RELEASE

WELL SITE #17 Date 01-11-90

Released By Boyd Operational Health Physics

Remarks LD B & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

RADIATION RELEASE

WELL SITE #17 Date 01-11-90

Released By Boyd Operational Health Physics

Remarks LD B & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

MW-17-4 RADIATION RELEASE

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

Remarks LD B & L on outside side of bag.

54-3000-022 (09/88)

MW-17-5 RADIATION RELEASE

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

Remarks LD B & L on outside of bag.

54-3000-022 (09/88)

MW-17-6 RADIATION RELEASE

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

Remarks LD B & L on outside side of bag.

54-3000-022 (09/88)

MW-17-7 RADIATION RELEASE 37-38

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

Remarks LD B & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

DRILL SITE RADIATION RELEASE

MW-17/3000 Date 1/19/90

Released By Leeders Operational Health Physics

Remarks LD B & L

MW-17-B 54-3000-022 (09/88)

TEST REQUEST FORM

Sample/Specimen No. 0-059 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 2-12-90

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>

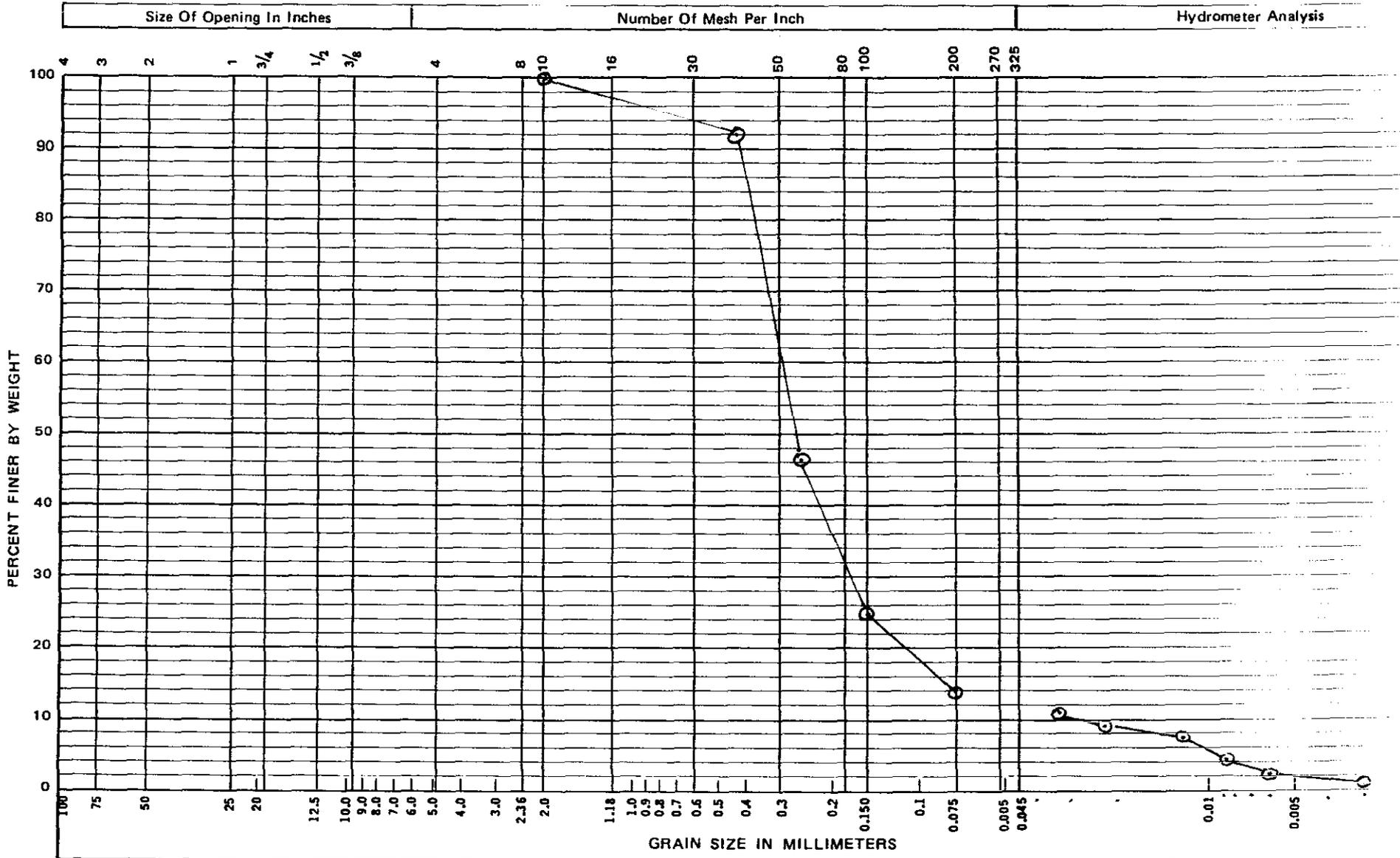
Remarks FIELD SAMPLE
MW-17-S

Received By: R.G ALEXANDER Date 2-2-90

Approved By: RG ALEXANDER Date 2-12-90

9212110795

GRAIN SIZE ANALYSIS PLOT



Specimen No 0-059 Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

<p>Sample Description: <u>SAND</u> <u>MW-17-5</u></p>	<p>Plotted by: <u>R.G ALEXANDER</u> Date: <u>2-12-90</u></p>	<p>Checked by: <u>HL Benny</u> Date: <u>2-12-90</u></p>
		<p>Approved by: <u>NA</u> Date: _____</p>

HYDROMETER ANALYSIS DATA SHEET

Sample ID 0-059

Page 1 of 1

Tested By R.G. ALEXANDER Date 3-20-90
 Procedure ETAL-07 Rev 1 Date Issued 11-15-89

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

Specific gravity of Sample 2.74

% Passing No. 10 Sieve 100 (%)

Hygroscopic Correction Factor N/A

HYGROSCOPIC MOISTURE CONTENT

Wt. Container + Air Dry Soil N/A (g)

Wt. Container + Oven Dry Soil N/A (g)

Wt. Container N/A (g)

Water Content N/A (%)

WEIGHT OF SAMPLE

Wt. Container + Soil N/A (g)

Wt. Container N/A (g)

Wt. Soil 96.67 (g)

REMARKS

COMPOSITE CORRECTION

1st Reading 5 at 23.6 °C

2nd Reading N/A at N/A °C

TUBE D

Date	Clock time	Elapsed time (min)	Hydrometer reading	Hydrometer with composite correction	Temp. (°C)	Soil in suspension (%)	Particle diameter (mm)
3-20	1002	2.0	16	11	23.8	11.2	0.033
3-20	1005	5.0	14	9	23.8	9.1	0.021
3-20	1015	15.0	12	7	23.7	7.1	0.012
3-20	1030	30.0	9	4	23.8	4.1	0.009
3-20	1100	60.0	7	2	23.7	2.0	0.006
3-20	1410	250.00	6	1	24.5	1.0	0.003
3-21	1000	1,440.0	4	1	23.2	1.0	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 J.F. Relyea Date 3-22-90

SPECIFIC GRAVITY OF SOILS DATA SHEET

Specimen/Sample No. 0-059 Page 1 of 1

Test Operator	<u>R.G ALEXANDER</u>	<u>3-6-90</u>
EQUIPMENT ITEM		
	NO.	DATE DUE
Balance	<u>3304</u>	<u>3-25-90</u>
Oven Thermometer	<u>0007</u>	<u>8-16-90</u>
Thermometer	<u>0002</u>	<u>2-9-91</u>
Pycnometer	<u>2554</u>	<u>N/A</u>

Wetting Agent "P" 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_o	Wt. Oven Dry Soil, g	<u>40.50</u>	---	---
	Pycnometer No.	<u>2554</u>	---	---
	Wt. Pycnometer, g	<u>135.20</u>	---	---
W_a	Wt. Pycnometer + Wetting Agent, g	<u>387.09</u>	---	---
W_b	Wt. Pycnometer + Wetting Agent + Soil, g	<u>412.53</u>	---	---
	Temperature, T_x at W_b , °C	<u>25.2 C</u>	---	---
G_w	Specific Gravity of Wetting Agent at T_x	<u>1.02</u>	---	---
G_t	Specific Gravity of Soil at T_x	<u>2.75</u>	---	---
G_s	Specific Gravity of Soil at 20°C	<u>2.74</u>	---	---

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

γ_w = Unit Weight Of Water (g/cc)

* $G_s = K \cdot G_t$

K values found in ASTM D854-58, Table 1

*NOTE $G_s = G_t$ When Test Run at 20 °c

Average Specific Gravity At 20°C	<u>2.74</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 H. Benny Date 3-7-90

92121700

Company Contact JW Lindberg Telephone 6-5005
 Sample Collected by DC Weekes Date 1/11/90 - 1/20/90 Time NA
 Sample Locations MW-17
 Ice Chest No. NA Field Logbook and Page No. WHC-N-306-2, p. 27-35
 Remarks CERCLA, 1100-EM-1 Operable Unit, Groundwater Monitoring Wells
 Bill of Lading No. NA Offsite Property No. NA
 Method of Shipment Hand carry
 Shipped to Verry Alexander, WHC, 2101-M Physical Testing Laboratory

Sample Identification

<u>MW-17-1 double-lined plastic bag</u>	
<u>MW-17-2 " " " "</u>	
<u>MW-17-3 " " " "</u>	
<u>MW-17-4 " " " "</u>	
<u>MW-17-5 " " " "</u>	
<u>MW-17-6 " " " "</u>	
<u>MW-17-7 " " " "</u>	
<u>MW-17-8 " " " "</u>	
<u>MW-17-9 " " " "</u>	
<u>MW-17-10 " " " "</u>	
<u>MW-17-11 " " " "</u>	
<u>MW-17-12 triple-lined plastic bag</u>	

Chain of Possession

Relinquished by: <u>DC Weekes</u> DC Weekes	Received by: <u>RG ALEXANDER</u> R.G. Alexander	Date/Time: <u>2-2-90/10:20</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

9212

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector DC Weekes Date Sampled 1/16/90-1/16/90 Time NA hours

Affiliation of Sampler WHE

Address 450 Hills St. Richland WA 99352
number street city state zip

Telephone (509) 376-5005 Company Contact J.W. Lindberg

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	<u>MW-17-5</u>	<u>Soil</u>	
	<u>MW-17-6</u>	<u>"</u>	
	<u>MW-17-7</u>	<u>"</u>	
	<u>MW-17-8</u>	<u>"</u>	

Analysis Requested MW-17-5 through MW-17-7 Particle Size Analysis and Moisture Content, MW-17-8 Particle Size Analysis

Special Handling and/or Storage _____

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.

9212110702

RADIATION RELEASE

WELL SITE #17 DATE 01-11-90

RELEASED BY Boyd RADIATION MONITORING

REMARKS: LD B & L ON OUTSIDE OF BAG.

54-3000-022 (5-57)

MW-17-1

RADIATION RELEASE

WELL SITE #17 DATE 01-11-90

RELEASED BY Boyd RADIATION MONITORING

REMARKS: LD B & L ON OUTSIDE OF BAG.

54-3000-022 (5-57)

MW-17-2

MW-17-3 RADIATION RELEASE

WELL SITE #17 Date 01-11-90

Released By Boyd Operational Health Physics

REMARKS LD B & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

RADIATION RELEASE

WELL SITE #17 Date 01-11-90

Released By Boyd Operational Health Physics

REMARKS LD B & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

MW-17-4

MW-17-6 RADIATION RELEASE

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

REMARKS LD B & L on outside side of bag.

54-3000-022 (09/88)

MW-17-5 RADIATION RELEASE

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

REMARKS LD B & L on outside of bag.

54-3000-022 (09/88)

MW-17-7 RADIATION RELEASE 37-38

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

REMARKS LD B & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

RADIATION RELEASE

DRILL SITE MW-17/3000 Date 1/19/90

Released By Weathers Operational Health Physics

REMARKS LD B & L

54-3000-022 (09/88)

MW-17-B

TEST REQUEST FORM

Sample/Specimen No. 0-060 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 2-12-90

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 17-6

Received By: R.G ALEXANDER Date 2-2-90

Approved By: R.G ALEXANDER Date 2-12-90

9212110304

SIEVE ANALYSIS DATA SHEET

Sample ID 0-060 Page 1 of 1

Tested By R.G. ALEXANDER Date 2-12-90

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

EQUIPMENT ITEM	CALIBRATION NO.	DATE DUE
Balance	<u>3804</u>	<u>3-25-90</u>
Thermometer	<u>0007</u>	<u>8-16-90</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 $\frac{B-A}{B} \times 100 = \frac{N/A}{B} \% \text{ LOSS}$

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>4534.66</u>	<u>265.54</u>	<u>5.9</u>	<u>5.9</u>	<u>94.1</u>	<u>94.1</u>
	<u>1 1/2</u>		<u>443.88</u>	<u>9.8</u>	<u>9.8</u>	<u>90.2</u>	<u>90.2</u>
	<u>1</u>		<u>794.43</u>	<u>17.5</u>	<u>17.5</u>	<u>82.5</u>	<u>82.5</u>
	<u>3/4</u>		<u>925.10</u>	<u>20.4</u>	<u>20.4</u>	<u>79.6</u>	<u>79.6</u>
	<u>1/2</u>		<u>1009.80</u>	<u>22.3</u>	<u>22.3</u>	<u>77.7</u>	<u>77.7</u>
	<u>3/8</u>		<u>1054.59</u>	<u>23.3</u>	<u>23.3</u>	<u>76.7</u>	<u>76.7</u>
	<u>#4</u>		<u>1135.29</u>	<u>25.0</u>	<u>25.0</u>	<u>75.0</u>	<u>75.0</u>
	<u>#10</u>	<u>4534.66</u>	<u>1245.51</u>	<u>27.5</u>	<u>27.5</u>	<u>72.5</u>	<u>72.5</u>
	<u>#40</u>	<u>107.89</u>	<u>59.05</u>	<u>54.7</u>	<u>54.7</u>	<u>45.3</u>	<u>32.8</u>
	<u>#60</u>		<u>80.93</u>	<u>75.0</u>	<u>75.0</u>	<u>25.0</u>	<u>18.1</u>
	<u>#100</u>		<u>89.77</u>	<u>83.2</u>	<u>83.2</u>	<u>16.8</u>	<u>12.2</u>
	<u>#200</u>		<u>95.75</u>	<u>88.7</u>	<u>88.7</u>	<u>11.3</u>	<u>8.2</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 11.3 %
 D=Original Dry Weight of Sample 107.89g
 E=Dry Weight of Sample After Washing/Sieve 95.75g
 $C = \frac{D-E}{D} \times 100$

Remarks

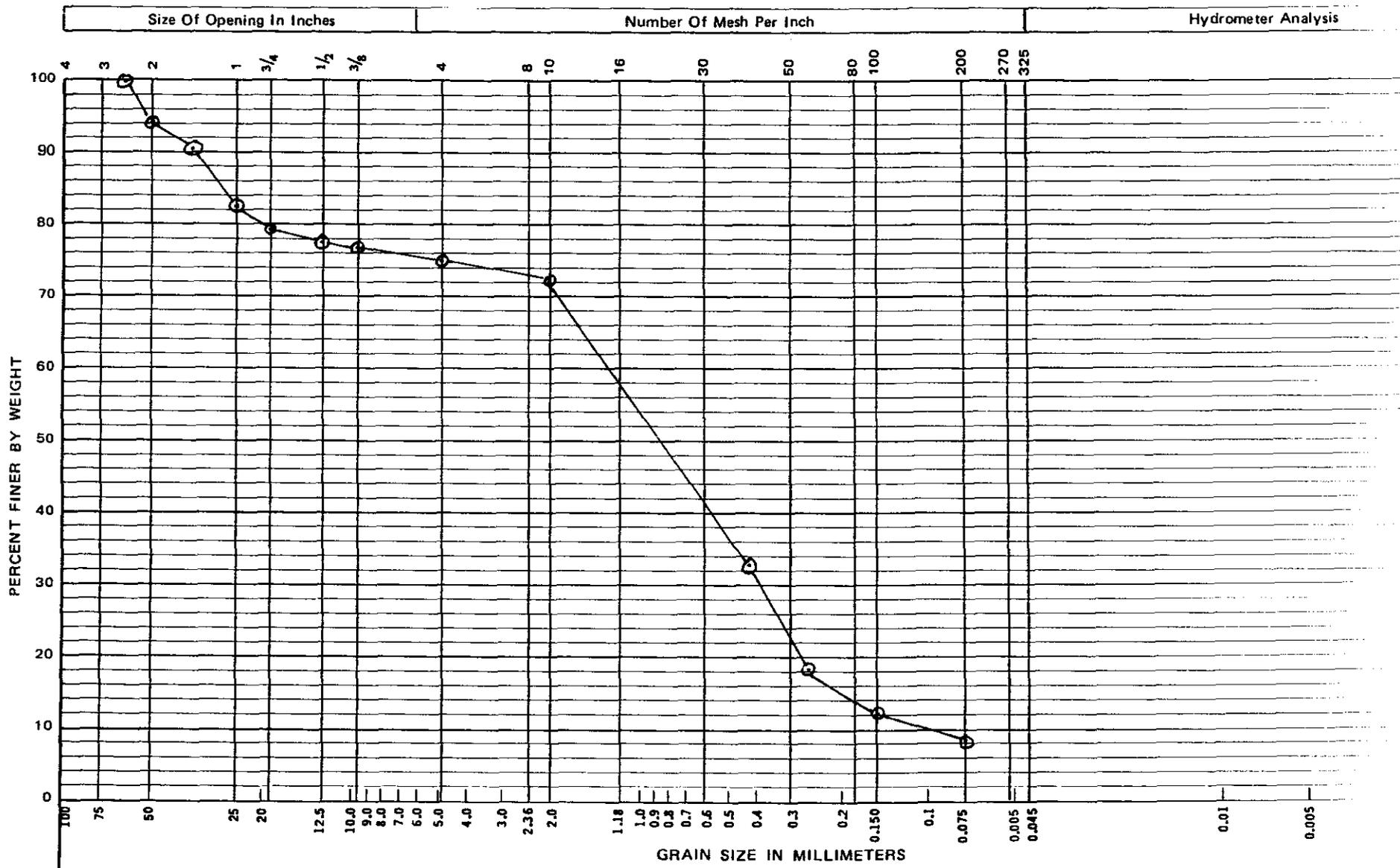
WASH FINE GRADING
SMALL FINE
SAMPLE

ALL DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS TRAINED AND USED CALIBRATED INSTRUMENTS
 Checked By HL Benny Date 02-12-90

921211305

9 2 1 2 1 1 1 0 7 0 6

GRAIN SIZE ANALYSIS PLOT



Specimen No 0-060 Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

Sample Description: SANDY GRAVEL
MW-17-G

Plotted by: R. G. ALEXANDER
Date: 2-12-90

Checked by: HL Benny
Date: 2-12-90

Approved by: N/A
Date: _____

Company Contact JW Lindberg Telephone 6-5005
 Sample Collected by DC Weekes Date 1/11/90 - 1/20/90 Time NA
 Sample Locations MW-17
 Ice Chest No. NA Field Logbook and Page No. WHC-N-306-2, p. 27-35
 Remarks CERCLA, 1100-EM-1 Operable Unit, Groundwater Monitoring Wells
 Bill of Lading No. NA Offsite Property No. NA
 Method of Shipment Hand carry
 Shipped to Verry Alexander, WHC, 2101-M Physical Testing Laboratory

Sample Identification

MW-17-1	double-lined plastic bag	
MW-17-2	" " " "	
MW-17-3	" " " "	
MW-17-4	" " " "	
MW-17-5	" " " "	
MW-17-6	" " " "	
MW-17-7	" " " "	
MW-17-8	" " " "	
MW-17-9	" " " "	
MW-17-10	" " " "	
MW-17-11	" " " "	
MW-17-12	triple-lined plastic bag	

Chain of Possession

Relinquished by: <u>DC Weekes</u> DC Weekes	Received by: <u>R.G. ALEXANDER</u> R.G. Alexander	Date/Time: <u>2-2-90 / 10:20</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

92121108

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector DC Weekes Date Sampled 1/17/80-1/18/80 Time NA hours

Affiliation of Sampler WHC

Address 450 Hills St. Richland WA 99352
number street city state zip

Telephone (509) 376-5005 Company Contact J.W. Lindberg

LABORATORY
SAMPLE
NUMBER

COLLECTOR'S
SAMPLE NO.

TYPE OF
SAMPLE*

FIELD INFORMATION**

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	<u>MW-17-5</u>	<u>Soil</u>	
	<u>MW-17-6</u>	<u>"</u>	
	<u>MW-17-7</u>	<u>"</u>	
	<u>MW-17-8</u>	<u>"</u>	

Analysis Requested MW-17-5 through MW-17-7 Particle Size Analysis and Moisture Content, MW-17-8 Particle Size Analysis

Special Handling and/or Storage _____

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.

92120909

RADIATION RELEASE

WELL SITE #17 DATE 01-11-90

RELEASED BY Boyd RADIATION MONITORING

REMARKS: LD B-8 ON OUTSIDE OF BAG.

54-3000-022 (5-57)

MW-17-1

RADIATION RELEASE

WELL SITE #17 DATE 01-11-90

RELEASED BY Boyd RADIATION MONITORING

REMARKS: LD B-8 ON OUTSIDE OF BAG.

54-3000-022 (5-57)

MW-17-2

MW-17-3 RADIATION RELEASE

WELL SITE #17 Date 01-11-90

Released By Boyd Operational Health Physics

Remarks LD B-8 ON OUTSIDE OF BAG.

54-3000-022 (09/88)

RADIATION RELEASE

WELL SITE #17 Date 01-11-90

Released By Boyd Operational Health Physics

Remarks LD B-8 ON OUTSIDE OF BAG.

54-3000-022 (09/88)

MW-17-4

MW-17-6 RADIATION RELEASE

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

Remarks LD B-8 on outside side of bag.

54-3000-022 (09/88)

MW-17-5 RADIATION RELEASE

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

Remarks LD B-8 on outside of bag.

54-3000-022 (09/88)

MW-17-7 RADIATION RELEASE 37-38

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

Remarks LD B-8 ON OUTSIDE OF BAG.

54-3000-022 (09/88)

DRILL SITE RADIATION RELEASE

MW-17/300 Date 1/19/90

Released By Weeds Operational Health Physics

Remarks LD B-2 - 1 y

54-3000-022 (09/88)

MW-17-B

01601

2

9

TEST REQUEST FORM

Sample/Specimen No. 0-001 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 2-12-90

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-17-7

Received By: R.G. ALEXANDER Date 2-2-90

Approved By: R.G. ALEXANDER Date 2-12-90

9212110711

SIEVE ANALYSIS DATA SHEET

Sample ID D-061 Page 1 of 1

Tested By R.G. ALEXANDER Date 2-12-90

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

EQUIPMENT ITEM	CALIBRATION NO.	DATE DUE
Balance	<u>3804</u>	<u>3-25-90</u>
Thermometer	<u>0007</u>	<u>8-16-90</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	4438.93	678.03	15.3	15.3	84.7	84.7
	1 1/2		943.64	21.3	21.3	78.7	78.7
	1		1360.82	30.7	30.7	69.3	69.3
	3/4		1559.12	35.1	35.1	64.9	64.9
	1/2		1757.57	39.6	39.6	60.4	60.4
	3/8		1879.37	42.3	42.3	57.7	57.7
	#4		2073.12	46.7	46.7	53.3	53.3
	#10	4438.93	2312.77	52.1	52.1	47.9	47.9
	#40	137.84	84.48	61.3	61.3	38.7	18.5
	#60		104.04	75.5	75.5	24.5	11.7
	#100		111.90	81.2	81.2	18.8	9.0
	#200		117.82	85.5	85.5	14.5	6.9

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 14.5 %
 D=Original Dry Weight of Sample 137.84 g
 E=Dry Weight of Sample After Washing/Sieve 117.82 g
 $C = \frac{D-E}{D} \times 100$

Remarks
WASH FINE
GRADING
SMALL FIELD SAMPLE

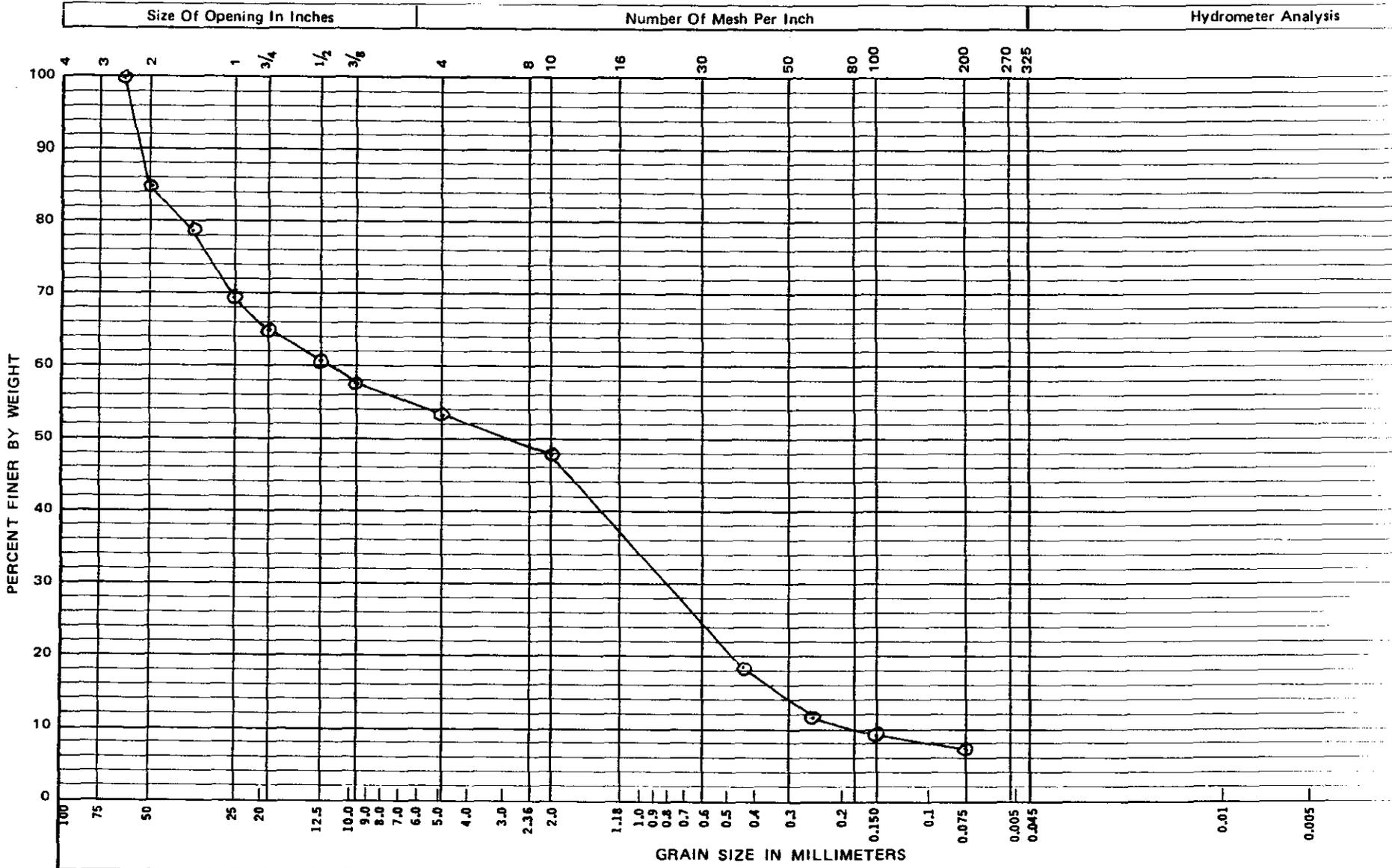
ALL DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS TRAINED AND USED CALIBRATED INSTRUMENTS

Checked By H. Benny Date 2-13-90

9212110712

9 2 1 2 1 1 0 9 1 3

GRAIN SIZE ANALYSIS PLOT



Specimen No. 0-061 Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

Sample Description: SANDY GRAVEL
SANDY RGA 2-11-90
MW 17-7

Plotted by: R.G. ALEXANDER
 Date: 2-13-90

Checked by: HC Benny
 Date: 2-13-90

Approved by: N/A
N/A
 Date: _____

Company Contact JW Lindberg Telephone 6-5005
 Sample Collected by DC Weekes Date 1/11/90 - 1/20/90 Time NA
 Sample Locations MW-17
 Ice Chest No. NA Field Logbook and Page No. WHC-N-306-2, p.27-35
 Remarks CERCLA, 1100-EM-1 Operable Unit, Groundwater Monitoring Wells
 Bill of Lading No. NA Offsite Property No. NA
 Method of Shipment Hand carry
 Shipped to Verry Alexander, WHC, 2101-M Physical Testing Laboratory

Sample Identification

9212110315

MW-17-1	double-lined plastic bag	
MW-17-2	" " " "	
MW-17-3	" " " "	
MW-17-4	" " " "	
MW-17-5	" " " "	
MW-17-6	" " " "	
MW-17-7	" " " "	
MW-17-8	" " " "	
MW-17-9	" " " "	
MW-17-10	" " " "	
MW-17-11	" " " "	
MW-17-12	triple-lined plastic bag	

Chain of Possession

Relinquished by: <u>DC Weekes</u> DC Weekes	Received by: <u>RG ALEXANDER</u> R.G. Alexander	Date/Time: <u>2-2-90/10:20</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector DC Weekes Date Sampled 1/14/90-1/16/90 Time NA hours

Affiliation of Sampler WHC

Address 450 Hills St. Richland WA 99352
number street city state zip

Telephone (509) 376-5005 Company Contact J.W. Lindberg

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	<u>MW-17-5</u>	<u>Soil</u>	
	<u>MW-17-6</u>	<u>"</u>	
	<u>MW-17-7</u>	<u>"</u>	
	<u>MW-17-8</u>	<u>"</u>	

Analysis Requested MW-17-5 through MW-17-7 Particle Size Analysis and Moisture Content, MW-17-8 Particle Size Analysis

Special Handling and/or Storage _____

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.

9212110716

RADIATION RELEASE

WELL SITE #17 DATE 01-11-90

RELEASED BY Boyd RADIATION MONITORING

REMARKS: LD B & L ON OUTSIDE OF BAG.

54-3000-022 (5-57) MW-17-1

RADIATION RELEASE

WELL SITE #17 DATE 01-11-90

RELEASED BY Boyd RADIATION MONITORING

REMARKS: LD B & L ON OUTSIDE OF BAG.

54-3000-022 (5-57) MW-17-2

MW-17-3 RADIATION RELEASE

WELL SITE #17 Date 01-11-90

Released By Boyd Operational Health Physics

Remarks LD B & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

RADIATION RELEASE

WELL SITE #17 Date 01-11-90

Released By Boyd Operational Health Physics

Remarks LD B & L ON OUTSIDE OF BAG.

MW-17-4 54-3000-022 (09/88)

MW-17-5 RADIATION RELEASE

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

Remarks LD B & L on outside of bag.

54-3000-022 (09/88)

MW-17-6 RADIATION RELEASE

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

Remarks LD B & L on out-side of bag.

54-3000-022 (09/88)

MW-17-7 37-38 RADIATION RELEASE

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

Remarks LD B & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

DRILL SITE RADIATION RELEASE

MW-17/3000 Date 1/19/90

Released By Leed Operational Health Physics

Remarks LD B & L

MW-17-8 54-3000-022 (09/88)

TEST REQUEST FORM

Sample/Specimen No. 0-062 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 2-13-90

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-17-B

Received By: R.G. ALEXANDER Date 2-2-90

Approved By: R.G. ALEXANDER Date 2-13-90

9212110718

SIEVE ANALYSIS DATA SHEET

Sample ID 0-067 Page 1 of 1

Tested By R.G. ALEXANDER Date 2-13-90

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>0007</u>	<u>8-16-90</u>
N/A	<u>N/A</u>	<u>N/A</u>

Sample Description SILTY SAND Sieve Time 10 (min)

reduced by splitting quartering stockpile

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

Sieve ID Number	Sieve Size	Sample Weight	Cumulative Wt. Retained (g)	% Retained	Cumulative % Retained	Cumulative % Pass	% Pass
<u>N/A</u>							
	<u>3/8</u>	<u>160.18</u>	<u>∅</u>	<u>∅</u>	<u>∅</u>	<u>100</u>	<u>100</u>
	<u>#4</u>		<u>3.62</u>	<u>2.3</u>	<u>2.3</u>	<u>97.7</u>	<u>97.7</u>
	<u>*10</u>		<u>4.86</u>	<u>3.0</u>	<u>3.0</u>	<u>97.0</u>	<u>97.0</u>
	<u>#40</u>		<u>11.64</u>	<u>7.3</u>	<u>7.3</u>	<u>92.7</u>	<u>92.7</u>
	<u>#60</u>		<u>17.05</u>	<u>10.6</u>	<u>10.6</u>	<u>89.4</u>	<u>89.4</u>
	<u>#100</u>		<u>24.17</u>	<u>15.1</u>	<u>15.1</u>	<u>84.9</u>	<u>84.9</u>
	<u>#200</u>		<u>61.92</u>	<u>38.7</u>	<u>38.7</u>	<u>61.3</u>	<u>61.3</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 61.3 %
 D=Original Dry Weight of Sample 160.18 g
 E=Dry Weight of Sample After Washing/Sieve 61.92 g
 $C = \frac{D-E}{D} \times 100$

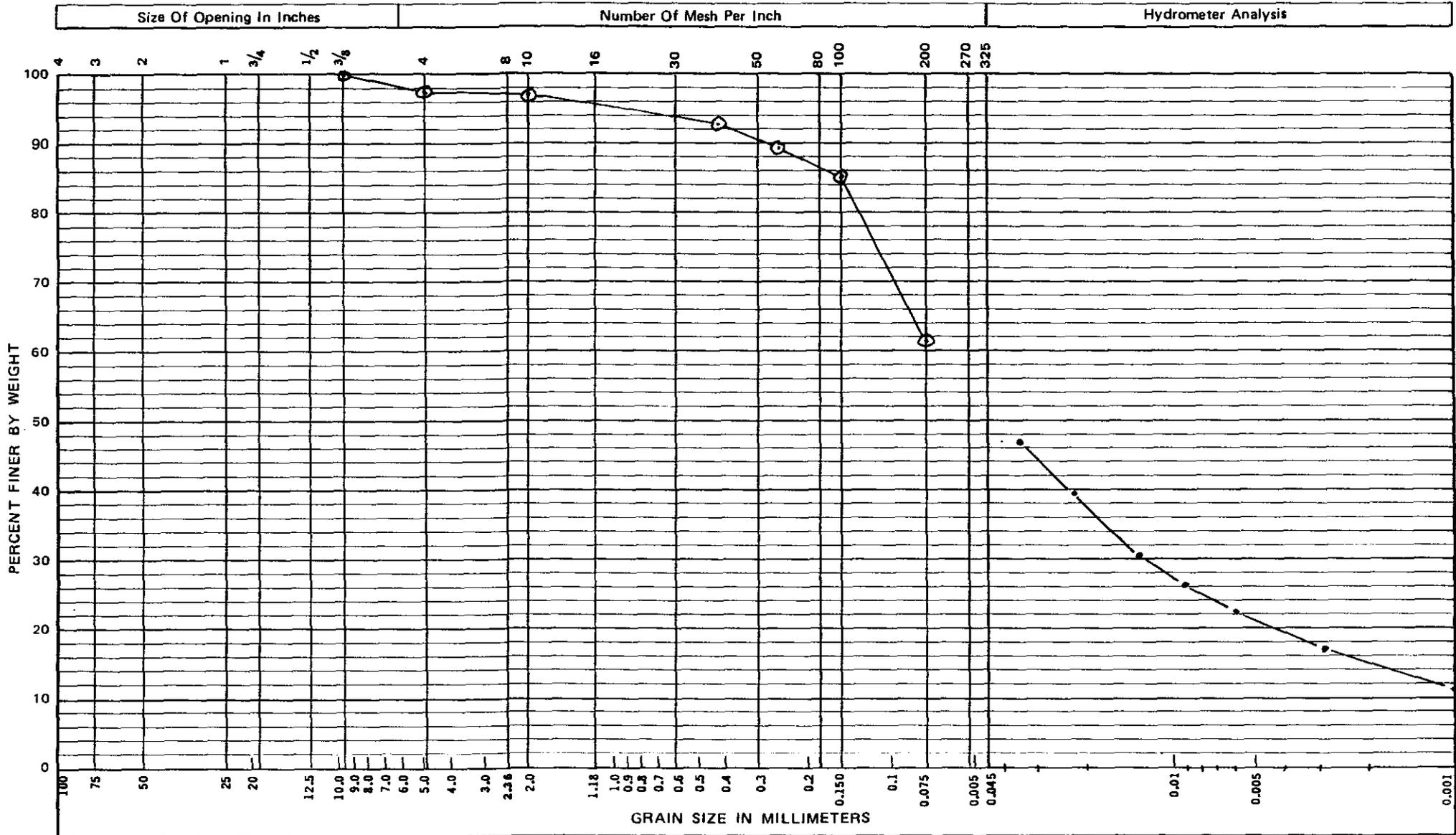
Remarks
WASH FINE GRADING

ALL DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS TRAINED AND USED CALIBRATED INSTRUMENTS
 Checked By H. Benny Date 2/13/90

92120111

9 2 1 2 1 1 0 7 0

GRAIN SIZE ANALYSIS PLOT



Specimen No. 0-062 Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-99

Sample Description: SILTY SAND
MW 17-8

Plotted by: RG ALEXANDER
Date: 2-13-90

Checked by: HL Benny
Date: 2-13-90

HYDROMETER ANALYSIS DATA SHEET

Sample ID 0-062

Page 1 of 1

Tested By HL Benny Date 2-25-90
 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 2.59
 % Passing No. 10 Sieve 97.0 (%)
 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 51.99 (g)

REMARKS

Tube D
w = 53.60

COMPOSITE CORRECTION

1st Reading 6 at 23.8 °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>2-25-90</u>	<u>0852</u>	<u>2.0</u>	<u>31</u>	<u>25</u>	<u>23.6</u>	<u>47.1</u>	<u>0.032</u>
	<u>0855</u>	<u>5.0</u>	<u>27</u>	<u>21</u>	<u>23.6</u>	<u>39.6</u>	<u>0.021</u>
	<u>0905</u>	<u>15.0</u>	<u>22</u>	<u>HLB 3-2-90 26.16</u>	<u>23.1</u>	<u>30.2</u>	<u>0.012</u>
	<u>0920</u>	<u>30.0</u>	<u>20</u>	<u>14</u>	<u>22.9</u>	<u>26.4</u>	<u>0.009</u>
	<u>0950</u>	<u>60.0</u>	<u>18</u>	<u>12</u>	<u>22.4</u>	<u>22.6</u>	<u>0.006</u>
	<u>1300</u>	<u>250.00</u>	<u>15</u>	<u>9</u>	<u>21.9</u>	<u>17.0</u>	<u>0.003</u>
<u>2-26-90</u>	<u>0850</u>	<u>1,440.0</u>	<u>12</u>	<u>6</u>	<u>21.4</u>	<u>11.3</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. Alexander Date 3-6-90

9212117321

Company Contact JW Lindberg Telephone 6-5005
 Sample Collected by DC Weekes Date 1/11/90 - 1/20/90 Time NA
 Sample Locations MW-17
 Ice Chest No. NA Field Logbook and Page No. WHC-N-306-2, p. 27-35
 Remarks CERCLA, 1100-EM-1 operable Unit, Groundwater Monitoring Wells
 Bill of Lading No. NA Offsite Property No. NA
 Method of Shipment Hand carry
 Shipped to Verry Alexander, WHC, 2101-M Physical Testing Laboratory

Sample Identification

MW-17-1	double-lined plastic bag	
MW-17-2	" " " "	
MW-17-3	" " " "	
MW-17-4	" " " "	
MW-17-5	" " " "	
MW-17-6	" " " "	
MW-17-7	" " " "	
MW-17-8	" " " "	
MW-17-9	" " " "	
MW-17-10	" " " "	
MW-17-11	" " " "	
MW-17-12	triple-lined plastic bag	

Chain of Possession

Relinquished by: <u>DC Weekes</u> DC Weekes	Received by: <u>RG ALEXANDER</u> R.G. Alexander	Date/Time: <u>2-2-90 / 10:20</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector DC Weekes Date Sampled 1/14/90-1/16/90 Time NA hours

Affiliation of Sampler WHC

Address 450 Hills St. Richland WA 99352
number street city state zip

Telephone (509) 376-5005 Company Contact J.W. Lindberg

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	<u>MW-17-5</u>	<u>Soil</u>	
	<u>MW-17-6</u>	<u>"</u>	
	<u>MW-17-7</u>	<u>"</u>	
	<u>MW-17-8</u>	<u>"</u>	

Analysis Requested MW-17-5 through MW-17-7 Particle Size Analysis and Moisture Content, MW-17-8 Particle Size Analysis

Special Handling and/or Storage _____

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.

9212110725

RADIATION RELEASE

WELL SITE #17 DATE 01-11-90

RELEASED BY Boyd RADIATION MONITORING

REMARKS: LD B & L ON OUTSIDE OF BAG.

54-3000-022 (5-57)

MW-17-1

RADIATION RELEASE

WELL SITE #17 DATE 01-11-90

RELEASED BY Boyd RADIATION MONITORING

REMARKS: LD B & L ON OUTSIDE OF BAG.

54-3000-022 (5-57)

MW-17-2

MW-17-3 RADIATION RELEASE

WELL SITE #17 Date 01-11-90

Released By Boyd Operational Health Physics

Remarks LD B & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

RADIATION RELEASE

WELL SITE #17 Date 01-11-90

Released By Boyd Operational Health Physics

Remarks LD B & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

MW-17-4

MW-17-6 RADIATION RELEASE

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

Remarks LD B & L on outside side of bag.

54-3000-022 (09/88)

MW-17-5 RADIATION RELEASE

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

Remarks LD B & L on outside of bag.

54-3000-022 (09/88)

DRILL SITE RADIATION RELEASE

MW-17/3000 Date 1/19/90

Released By Leed Operational Health Physics

Remarks LD B-2 - 1 &

54-3000-022 (09/88)

MW-17-B

MW-17-7 RADIATION RELEASE 37-38

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

Remarks LD B & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

TEST REQUEST FORM

Sample/Specimen No. 0-063 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 2-13-90

Test Requested	No. of Samples	Test Lab Information (Instruction Used)
<u>HYDRAULIC CONDUCTIVITY</u>	<u>1</u>	<u>ETAL-09</u>
<u>ATTORBERG LIMITS</u>	<u>1</u>	<u>ETAL-18</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-17-9

Received By: R.G. ALEXANDER Date 2-2-90

Approved By: R.G. ALEXANDER Date 2-13-90

9212110127

SAMPLE PREPARATION

Determine Weight of Samples in Container

Container No.	55
Wt. of Sample + Container, g	465.08
Wt. of Container, g	120.56
Wt. of Sample, g	344.52

Determine the Water Content of the "Air Dry" Sample

Container No.	55
Wt. Container & Wet Soil (A), g	465.08
Wt. Container & Dry Soil (B), g	373.36
Wt. of Water, g	91.72
Wt. of Container (C), g	120.56
Wt. of Dry Soil, W _s , g	252.80
Water Content (W), %	36.28

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

SAMPLE COMPONENT	SPECIFIC GRAVITY, G	LABORATORY NOTEBOOK DATA LOCATION
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

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 H L Benny Date 2-22-90

9212

PLASTIC INDEX SOILS DATA SHEET

Sample No. 0-063

Page 1 of 2

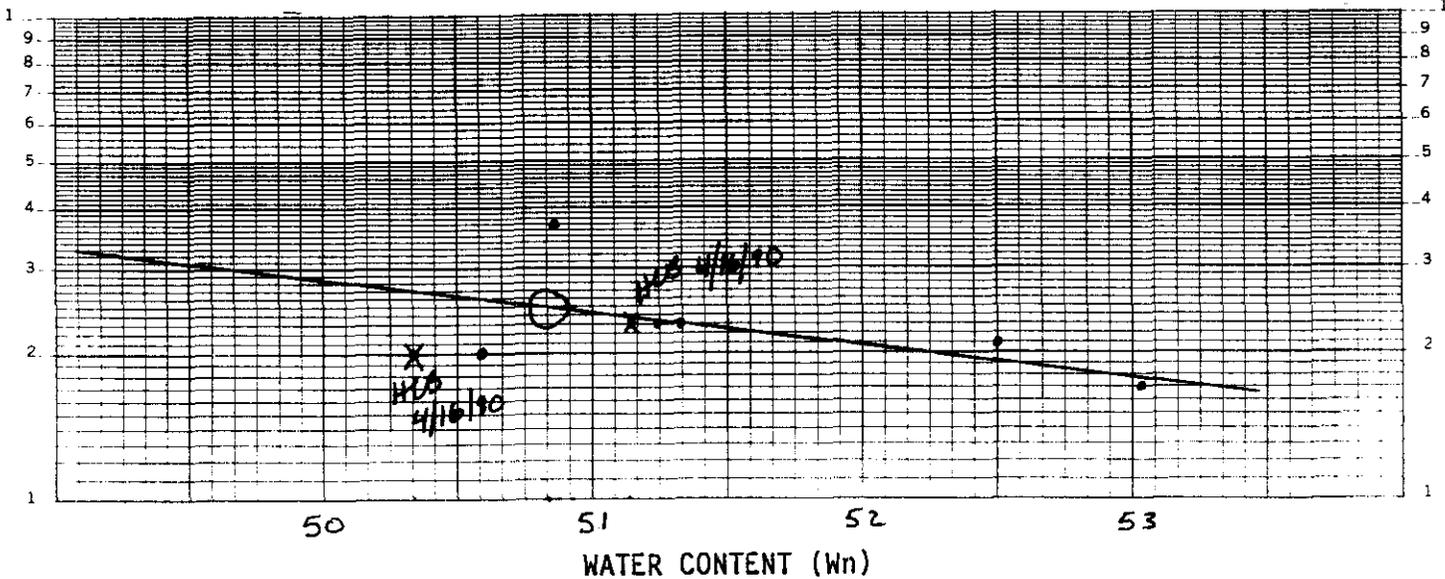
Test Operator HL Benny

Date 4/9/90

Thermometer No. 0007

Calibration Date 8/16/90

NUMBER OF DROPS (N)



Liquid Limit (LL) 50.83 Graph

Plastic Limit (PL) 41.43 (Avg.)

Liquid Limit (LL) NA One Point

Moisture (PL) 43.29% 40.80% 40.21%

Moisture (LL) 50.83%

Plastic Index (PI)* 9.40

*PI = LL - PL

Remarks _____

ALL DATA ARE ACCURATELY AND COMPLETELY RECORDED. LAB 4/14/90
 THE TEST OPERATOR WAS APPROPRIATELY TRAINED AND UTILIZED
 CALIBRATED TEST INSTRUMENTS. APPROVED TEST PROCEDURES WERE
 FOLLOWED TO PRODUCE THIS DATA.

Company Contact JW Lindberg Telephone 6-5005
 Sample Collected by DC Weekes Date 1/11/90 - 1/20/90 Time NA
 Sample Locations MW-17
 Ice Chest No. NA Field Logbook and Page No. WHC-N-306-2, p. 27-35
 Remarks CERCLA, 1100-EM-1 Operable Unit, Groundwater Monitoring Wells
 Bill of Lading No. NA Offsite Property No. NA
 Method of Shipment Hand carry
 Shipped to Jerry Alexander, WHC, 2101-M Physical Testing Laboratory

Sample Identification

9
2
1
2
1
1
3
3
5

MW-17-1	double-lined plastic bag	
MW-17-2	" " " "	
MW-17-3	" " " "	
MW-17-4	" " " "	
MW-17-5	" " " "	
MW-17-6	" " " "	
MW-17-7	" " " "	
MW-17-8	" " " "	
MW-17-9	" " " "	
MW-17-10	" " " "	
MW-17-11	" " " "	
MW-17-12	triple-lined plastic bag	

Chain of Possession

Relinquished by: <u>DC Weekes</u> DC Weekes	Received by: <u>RG ALEXANDER</u> RG Alexander	Date/Time: <u>2-2-90 / 10:20</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector DC Weekes Date Sampled 1/19/90-1/24/90 Time NA hours

Affiliation of Sampler WHC

Address 450 Hills St. Richland WA 99352
number street city state zip

Telephone (509) 376-5005 Company Contact J. W. Lindberg

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	<u>MW17-9</u>	<u>Soil</u>	
	<u>MW17-10</u>	<u>"</u>	
	<u>MW17-11</u>	<u>"</u>	
	<u>MW17-12</u>	<u>"</u>	

Analysis Requested MW17-9 Permeability and Atterberg Limits,
MW17-10 through MW-17-12 Particle Size Analysis

Special Handling and/or Storage MW-17-9 does not have liner.

Permeability must be done with flexible wall permeameter or must be cored.

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.

9212110936

RADIATION RELEASE

WELL SITE #17 DATE 01-11-90

RELEASED BY Boyd RADIATION MONITORING

REMARKS: LD B⁻ & L ON OUTSIDE OF BAG.

54-3000-022 (5-57) MW-17-1

RADIATION RELEASE

WELL SITE #17 DATE 01-11-90

RELEASED BY Boyd RADIATION MONITORING

REMARKS: LD B⁻ & L ON OUTSIDE OF BAG.

54-3000-022 (5-57) MW-17-2

MW-17-3 RADIATION RELEASE

WELL SITE #17 Date 01-11-90

Released By Boyd Operational Health Physics

REMARKS LD B⁻ & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

RADIATION RELEASE

WELL SITE #17 Date 01-11-90

Released By Boyd Operational Health Physics

REMARKS LD B⁻ & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

MW-17-5 RADIATION RELEASE

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

REMARKS LD B⁻ & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

MW-17-6 RADIATION RELEASE

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

REMARKS LD B⁻ & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

MW-17-7 RADIATION RELEASE 37-38

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

REMARKS LD B⁻ & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

DRILL SITE RADIATION RELEASE

MW-17/3000 Date 1/19/90

Released By Leed Operational Health Physics

REMARKS LD B⁻ & L

54-3000-022 (09/88)

MW-17-9 RADIATION RELEASE

MW-17 Date 01-20-90

Released By Boyd Operational Health Physics

REMARKS LD B⁻ & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

MW-17-8 RADIATION RELEASE

MW-17 Date 01-20-90

Released By Boyd Operational Health Physics

REMARKS LD B⁻ & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

921237

TEST REQUEST FORM

Sample/Specimen No. 0004 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 2-13-90

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 (INFR)</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-17-10

Received By: R. G. ALEXANDER Date 2-2-90

Approved By: R. G. ALEXANDER Date 2-13-90

9212110038

SIEVE ANALYSIS DATA SHEET

Sample ID 0-064 Page 1 of 1

Tested By R.G. ALEXANDER Date 2-13-90

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>0007</u>	<u>8-16-90</u>
N/A	N/A	N/A

Sample Description SILTY SAND Sieve Time 10 (min)

reduced by splitting quartering stockpile

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

Sieve ID Number	Sieve Size	Sample Weight	Cumulative Wt. Retained (g)	% Retained	Cumulative % Retained	Cumulative % Pass	% Pass
N/A							
	# 4	129.01	0	0	0	100	100
	# 10		0.74	0.6	0.6	99.4	99.4
	# 40		20.31	15.7	15.7	84.3	84.3
	# 60		33.80	26.2	26.2	73.8	73.8
	# 100		42.66	33.1	33.1	66.9	66.9
	# 200		52.97	41.1	41.1	58.9	58.9

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 58.9 %
 D=Original Dry Weight of Sample 129.01 g
 E=Dry Weight of Sample After Washing/Sieve 52.97 g
 $C = \frac{D-E}{D} \times 100$

Remarks
WASH FINE GRADING

ALL DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS TRAINED AND USED CALIBRATED INSTRUMENTS
 Checked By H. Berry Date 2-13-90

9212110739

HYDROMETER ANALYSIS DATA SHEET

Sample ID 0-064

Page 1 of 1

Tested By HL Benny Date 2-25-90
 Procedure ETAL-07 Rev 1 Date Issued 11-15-89

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 2.49

% Passing No. 10 Sieve 99.4 (%)

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 50.00 (g)

REMARKS

Tube E
W = 50.30

COMPOSITE CORRECTION

1st Reading 6 at 23.8 °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)
2-25-90	0940	2.0	35	29	23.8	59.4	0.031
	0943	5.0	30	24	23.8	49.1	0.021
	0953	15.0	25	19	23.4	38.9	0.012
	1008	30.0	21	15	22.8	30.7	0.009
	1038	60.0	14	8	22.3	16.4	0.007
✓	1348	250.00	11	5	22.3	10.2	0.003
2-26-90	0938	1,440.0	9	3	21.7	6.1	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 3-6-90

9212110040

SPECIFIC GRAVITY OF SOILS DATA SHEET

 Specimen/Sample No. 0-064

 Page 1 of 1

Test Operator <u>RG ALEXANDER</u>	<u>2-28-90</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 _o Wt. Oven Dry Soil, g	40.00	---	---
Pycnometer No.	2554		
Wt. Pycnometer, g	135.72	---	---
W _a Wt. Pycnometer + Wetting Agent, g	387.01	---	---
W _b Wt. Pycnometer + Wetting Agent + Soil, g	411.02	---	---
Temperature, T _x at W _b , °C	24.00		
G _w Specific Gravity of Wetting Agent at T _x	1.00	---	---
G _t Specific Gravity of Soil at T _x	2.50	---	---
G _s Specific Gravity of Soil at 20°C	2.49	↓	↓

* GRAY/TAN SILTY SAND

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

 Y_w = Unit Weight Of Water (g/cc)

$$*G_s = K \cdot G_t$$

K values found in ASTM D854-58, Table 1

 *NOTE G_s = G_t When Test Run at 20 °c

Average Specific Gravity At 20°C	<u>2.49</u>
----------------------------------	-------------

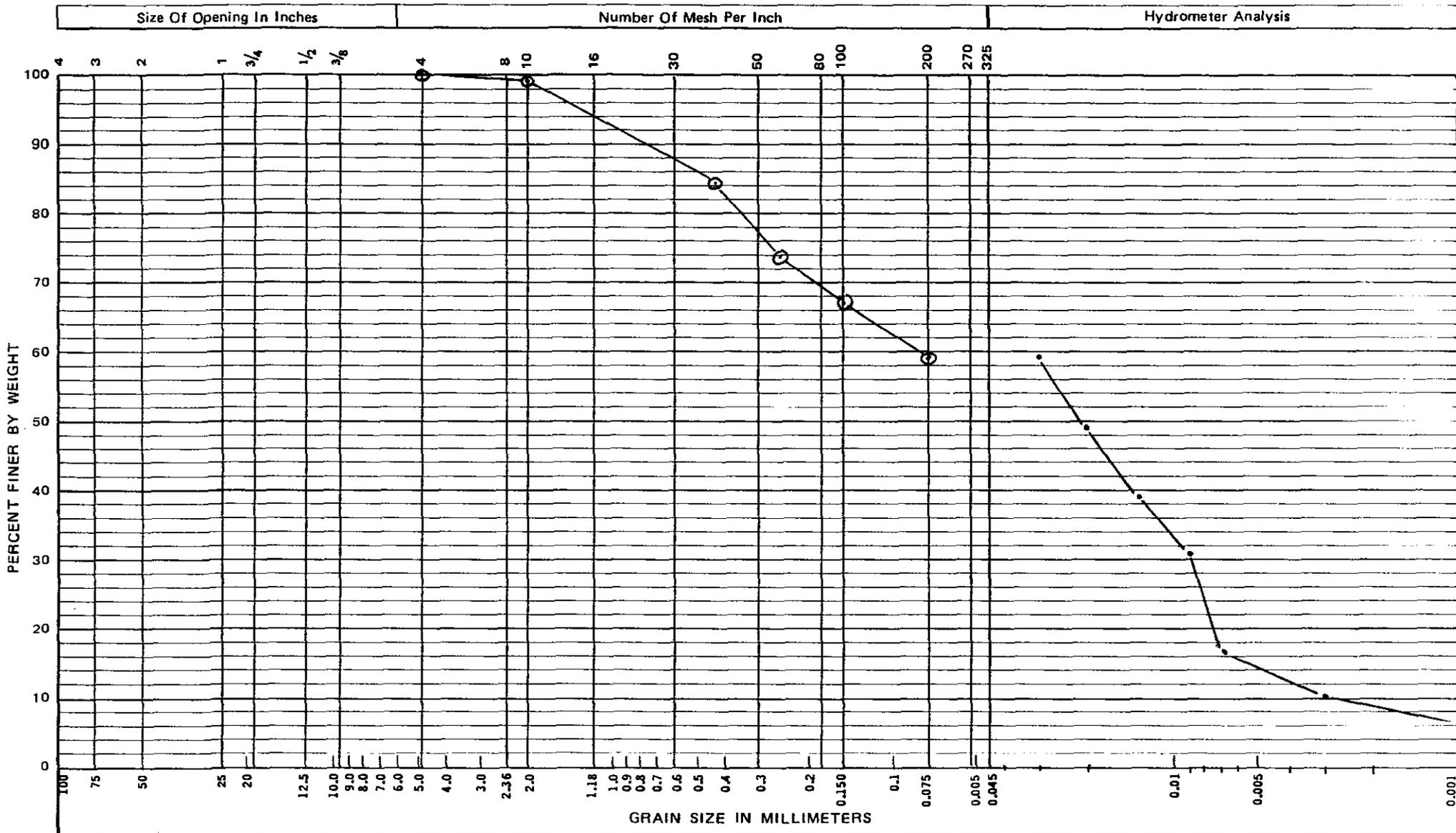
ALL REQUIRED DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS APPROPRIATELY TRAINED AND UTILIZED CALIBRATED TEST INSTRUMENTS AS INDICATED ABOVE. APPROVED TEST PROCEDURES WERE FOLLOWED TO PRODUCE THE ABOVE DATA.

Checked By HL Benny Date 3-1-90

9212110341

9 2 1 2 1 1 0 2 4 2

GRAIN SIZE ANALYSIS PLOT



Specimen No. 0-064 Procedure No. ETK-07 Rev. 1 Date Issued 11-15-89

<p>Sample Description: <u>SILTY SAND</u> <u>MW 17-10</u></p>	<p>Plotted by: <u>R.G. ALEXANDER</u> Date: <u>2-13-90</u></p>	<p>Checked by: <u>HLBenny</u> Date: <u>2-13-90</u></p>
--	---	--

Company Contact JW Lindberg Telephone 6-5005
 Sample Collected by DC Weekes Date 1/11/90 - 1/20/90 Time NA
 Sample Locations MW-17
 Ice Chest No. NA Field Logbook and Page No. WHC-N-306-2, p. 27-35
 Remarks CERCLA, 1100-EM-1 Operable Unit, Groundwater Monitoring Wells
 Bill of Lading No. NA Offsite Property No. NA
 Method of Shipment Hand carry
 Shipped to Verry Alexander, WHC, 2101-M Physical Testing Laboratory

Sample Identification

MW-17-1	double-lined plastic bag	
MW-17-2	" " " "	
MW-17-3	" " " "	
MW-17-4	" " " "	
MW-17-5	" " " "	
MW-17-6	" " " "	
MW-17-7	" " " "	
MW-17-8	" " " "	
MW-17-9	" " " "	
MW-17-10	" " " "	
MW-17-11	" " " "	
MW-17-12	triple-lined plastic bag	

Chain of Possession

Relinquished by: <u>DC Weekes</u> DC Weekes	Received by: <u>R.G. ALEXANDER</u> R.G. Alexander	Date/Time: <u>2-2-90 / 10:20</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

9212110744

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector DC Weekes Date Sampled 1/19/90-1/20/90 Time NA hours

Affiliation of Sampler WHC

Address 450 Hills St. Richland WA 99352
number street city state zip

Telephone (509) 376-5005 Company Contact J. W. Lindberg

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	<u>MW17-9</u>	<u>Soil</u>	
	<u>MW17-10</u>	<u>"</u>	
	<u>MW17-11</u>	<u>"</u>	
	<u>MW17-12</u>	<u>"</u>	

Analysis Requested MW17-9 Permeability and Atterberg Limits,
MW17-10 through MW-17-12 Particle Size Analysis

Special Handling and/or Storage MW-17-9 does not have liner.

Permeability must be done with flexible wall permeameter or must be cored.

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.

9212110945

RADIATION RELEASE

WELL SITE #17 DATE 01-14-90

RELEASED BY Boyd RADIATION MONITORING

REMARKS: <D B' & L ON OUTSIDE OF BAG.

54-3000-022 (5-57) MW-17-1

RADIATION RELEASE

WELL SITE #17 DATE 01-14-90

RELEASED BY Boyd RADIATION MONITORING

REMARKS: <D B' & L ON OUTSIDE OF BAG.

54-3000-022 (5-57) MW-17-2

MW-17-3 RADIATION RELEASE

WELL SITE #17 Date 01-11-90

Released By Boyd Operational Health Physics

Remarks <D B' & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

RADIATION RELEASE

WELL SITE #17 Date 01-11-90

Released By Boyd Operational Health Physics

Remarks <D B' & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

MW-17-5 RADIATION RELEASE

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

Remarks <D B' & L on outside of bag.

54-3000-022 (09/88)

MW-17-6 RADIATION RELEASE

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

Remarks <D B' & L on outside of bag.

54-3000-022 (09/88)

MW-17-7 RADIATION RELEASE 37-38

WELL #17 Date 01-12-90

Released By Boyd Operational Health Physics

Remarks <D B' & L ON OUTSIDE OF BAG.

54-3000-022 (09/88)

DRILL SITE RADIATION RELEASE

MW-17/3000 Date 1/19/96

Released By Weidman Operational Health Physics

Remarks <D B' & L

54-3000-022 (09/88)

MW-17-9 RADIATION RELEASE

MW-17 Date 01-20-90

Released By Boyd Operational Health Physics

Remarks <D B' & L on outside of bag.

54-3000-022 (09/88)

MW-17-10 RADIATION RELEASE

MW-17 Date 01-20-90

Released By Boyd Operational Health Physics

Remarks <D B' & L on outside of bag.

54-3000-022 (09/88)

9212130246

TEST REQUEST FORM

Sample/Specimen No. 0-065 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 2-13-90

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 17-11

Received By: R.G. ALEXANDER Date 2-2-90

Approved By: R.G. ALEXANDER Date 2-13-90

9212100247

SIEVE ANALYSIS DATA SHEET

Sample ID 0-065 Page 1 of 1

Tested By R.G. ALEXANDER Date 2-13-90

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

EQUIPMENT ITEM	CALIBRATION NO.	DATE DUE
Balance	3304	3-25-90
Thermometer	0007	8-16-90
N/A	N/A	N/A

Sample Description SILTY SAND Sieve Time 10 (min)

reduced by splitting quartering stockpile

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

Sieve ID Number	Sieve Size	Sample Weight	Cumulative Wt. Retained (g)	% Retained	Cumulative % Retained	Cumulative % Pass	% Pass
N/A							
	# 10	128.84	0	0	0	100	100
	# 40		2.71	2.1	2.1	97.9	97.9
	# 60		54.57	42.4	42.4	57.6	57.6
	# 100		93.89	72.9	72.9	27.1	27.1
	# 200		110.35	85.6	85.6	14.4	14.4

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 14.4%
 D=Original Dry Weight of Sample 128.84 g
 E=Dry Weight of Sample After Washing/Sieve 110.35g
 $C = \frac{D-E}{D} \times 100$

Remarks

WASH FINE GRADING

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

Checked By HL Benny Date 2-13-90

9212110748

HYDROMETER ANALYSIS DATA SHEET

Sample ID 0-065

Page 1 of 1

Tested By HL Benny Date 2-25-90
 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 2.61

% Passing No. 10 Sieve 100 (%)

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 100.00 (g)

REMARKS

Tube F

W = 100.00

COMPOSITE CORRECTION

1st Reading 6 at 23.8 °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)
2-25-90	1000	2.0	23	17	23.8	17.2	0.033
	1003	5.0	20	14	23.7	14.1	0.022
	1013	15.0	17	11	23.4	11.1	0.013
	1028	30.0	15	9	23.1	9.1	0.009
	1058	60.0	14	8 8	22.4	8.1	0.006
<u>Y</u>	1408	250.00	13	7	22.6	7.1	0.003
2-26-90	0958	1,440.0	10	4	21.6	4.0	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 3-6-90

92121149

SPECIFIC GRAVITY OF SOILS DATA SHEET

 Specimen/Sample No. 0-065

 Page 1 of 1

Test Operator <u>R. G. ALEXANDER</u>	<u>2-28-90</u>
<u>EQUIPMENT ITEM</u>	<u>NO.</u>
<u>DATE DUE</u>	
Balance	3304
Oven Thermometer	0007
Thermometer	0002
Pycnometer	2554
	3-25-90
	8-16-90
	2-9-91
	N/A

 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 _o	Wt. Oven Dry Soil, g	40.00	---	---
	Pycnometer No.	2554		
	Wt. Pycnometer, g	135.72	---	---
W _a	Wt. Pycnometer + Wetting Agent, g	387.09	---	---
W _b	Wt. Pycnometer + Wetting Agent + Soil, g	411.81	---	---
	Temperature, T _x at W _b , °C	25.00		
G _w	Specific Gravity of Wetting Agent at T _x	1.00	---	---
G _t	Specific Gravity of Soil at T _x	2.62	---	---
G _s	Specific Gravity of Soil at 20°C	2.61	↓	↓

* GRAY/TAN SILTY SAND

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

 γ_w = Unit Weight Of Water (g/cc)

 *G_s = K · G_t

K values found in ASTM D854-58, Table 1

 *NOTE G_s = G_t When Test Run at 20 °C

Average Specific Gravity At 20°C	<u>2.61</u>
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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.

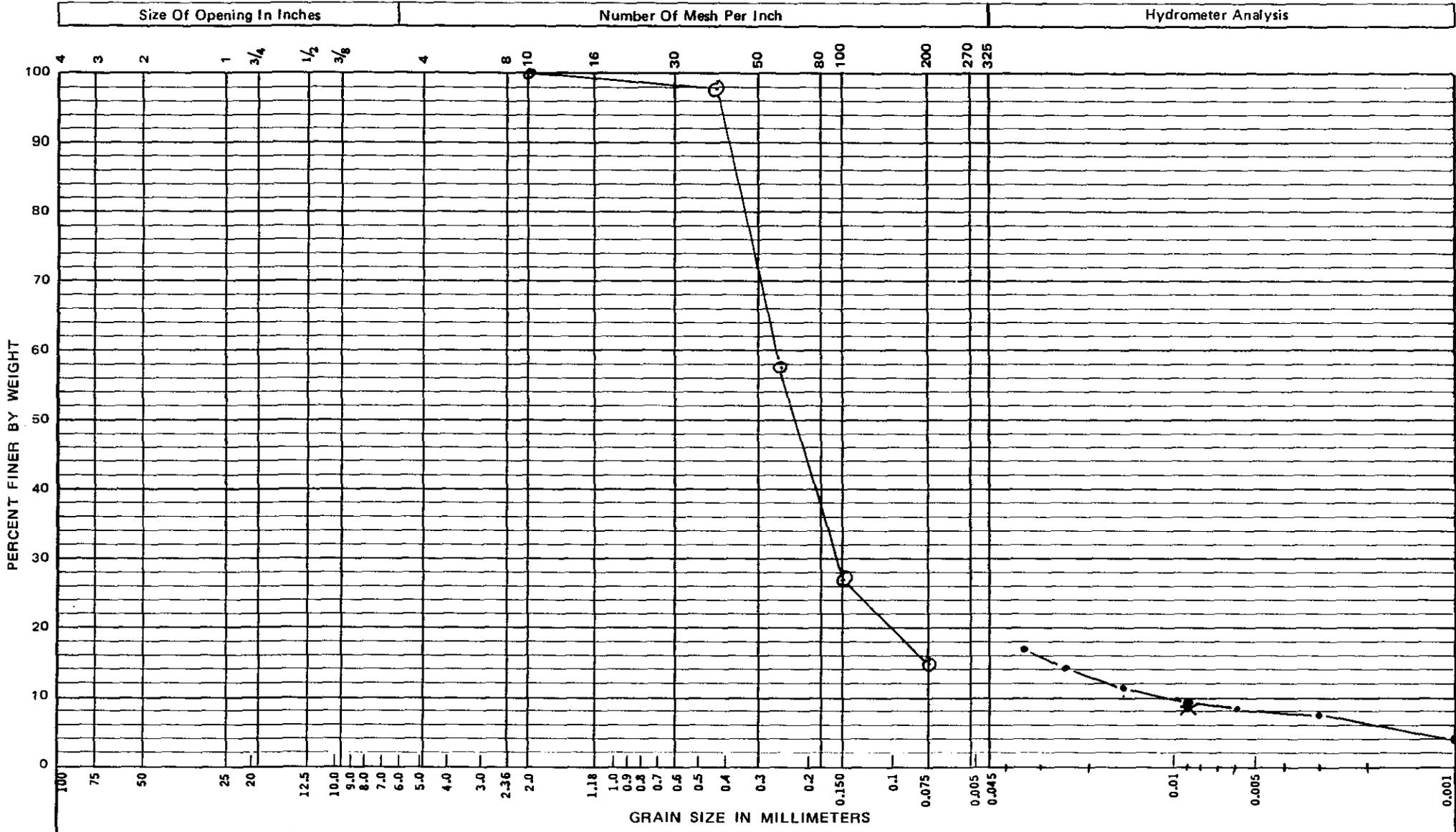
 Checked By HL Benny

 Date 3-1-90

9212110750

9 2 1 2 1 1 0 9 5 1

GRAIN SIZE ANALYSIS PLOT



Specimen No. 0-065 Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

<p>Sample Description: <u>SILTY SAND</u> <u>MW 17-11</u></p>	<p>Plotted by: <u>R.G. ALEXANDER</u> Date: <u>2-13-90</u></p>	<p>Checked by: <u>HC Benny</u> Date: <u>2-13-90</u></p>
--	---	---

Company Contact JW Lindberg Telephone 6-5005

Sample Collected by DC Weekes Date 1/11/90 - 1/20/90 Time NA

Sample Locations MW-17

Ice Chest No. NA Field Logbook and Page No. WHC-N-306-2, p.27-35

Remarks CERCLA, 1100-EM-1 Operable Unit, Groundwater Monitoring Wells

Bill of Lading No. NA Offsite Property No. NA

Method of Shipment Hand carry

Shipped to Jerry Alexander, WHC, 2101-M Physical Testing Laboratory

Sample Identification

MW-17-1	double-lined plastic bag	
MW-17-2	" " " "	
MW-17-3	" " " "	
MW-17-4	" " " "	
MW-17-5	" " " "	
MW-17-6	" " " "	
MW-17-7	" " " "	
MW-17-8	" " " "	
MW-17-9	" " " "	
MW-17-10	" " " "	
MW-17-11	" " " "	
MW-17-12	triple-lined plastic bag	

9212
1053

Chain of Possession

Relinquished by: <u>DC Weekes</u> DC Weekes	Received by: <u>RG ALEXANDER</u> RG Alexander	Date/Time: <u>2-2-90/10:20</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector DC Weekes Date Sampled 1/19/90-1/24/90 Time NA hours

Affiliation of Sampler WHC

Address 450 Hills St. Richland WA 99352
number street city state zip

Telephone (509) 376-5005 Company Contact J. W. Lindberg

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	<u>MW17-9</u>	<u>Soil</u>	
	<u>MW17-10</u>	<u>"</u>	
	<u>MW17-11</u>	<u>"</u>	
	<u>MW17-12</u>	<u>"</u>	

Analysis Requested MW17-9 Permeability and afterberg Limits,
MW17-10 through MW-17-12 Particle Size Analysis

Special Handling and/or Storage MW-17-9 does not have liner.
Permeability must be done with flexible wall permeameter or must be cored.

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.

921210954

110-112

RADIATION RELEASE

MW-17 Date 01-20-90

Released By Dept Operational Health Physics

Remarks DP's on outside of bag

MW-17-11

MW SURVEYED BY RM FOR SHIPMENT

Dose rate - side of container _____ mr-hr

Max. dose rate through the container _____ mr-hr

Dose rate to handle container _____ mr-hr

Dose rate at nearest approach on conveyance _____ mr-hr

External contamination ID

SWP and RSR required Yes No

SURVEYED BY _____

DATE 1-20-90

64-6800-009(1-86)

921210255

TEST REQUEST FORM

Sample/Specimen No. 0-066 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. ANDBERG Date 2-13-90

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-17-12

Received By: R.G. ALEXANDER Date 2-2-90

Approved By: R.G. ALEXANDER Date 2-13-90

9212110756

Westinhouse Hanford Company

CHAIN OF CUSTODY

Company Contact JW Lindberg Telephone 6-5005
 Sample Collected by DC Weekes Date 1/11/90 - 1/20/90 Time NA
 Sample Locations MW-17
 Ice Chest No. NA Field Logbook and Page No. WHC-N-306-2, p.27-35
 Remarks CERCLA, 1100-EM-1 Operable Unit, Groundwater Monitoring Wells
 Bill of Lading No. NA Offsite Property No. NA
 Method of Shipment Hand carry
 Shipped to Verry Alexander, WHC, 2101-M Physical Testing Laboratory

Sample Identification

9212

MW-17-1	double-lined plastic bag	
MW-17-2	" " " "	
MW-17-3	" " " "	
MW-17-4	" " " "	
MW-17-5	" " " "	
MW-17-6	" " " "	
MW-17-7	" " " "	
MW-17-8	" " " "	
MW-17-9	" " " "	
MW-17-10	" " " "	
MW-17-11	" " " "	
MW-17-12	triple-lined plastic bag	

Chain of Possession

Relinquished by: <u>DC Weekes</u> DC Weekes	Received by: <u>RG ALEXANDER</u> RG Alexander	Date/Time: <u>2-2-90 / 10:20</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector DC Weekes Date Sampled 1/19/90-1/24/90 Time NA hours

Affiliation of Sampler WHC

Address 450 Hills St. Richland WA 99352
number street city state zip

Telephone (509) 376-5005 Company Contact J. W. Lindberg

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	<u>MW17-9</u>	<u>Soil</u>	
	<u>MW17-10</u>	<u>"</u>	
	<u>MW17-11</u>	<u>"</u>	
	<u>MW17-12</u>	<u>"</u>	

Analysis Requested MW17-9 Permeability and atterberg Limits,
MW17-10 through MW-17-12 Particle Size Analysis

Special Handling and/or Storage MW-17-9 does not have liner.

Permeability must be done with flexible wall permeameter or must be cored.

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.

9212110761

110-112

RADIATION RELEASE

MW-17 Date 01-20-90

Released By Dept Operational Health Physics

Remarks DP-8 on outside of

MW-17-11

MW SURVEYED BY RM FOR SHIPMENT

Dose rate - side of container _____ mr-hr

Max. dose rate through the container 0.05 _____ mr-hr

Dose rate to handle container _____ mr-hr

Dose rate at nearest approach on conveyance <D _____ mr-hr

External contamination _____

SWP and RSR required Yes No

SURVEYED BY _____

DATE 1-20-90

54-6800-009(1-86)

9212110362