TEST REQUEST FORM

Sample/Specimen No. 9-079 Cost Code/Work Order No. ED332

Requested By: Org. 80832 Person J. LINDBERG Date 12-12-89

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

Remarks FIELD SAMPLE MW-15-1

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

Approved By: R.G ALEXANDER Date 12-13-89

SIEVE ANALYSIS DATA SHEET

Sample ID 9-079 Page 1 of 1

Tested By RG ALEXANDER Date 12-13-89

Procedure ETAL-07 Rev 0 Date Issued 11-15-89

EQUIPMENT ITEM	CALIBRATION NO.	DATE DUE
Balance	3304	~~12-13-89~~ RGA 12-13-89
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) (A)

BEFORE TEST WT. N/A AFTER TEST WT. N/A $\frac{B-A}{B}$ X 100 = N/A % LOSS

Sieve ID Number	Sieve Size	Sample Weight	Cumulative Wt. Retained (g)	% Retained	Cumulative % Retained	Cumulative % Pass	% Pass
N/A	2	4796.93	397.02	8.3	8.3	91.7	91.7
	1½		793.94	16.6	16.6	83.4	83.4
	1		1324.07	27.6	27.6	72.4	72.4
	¾		1780.81	37.1	37.1	62.9	62.9
	½		1964.08	40.9	40.9	59.1	59.1
	⅜		2258.65	47.1	47.1	52.9	52.9
	#4		2399.02	50.0	50.0	50.0	50.0
	#10	4796.93	2563.47	53.4	53.4	46.6	46.6
	#40	152.31	68.16	44.8	44.8	55.2	25.7
	#60		103.18	67.7	67.7	32.3	15.1
	#100		115.21	75.6	75.6	24.4	11.4
	#200		124.70	81.9	81.9	18.1	8.4

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 N/A %

D=Original Dry Weight of Sample N/A g

E=Dry Weight of Sample After Drying N/A g

C = <(D-E)/D> X 100

Remarks WASH FINE GRADING

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

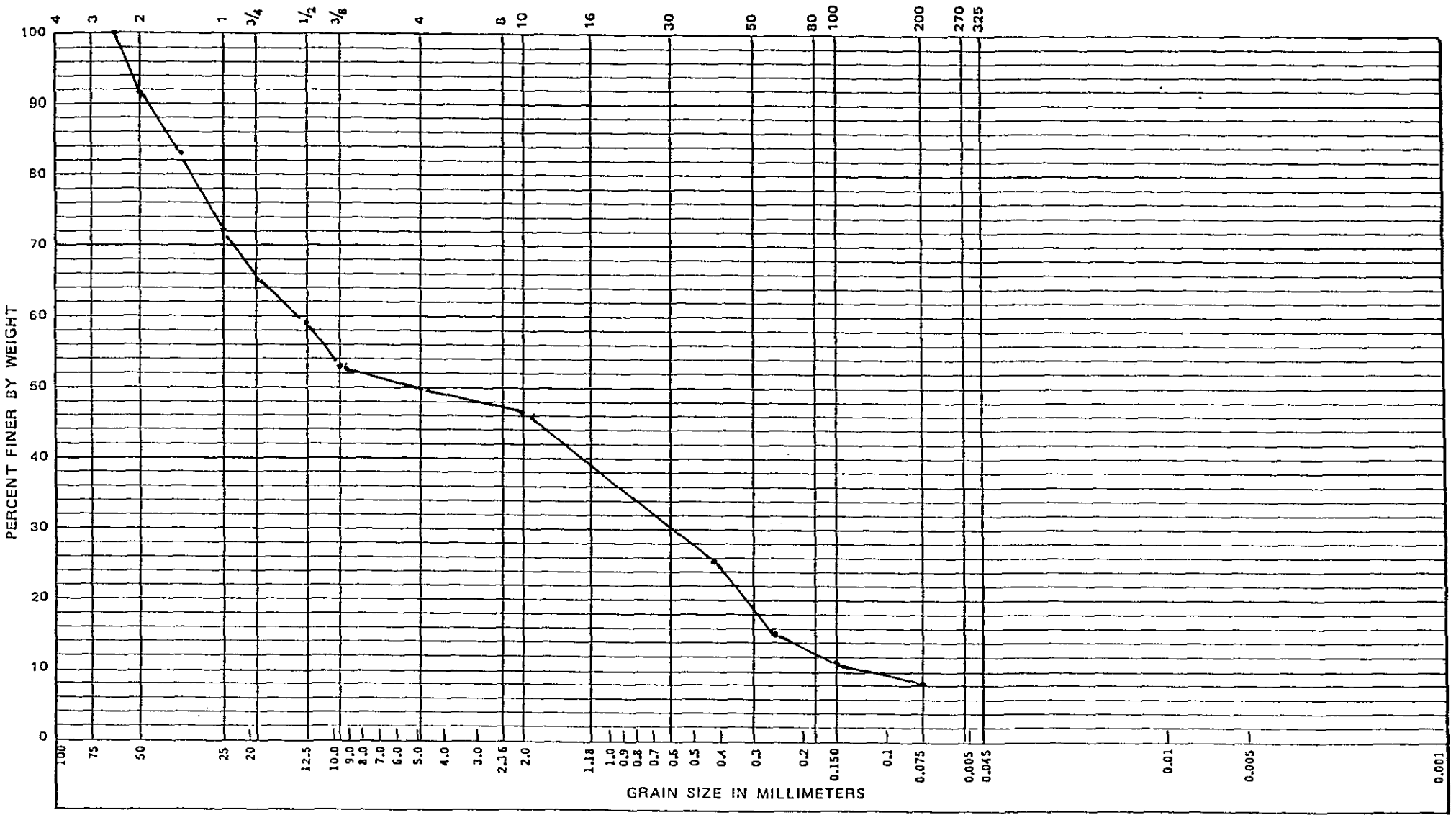
Checked By J Pelyea Date 15 Dec 89

A-6400-204(2-87)

9212273

9212 0774

GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-079 Procedure No. ETAL-07 Rev. Ø Date Issued 11-15-89

Sample Description: SANDY GRAVEL
MW-15-1

Plotted by: R.G ALEXANDER
Date: 12-14-89

Checked by: J.F Relyea
Date: 15-Dec 89

BD-6400-136 (9-85)

SOIL MOISTURE DATA SHEET

PROCEDURE NO. ETAL-14 REV. NO. 0

THERMOMETER NO. 0006 CALIBRATION DUE DATE 2-6-90

SAMPLE NO.	WET WT. + CAN	DRY WT. + CAN	CAN WT.	WET WT. SOIL	DRY WT. SOIL	% WATER
9-079	5462.05	5374.99	578.06	4883.99	4796.93	1.82

ALL REQUIRED DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS APPROPRIATELY TRAINED AND TEST PROCEDURES FOLLOWED TO PRODUCE THE ABOVE DATA

TEST OPERATOR: R.G ALEXANDER DATE 12-14-89

Westinghouse
Hanford Company

CHAIN OF CUSTODY

Company Contact: JON LINDBERG Telephone 6-5005

Sample Collected by: Weekes / Anderson & Lindberg Date: Dec. 11, 1989 Time: Variable

Sample Locations: Horn Rapids Landfill, 1100-EM-1, MW-15

Ice Chest No.: NA Field Logbook & Page No.: WHC-N-306-2 pages 15-20

Remarks: Samples collected at MW-15 from 11/21/89 to 12/1/89

Bill of Lading No.: NA Off Site Property No.: NA

Method of Shipment: Hand Carry

Shipped to: Jerry Alexander Bldg. 2101-M Physical Testing Laboratory

Sample Identification	
MW-15-1	Plastic Bags
MW-15-2	Plastic Bags
MW-15-3	Plastic Bags
MW-15-4	Plastic Bags
MW-15-5	Plastic Bags
MW-15-6	Plastic Bags
MW-15-7	Plastic Bags
MW-15-9	Plastic Bags
MW-15-10	Plastic Bags
MW-15-11	Plastic Bags
MW-15-12	Plastic Bags
~~MW-15-13~~	~~JW Lindberg 12-11-89~~ JW Lindberg

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
JW Lindberg JW Lindberg	RG Hyland	12-12-89/0630
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

FVR\071889-B

9212100775

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector Weekes/Anderson/Lindberg Date Sampled 11-21-89 to 11-28-89 Time Variable Hours

Affiliation of Sampler Westinghouse/Golder

Address Richland, WA
number street city state zip

Telephone (509) 376-5005 Company Contact Jon Lindberg

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	MW-1 to MW-5	Soil	Retained in plastic bags

Analysis Requested Sieve/Hydrometer Analysis ASTM-D-422 and Moisture ASTM-D-2216

Special Handling and/or Storage Please report any breaks in plastic bags that may affect moisture.

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.

Revision 0
Date September 1986

RADIATION RELEASE

Bldg. Hora Rapids Date 11-21-89

Released By M Caseland
Operational Health Physics

Remarks 5' Sample

MW-15-1

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Hora Rapids Date 11-21-89

Released By M Caseland
Operational Health Physics

Remarks 10' Sample

MW-15-2

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Hora Rapids Date 11-22-89

Released By M Caseland
Operational Health Physics

Remarks 15' Sample

MW-15-3

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Hora Rapids Date 11-22-89

Released By M Caseland
Operational Health Physics

Remarks Sample @ 20'

MW-15-4

54-3000-022 (09/88)

TEST REQUEST FORM

Sample/Specimen No. 9-080 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 12-13-89

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

Remarks FIELD SAMPLE MW-15-2

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

Approved By: RG ALEXANDER Date 12-13-89

SIEVE ANALYSIS DATA SHEET

Sample ID 9-080 Page 1 of 1

Tested By R.G. ALEXANDER Date 12-13-89

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

EQUIPMENT ITEM	CALIBRATION NO.	DATE DUE
Balance	3304	12-28-89
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) (A)
BEFORE TEST WT. N/A AFTER TEST WT. N/A $\frac{B-A}{B}$ x 100 = N/A % LOSS

Sieve ID Number	Sieve Size	Sample Weight	Cumulative Wt. Retained (g)	% Retained	Cumulative % Retained	Cumulative % Pass	% Pass
N/A	2	4827.64	Ø	Ø	Ø	100	100
	1½		163.01	3.4	3.4	96.6	96.6
	1		620.71	12.9	12.9	87.1	87.1
	¾		854.28	17.7	17.7	82.3	82.3
	½		1353.20	28.0	28.0	72.0	72.0
	⅜		1637.82	33.9	33.9	66.1	66.1
	#4		2131.35	44.1	44.1	55.9	55.9
	#10	4827.64	2632.15	54.5	54.5	45.5	45.5
	#40	151.96	87.31	57.5	57.5	42.5	19.3
	#60		112.92	74.3	74.3	25.7	11.7
	#100		122.50	80.6	80.6	19.4	8.8
	#200		130.68	86.0	86.0	14.0	6.4

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 N/A %

D=Original Dry Weight of Sample N/A g

E=Dry Weight of Sample After Drying N/A g

C = <(D-E)/D> X 100

Remarks
WASH FINE GRADING

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

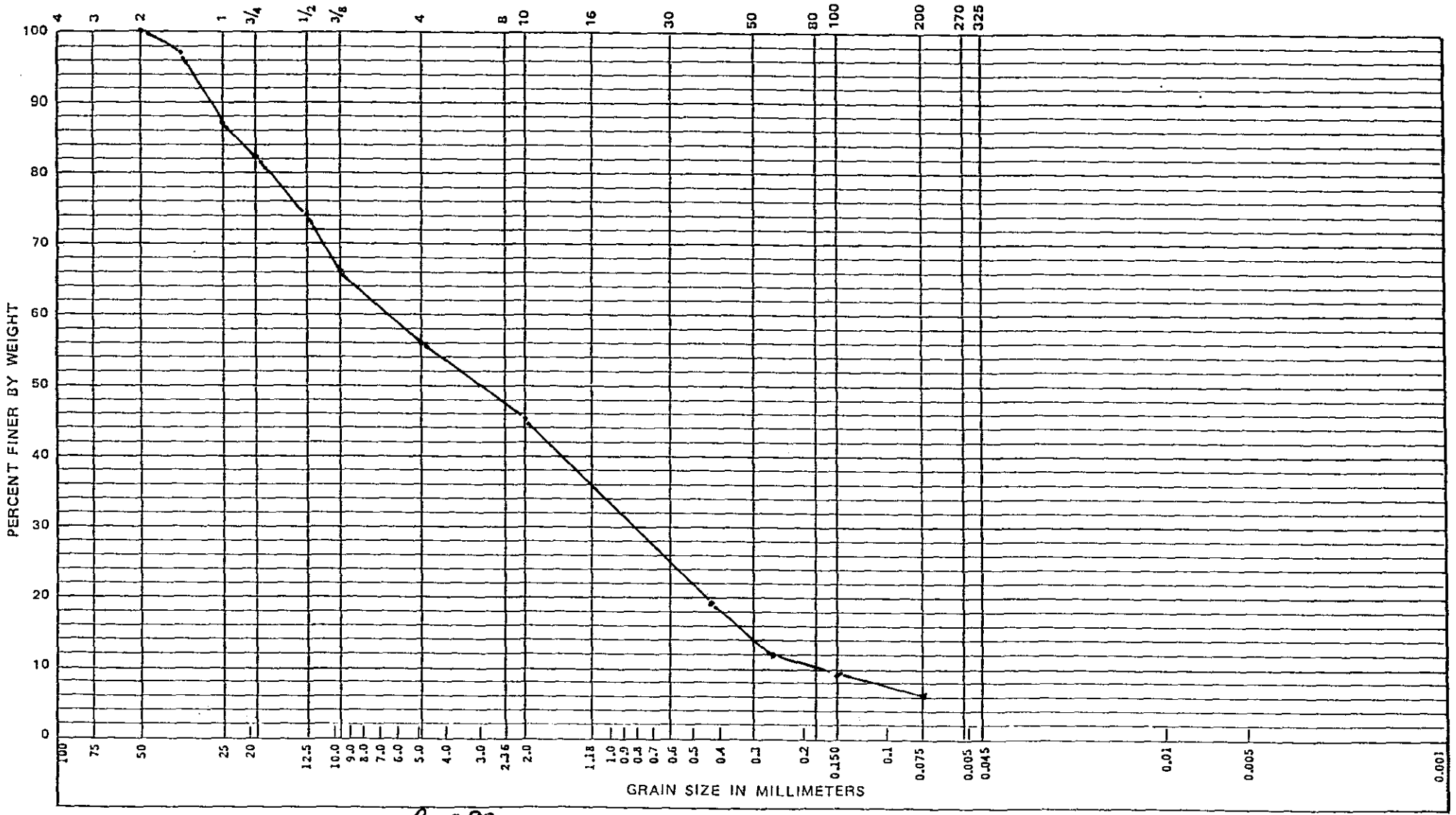
Checked By J Rebyea Date 15 Dec 89

A-6400-204(2-87)

9212170

9214 0731

GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-080 Procedure No. ETAL-07 Rev. Ø Date Issued 11-15-89

Sample Description: SANDY GRAVEL
MW-15-2

Plotted by: R.G ALEXANDER
Date: 12-15-89

Checked by: J F Ridgeway
Date: 15 Dec 89

BD-6400-126 (9-85)

SOIL MOISTURE DATA SHEET

PROCEDURE NO. ETAL-14 REV. NO. Ø

THERMOMETER NO. 0006 CALIBRATION DUE DATE 2-6-90

SAMPLE NO.	WET WT. + CAN	DRY WT. + CAN	CAN WT.	WET WT. SOIL	DRY WT. SOIL	% WATER
9-080	5518.09	5417.03	589.39	4928.70	4827.64	2.09

ALL REQUIRED DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS APPROPRIATELY TRAINED AND TEST PROCEDURES FOLLOWED TO PRODUCE THE ABOVE DATA

TEST OPERATOR: R.G ALEXANDER DATE 12-14-89

Westinghouse
Hanford Company

CHAIN OF CUSTODY

Company Contact: JON LINDBERG Telephone 6-5005

Sample Collected by: Weekes / Anderson & Lindberg Date: Dec. 11, 1989 Time: Variable

Sample Locations: Horn Rapids Landfill, 1100-EM-1, MW-15

Ice Chest No.: NA Field Logbook & Page No.: WHC-N-306-2 pages 15-20

Remarks: Samples collected at MW-15 from 11/21/89 to 12/1/89

Bill of Lading No.: NA Off Site Property No.: NA

Method of Shipment: Hand Carry

Shipped to: Jerry Alexander 2101-M Bldg. Physical Testing Laboratory

Sample Identification

MW-15-1 Plastic Bags	
MW-15-2 Plastic Bags	
MW-15-3 Plastic Bags	
MW-15-4 Plastic Bags	
MW-15-5 Plastic Bags	
MW-15-6 Plastic Bags	
MW-15-7 Plastic Bags	
MW-15-9 Plastic Bags	
MW-15-10 Plastic Bags	
MW-15-11 Plastic Bags	
MW-15-12 Plastic Bags	
~~MW-15-13~~ JW Lindberg 12-11-89 JW Lindberg	

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
JW Lindberg JW Lindberg	RG Alexander	12-12-89/0630

FVR\071889-B

9212100793

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector Weekes/Anderson/Lindberg Date Sampled 11-21-89 to 11-28-89 Time Variable Hours

Affiliation of Sampler Westinghouse/Golder

Address Richland, WA
number street city state zip

Telephone (509) 376-5005 Company Contact Jon Lindberg

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	MW-1 to MW-5	Soil	Retained in plastic bags

Analysis Requested Sieve/Hydrometer Analysis ASTM-D-422 and Moisture ASTM-D-2216

Special Handling and/or Storage Please report any breaks in plastic bags that may affect moisture.

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.

RADIATION RELEASE

Bldg. Horn Rapids Date 11-21-89

Released By M H Copeland
Operational Health Physics

Remarks 5' Sample

MW-15-1

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-21-89

Released By M H Copeland
Operational Health Physics

Remarks 10' Sample

MW-15-2

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-22-89

Released By M H Copeland
Operational Health Physics

Remarks 15' Sample

MW-15-3

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-22-89

Released By M H Copeland
Operational Health Physics

Remarks Sample @ 20'

MW-15-4

54-3000-022 (09/88)

TEST REQUEST FORM

Sample/Specimen No. 9-081 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 12-13-89

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

Remarks FIELD SAMPLE MW-15-3

Received By: R-6 ALEXANDER Date 12-12-89

Approved By: R6 ALEXANDER Date 12-13-89

SIEVE ANALYSIS DATA SHEET

Sample ID 9-081 Page 1 of 1

Tested By R.G ALEXANDER Date 12-18-89

Procedure ETAC-67 Rev Ø Date Issued 11-15-89

EQUIPMENT ITEM	CALIBRATION NO.	DATE DUE
Balance	3304	12-28-89
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) (A)
BEFORE TEST WT. N/A AFTER TEST WT. N/A $\frac{B-A}{B} \times 100$ = N/A % LOSS

Sieve ID Number	Sieve Size	Sample Weight	Cumulative Wt. Retained (g)	% Retained	Cumulative % Retained	Cumulative % Pass	% Pass
N/A	2	4833.73	Ø	Ø	Ø	100	100
	1½		500.00	10.3	10.3	89.7	89.7
	1		1132.39	23.4	23.4	76.6	76.6
	¾		1652.16	34.2	34.2	65.8	65.8
	½		2149.17	44.5	44.5	55.5	55.5
	⅜		2470.14	51.1	51.1	48.9	48.9
	#4		3031.09	62.7	62.7	37.3	37.3
	#10	4833.73	3555.33	73.6	73.6	26.4	26.4
	#40	128.84	54.72	42.5	42.5	57.5	16.2
	#60		73.04	56.7	56.7	43.3	11.4
	#100		87.46	67.9	67.9	32.1	8.5
	#200		101.33	78.6	78.6	21.4	5.7

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 N/A%

D=Original Dry Weight of Sample N/A g

E=Dry Weight of Sample After Drying N/A g

C = <(D-E)/D> X 100

Remarks
WASH FINE GRADING

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

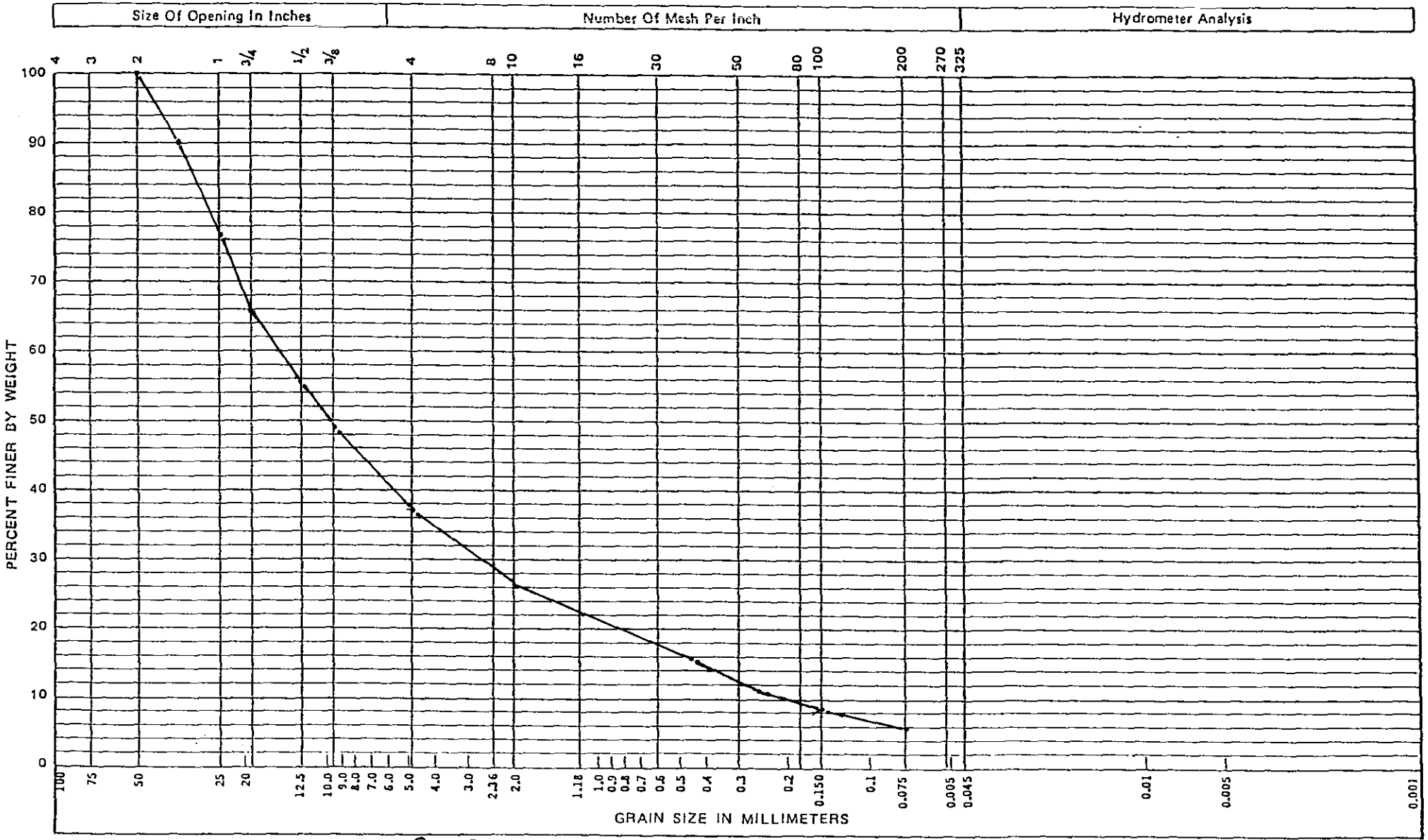
Checked By J F Relyea Date 15 Dec 89

A-6400-204(2-87)

9211737

9 2 1 [illegible] 0 7 3 3

GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-081 Procedure No. ETAC-07 Rev. Ø Date Issued 11-15-89

Sample Description: SANDY GRAVEL MW-15-3

Plotted by: R.G ALEXANDER Date: 12-15-89

Checked by: J. Relyea Date: 15 Dec 89

SOIL MOISTURE DATA SHEET

PROCEDURE NO. ETAL-14 REV. NO. Ø

THERMOMETER NO. 0006 CALIBRATION DUE DATE 3-6-90

SAMPLE NO.	WET WT. + CAN	DRY WT. + CAN	CAN WT.	WET WT. SOIL	DRY WT. SOIL	% WATER
9-081	5536.16	5422.21	588.48	4947.68	4833.73	2.36

ALL REQUIRED DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS APPROPRIATELY TRAINED AND TEST PROCEDURES FOLLOWED TO PRODUCE THE ABOVE DATA

TEST OPERATOR: R.G ALEXANDER DATE 12-14-89

Westinghouse
Hanford Company

CHAIN OF CUSTODY

Company Contact: JON LINDBERG Telephone 6-5005

Sample Collected by: Weekes / Anderson & Lindberg Date: Dec. 11, 1989 Time: Variable

Sample Locations: Horn Rapids Landfill, 1100-EM-1, MW-15

Ice Chest No.: NA Field Logbook & Page No.: WHC-N-306-2 pages 15-20

Remarks: Samples collected at MW-15 from 11/21/89 to 12/1/89

Bill of Lading No.: NA Off Site Property No.: NA

Method of Shipment: Hand Carry

Shipped to: Jerry Alexander Bldg. 2101-M Physical Testing Laboratory

Sample Identification

MW-15-1 Plastic Bags	
MW-15-2 Plastic Bags	
MW-15-3 Plastic Bags	
MW-15-4 Plastic Bags	
MW-15-5 Plastic Bags	
MW-15-6 Plastic Bags	
MW-15-7 Plastic Bags	
MW-15-9 Plastic Bags	
MW-15-10 Plastic Bags	
MW-15-11 Plastic Bags	
MW-15-12 Plastic Bags	
~~MW-15-13~~ JW Lindberg 12-11-89 JW Lindberg	

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
JW Lindberg JW Lindberg	RG Alexander	12-12-89/0630
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

FVR\071889-B

9212-2790

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector Weekes/Anderson/Lindberg Date Sampled 11-21-89 to 11-28-89 Time Variable Hours

Affiliation of Sampler Westinghouse/Golder

Address Richland, WA
number street city state zip

Telephone (509) 376-5005 Company Contact Jon Lindberg

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	MW-1 to MW-5	Soil	Retained in plastic bags

Analysis Requested Sieve/Hydrometer Analysis ASTM-D-422 and Moisture ASTM-D-2216

Special Handling and/or Storage Please report any breaks in plastic bags that may affect moisture.

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.

Revision 0
Date September 1986

RADIATION RELEASE

Bldg. Horn Rapids Date 11-21-89

Released By M Copeland
Operational Health Physics

Remarks 5' Sample

MW-15-1

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-21-89

Released By M Copeland
Operational Health Physics

Remarks 10' Sample

MW-15-2

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-22-89

Released By M Copeland
Operational Health Physics

Remarks 15' Sample

MW-15-3

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-22-89

Released By M Copeland
Operational Health Physics

Remarks Sample @ 20'

MW-15-4

54-3000-022 (09/88)

TEST REQUEST FORM

Sample/Specimen No. 9-082 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 12-13-89

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

Remarks FIELD SAMPLE MW-15-4

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

Approved By: RG ALEXANDER Date 12-13-89

SIEVE ANALYSIS DATA SHEET

Sample ID 9-082 Page 1 of 1

Tested By R.G. ALEXANDER Date 12-13-89

Procedure ETM-07 Rev 0 Date Issued 11-15-89

EQUIPMENT ITEM	CALIBRATION NO.	DATE DUE
Balance	3304	12-28-89
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 $\frac{B-A}{B} \times 100$ = N/A % LOSS

Sieve ID Number	Sieve Size	Sample Weight	Cumulative Wt. Retained (g)	% Retained	Cumulative % Retained	Cumulative % Pass	% Pass
N/A	2	4582.83	263.39	5.7	5.7	94.3	94.3
	1½		1100.75	24.0	24.0	76.0	76.0
	1		1518.16	33.1	33.1	66.9	66.9
	¾		1957.87	42.7	42.7	57.3	57.3
	½		2427.55	53.0	53.0	47.0	47.0
	⅜		2661.16	58.1	58.1	41.9	41.9
	#4		3058.86	66.6	66.6	33.4	33.4
	#10	4582.83	3300.79	72.0	72.0	28.0	28.0
	#40	118.83	24.57	20.7	20.7	79.3	22.2
	#60		51.77	43.6	43.6	56.4	15.8
	#100		80.66	67.9	67.9	32.1	9.0
	#200		96.56	81.3	81.3	18.7	5.2

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 N/A %

D=Original Dry Weight of Sample N/A g

E=Dry Weight of Sample After Drying N/A g

C = <(D-E)/D> X 100

Remarks WASH FINE GRADING

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

Checked By J.T. Relyea Date 15 Dec 89

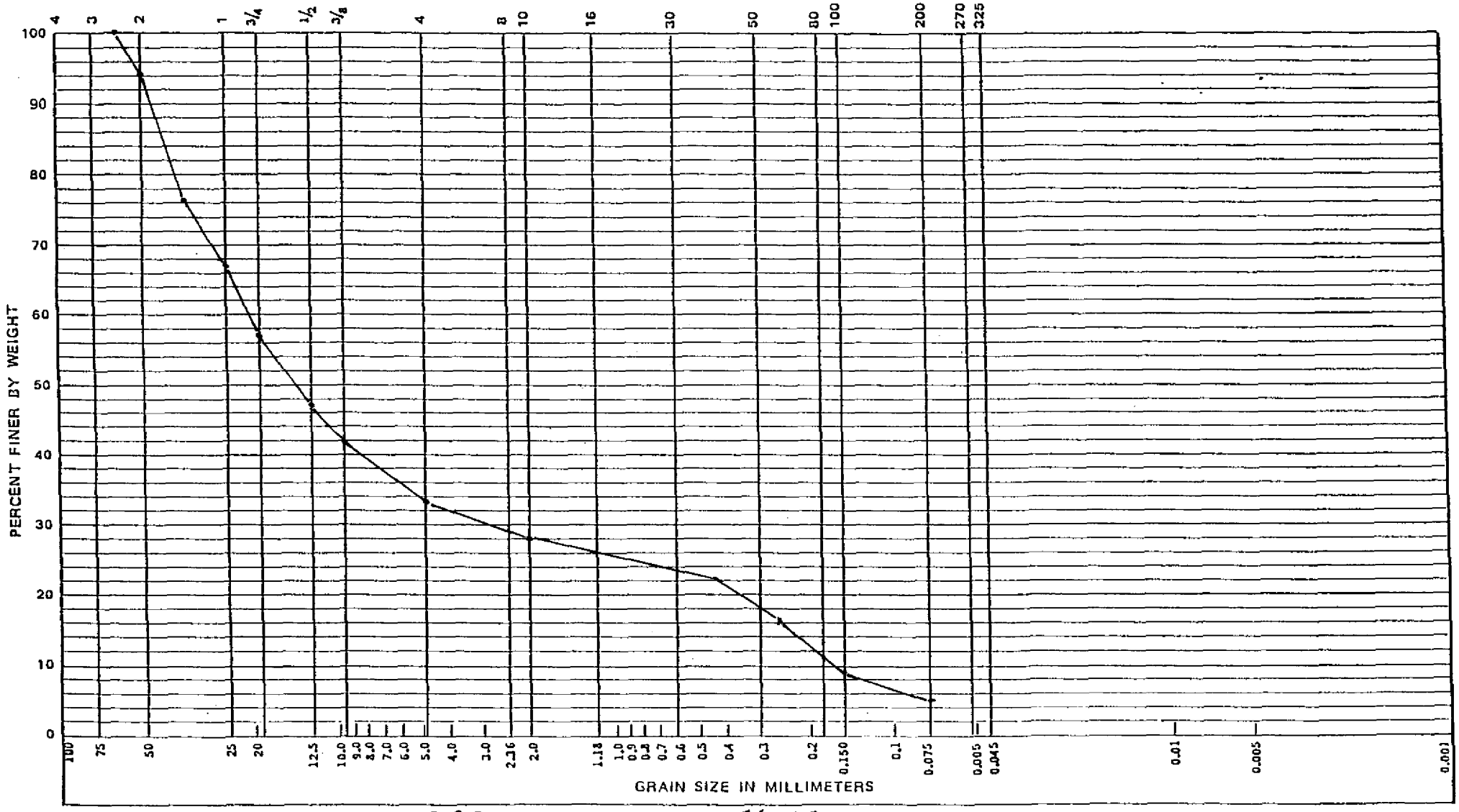
A-6400-204(2-87)

9212-1794

9212 0795

GRAIN SIZE ANALYSIS PLOT

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



Specimen No. 9-082 Procedure No. ETAL-07 Rev. Ø Date Issued 11-15-89

Sample Description: SANDY GRAVEL MW-15-4

Plotted by: R.G ALEXANDER Date: 12-14-89

Checked by: J.F Relyea Date: 15 Dec 89

SOIL MOISTURE DATA SHEET

PROCEDURE NO. ETAL-14 REV. NO. 0

THERMOMETER NO. 0006 CALIBRATION DUE DATE 2-6-90

SAMPLE NO.	WET WT. + CAN	DRY WT. + CAN	CAN WT.	WET WT. SOIL	DRY WT. SOIL	% WATER
9-082	5251.52	5167.55	584.72	4666.80	4582.83	1.83

ALL REQUIRED DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS APPROPRIATELY TRAINED AND TEST PROCEDURES FOLLOWED TO PRODUCE THE ABOVE DATA

TEST OPERATOR: R.G ALEXANDER DATE 12-11-89

RADIATION RELEASE

Bldg. Hora Rapids Date 11-21-89

Released By M Caseland
Operational Health Physics

Remarks 5' Sample

MW-15-1

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Hora Rapids Date 11-21-89

Released By M Caseland
Operational Health Physics

Remarks 10' Sample

MW-15-2

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Hora Rapids Date 11-22-89

Released By M Caseland
Operational Health Physics

Remarks 15' Sample

MW-15-3

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Hora Rapids Date 11-22-89

Released By M Caseland
Operational Health Physics

Remarks Sample @ 20'

MW-15-4

54-3000-022 (09/88)

Westinghouse
Hanford Company

CHAIN OF CUSTODY

Company Contact: JON LINDBERG Telephone 6-5005

Sample Collected by: Weekes/Anderson/Lindberg Date: Dec. 11, 1989 Time: Variable

Sample Locations: Horn Rapids Landfill, 1100-EM-1, MW-15

Ice Chest No.: NA Field Logbook & Page No.: WHC-N-306-2 pages 15-20

Remarks: Samples collected at MW-15 from 11/21/89 to 12/1/89

Bill of Lading No.: NA Off Site Property No.: NA

Method of Shipment: Hand Carry

Shipped to: Jerry Alexander Bldg. 2101-M Physical Testing Laboratory

Sample Identification

MW-15-1 Plastic Bags	
MW-15-2 Plastic Bags	
MW-15-3 Plastic Bags	
MW-15-4 Plastic Bags	
MW-15-5 Plastic Bags	
MW-15-6 Plastic Bags	
MW-15-7 Plastic Bags	
MW-15-9 Plastic Bags	
MW-15-10 Plastic Bags	
MW-15-11 Plastic Bags	
MW-15-12 Plastic Bags	
~~MW-15-13~~ JW Lindberg 12-11-89 JW Lindberg	

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
JW Lindberg JW Lindberg	R G Alexander	12-12-89/0630
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

FVR\071889-B

9212-1793

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector Weekes/Anderson/Lindberg Date Sampled 11-21-89 to 11-28-89 Time Variable Hours

Affiliation of Sampler Westinghouse/Golder

Address Richland, WA
number street city state zip

Telephone (509) 376-5005 Company Contact Jon Lindberg

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	MW-1 to MW-5	Soil	Retained in plastic bags

Analysis Requested Sieve/Hydrometer Analysis ASTM-D-422 and Moisture ASTM-D-2216

Special Handling and/or Storage Please report any breaks in plastic bags that may affect moisture.

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.

Revision 0
Date September 1986

TEST REQUEST FORM

Sample/Specimen No. 9-083 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 12-18-89

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

Remarks FIELD SAMPLE MW-15-5

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

Approved By: R.G ALEXANDER Date 12-18-89

9212-0300

SIEVE ANALYSIS DATA SHEET

Sample ID 9-083 Page 1 of 1

Tested By R.G. ALEXANDER Date 12-18-89

Procedure ETAL-07 Rev 0 Date Issued 11-15-89

EQUIPMENT ITEM	CALIBRATION NO.	DATE DUE
Balance	3304	12-20-89
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 $\frac{B-A}{B} \times 100$ = N/A % LOSS

Sieve ID Number	Sieve Size	Sample Weight	Cumulative Wt. Retained (g)	% Retained	Cumulative % Retained	Cumulative % Pass	% Pass
N/A	2	4642.65	496.32	10.7	10.7	89.3	89.3
	1½		994.55	21.4	21.4	78.6	78.6
	1		1412.56	30.4	30.4	69.6	69.6
	¾		1700.87	36.6	36.6	63.4	63.4
	½		2112.61	45.5	45.5	54.5	54.5
	⅜		2336.97	50.3	50.3	49.7	49.7
	#4		2835.46	61.1	61.1	38.9	38.9
	#10	4642.65	3147.17	67.8	67.8	32.2	32.2
	#40	126.36	28.99	22.9	22.9	77.1	24.8
	#60		45.81	36.3	36.3	63.7	26.5
	#100		65.85	52.1	52.1	47.9	15.4
	#200		83.14	65.8	65.8	34.2	11.0

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 N/D %

D=Original Dry Weight of Sample N/A g

E=Dry Weight of Sample After Drying N/A g

C = <(D-E)/D> X 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 1/3/90

A-6400-204(2-87)

9212301

SPECIFIC GRAVITY OF SOILS DATA SHEET

Specimen/Sample No. 9-083 Page 1 of 1

Test Operator R. G. ALEXANDER 2-28-90

EQUIPMENT ITEM	NO.	DATE DUE
Balance	3304	3-25-90
Oven Thermometer	0007	8-16-90
Thermometer	0002	2-9-91
Pycnometer	2554	N/A

Wetting Agent "D" 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	135.12		
W_a	Wt. Pycnometer + Wetting Agent, g	387.09		
W_b	Wt. Pycnometer + Wetting Agent + Soil, g	412.15		
	Temperature, T_x at W_b, °C	25.6		
G_w	Specific Gravity of Wetting Agent at T_x	1.00		
G_t	Specific Gravity of Soil at T_x	2.68		
G_s	Specific Gravity of Soil at 20°C	2.67		

$$G_t = \frac{G_{w^*} \gamma_{w^*} W_o}{W_o + (W_a - W_b)}$$

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	2.67

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

A-6400-235 (9-86)

HYDROMETER ANALYSIS DATA SHEET

Sample ID 9-083 Page 1 of 1

Tested By H L Benny Date 2-28-90

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

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

Specific gravity of Sample 2.67

% Passing No. 10 Sieve 32.2 (%)

Hygroscopic Correction Factor Ø

WEIGHT OF SAMPLE

Wt. Container + Soil NA (g)

Wt. Container NA (g)

Wt. Soil 74.22 (g)

COMPOSITE CORRECTION

1st Reading 6 at 23.8 °C

2nd Reading NA at NA °C

HYGROSCOPIC MOISTURE CONTENT

Wt. Container + Air Dry Soil NA (g)

Wt. Container + Oven Dry Soil NA (g)

Wt. Container NA (g)

Water Content NA (%)

REMARKS

Tube B

Date	Clock time	Elapsed time (min)	Hydrometer reading	Hydrometer with composite correction	Temp. (°C)	Soil in suspension (%)	Particle diameter (mm)
2-28-90	1150	2.0	25	19	25.1	8.2	0.032
	1153	5.0	20	14	25.1	6.0	0.021
	1203	15.0	17	11	24.4	4.8	0.012
	1218	30.0	15	9	24.1	3.9	0.009
	1248	60.0	13	7	23.5	3.0	0.006
↓	1558	250.00	10	4	22.8	1.7	0.003
3-1-90	1148	1,440.0	9	3	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.

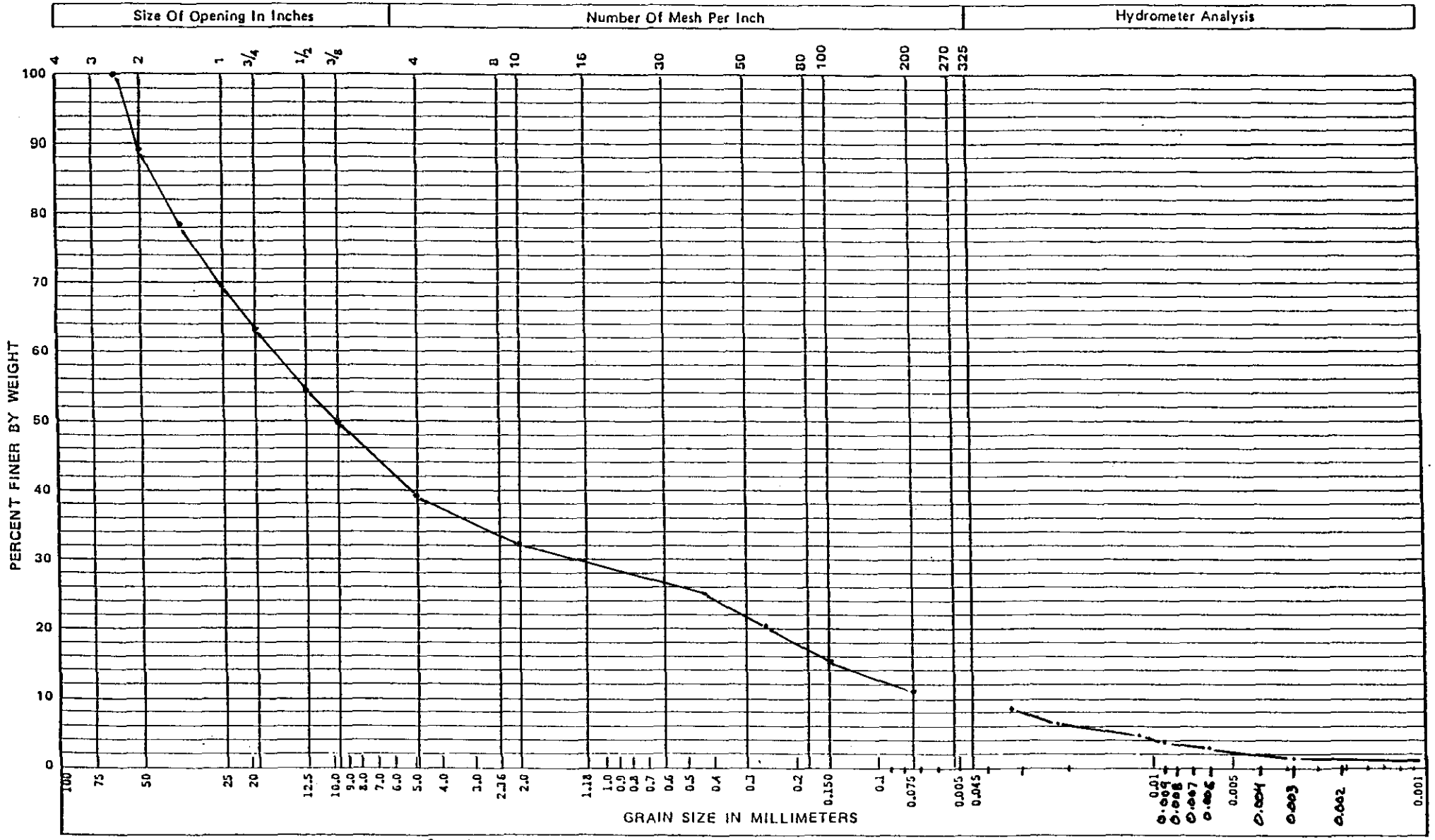
Checked By R.G Meyander Date 3-5-90

A-6400-205 (1.87)

9212103

9212 [illegible] 04

GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-083 Procedure No. ETAL-07 Rev. Ø Date Issued 11-15-89

Sample Description: SANDY GRAVEL MW-15-5	Plotted by: R.G ALEXANDER Date: 12-18-89	Checked by: HC Benny Date: 1/3/90

BD-6400-136 (9-85)

SOIL MOISTURE DATA SHEET

PROCEDURE NO. ETAL-14 REV. NO. 0

THERMOMETER NO. 0006 CALIBRATION DUE DATE 2-6-90

SAMPLE NO.	WET WT. + CAN	DRY WT. + CAN	CAN WT.	WET WT. SOIL	DRY WT. SOIL	% WATER
9-083	5282.53	5220.71	578.06	4704.47	4642.65	1.33

ALL REQUIRED DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS APPROPRIATELY TRAINED AND TEST PROCEDURES FOLLOWED TO PRODUCE THE ABOVE DATA

TEST OPERATOR: R.G ALEXANDER DATE 12-18-89

Westinghouse
Hanford Company

CHAIN OF CUSTODY

Company Contact: JON LINDBERG Telephone 6-5005

Sample Collected by: Weekes / Anderson & Lindberg Date: Dec. 11, 1989 Time: Variable

Sample Locations: Horn Rapids Landfill, 1100-EM-1, MW-15

Ice Chest No.: NA Field Logbook & Page No.: WHC-N-306-2 pages 15-20

Remarks: Samples collected at MW-15 from 11/21/89 to 12/1/89

Bill of Lading No.: NA Off Site Property No.: NA

Method of Shipment: Hand Carry

Shipped to: Jerry Alexander Bldg. 2101-M Physical Testing Laboratory

Sample Identification	
MW-15-1 Plastic Bags	
MW-15-2 Plastic Bags	
MW-15-3 Plastic Bags	
MW-15-4 Plastic Bags	
MW-15-5 Plastic Bags	
MW-15-6 Plastic Bags	
MW-15-7 Plastic Bags	
MW-15-9 Plastic Bags	
MW-15-10 Plastic Bags	
MW-15-11 Plastic Bags	
MW-15-12 Plastic Bags	
~~MW-15-13~~ JW Lindberg 12-11-89 JW Lindberg	

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
JW Lindberg JW Lindberg	R G Myers	12-12-89/0630
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

FVR\071889-B

9211206

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector Weekes/Anderson/Lindberg Date Sampled 11-21-89 to 11-28-89 Time Variable Hours

Affiliation of Sampler Westinghouse/Golder

Address Richland, WA
number street city state zip

Telephone (509) 376-5005 Company Contact Jon Lindberg

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	MW-1 to MW-5	Soil	Retained in plastic bags

Analysis Requested Sieve/Hydrometer Analysis ASTM-D-422 and Moisture ASTM-D-2216

Special Handling and/or Storage Please report any breaks in plastic bags that may affect moisture.

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.

RADIATION RELEASE

Bldg. Horn Rapids Date 11-21-89

Released By M A Copeland
Operational Health Physics

Remarks 5' Sample
MW-15-1

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-21-89

Released By M A Copeland
Operational Health Physics

Remarks 10' Sample
MW-15-2

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-22-89

Released By M A Copeland
Operational Health Physics

Remarks 15' Sample
MW-15-3

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-27-89

Released By M A Copeland
Operational Health Physics

Remarks Sample @ 20'
MW-15-4

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-27-89

Released By M A Copeland
Operational Health Physics

Remarks Sample @ 25 ft.
MW-15-5

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-28-89

Released By M A Copeland
Operational Health Physics

Remarks MW-15-6
30' Sample

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-28-89

Released by M A Copeland
Operational Health Physics

Remark 35' Sample
MW-15-7

54-3000-022 (09/88)

9213

TEST REQUEST FORM

Sample/Specimen No. 9-084 Cost Code/Work Order No. ED332

Requested By: Org. 80232 Person J. LINDBERG Date 12-18-89

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

Remarks FIELD SAMPLE MW-15-6

Received By: RG ALEXANDER Date 12-12-89

Approved By: RG ALEXANDER Date 12-18-89

SIEVE ANALYSIS DATA SHEET

Sample ID 9-084 Page 1 of 1

Tested By R.G ALEXANDER Date 12-18-89

Procedure ETAL-07 Rev 0 Date Issued 11-15-89

EQUIPMENT ITEM	CALIBRATION NO.	DATE DUE
Balance	3304	12-28-89
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) (A)
BEFORE TEST WT. N/A AFTER TEST WT. N/A $\frac{B-A}{B}$ x 100 = N/A % LOSS

Sieve ID Number	Sieve Size	Sample Weight	Cumulative Wt. Retained (g)	% Retained	Cumulative % Retained	Cumulative % Pass	% Pass
N/A	4	4468.65	2068.17	46.3	46.3	53.7	53.7
	1½		2382.64	53.3	53.3	46.7	46.7
	1		2796.36	62.6	62.6	37.4	37.4
	¾		2919.02	65.3	65.3	34.7	34.7
	½		3146.42	70.4	70.4	29.6	29.6
	⅜		3258.34	72.9	72.9	27.1	27.1
	#4	↓	3461.60	77.5	77.5	22.6	22.5
	#10	4468.65	3607.22	80.7	80.7	19.3	19.3
	#40	126.47	25.64	20.3	79.7	79.7	15.4
	#60		47.24	37.4	62.5	62.5	12.1
	#100		75.20	59.5	40.5	40.5	7.8
↓	#200	↓	97.90	77.4	22.6	22.6	4.4

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 N/A %

D=Original Dry Weight of Sample N/A g

E=Dry Weight of Sample After Drying N/A g

C = <(D-E)/D> X 100

Remarks

(1) 4" ROCK IN QUARTER SAMPLE. WASH FINE GRADING.

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

Checked By HK Berry Date 1/3/90

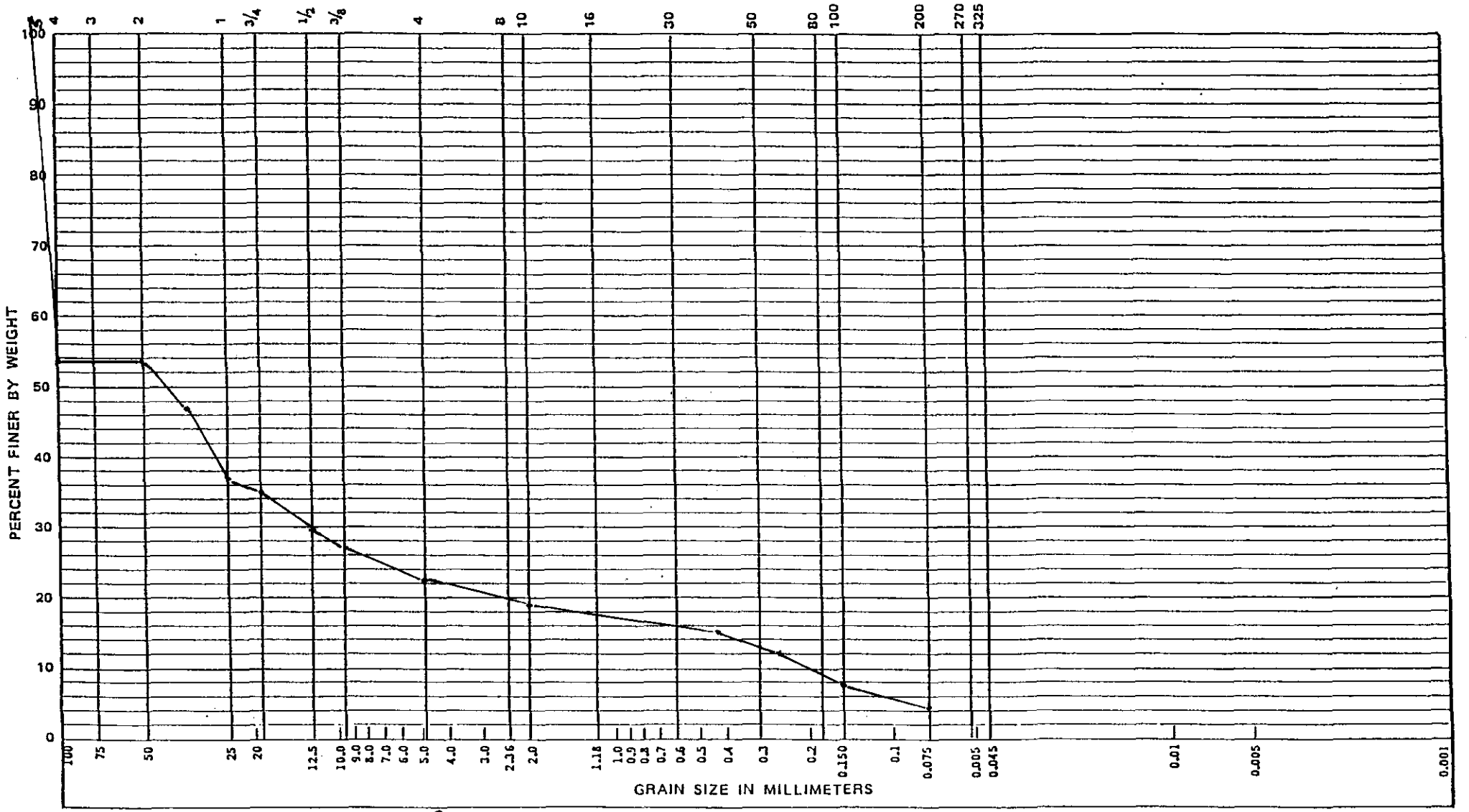
A-6400-204(2-87)

9212210

9212-1211

GRAIN SIZE ANALYSIS PLOT

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



Specimen No. 9-084 Procedure No. ETAL-07 Rev. Ø Date Issued 11-15-89

Sample Description: SANDY GRAVEL
MW-15-6

Plotted by: R.G ALEXANDER
Date: 12-18-89

Checked by: HL Benny
Date: 1/3/90

BD-6400-136 (9-85)

SOIL MOISTURE DATA SHEET

PROCEDURE NO. ETAL-14 REV. NO. Ø

THERMOMETER NO. 0006 CALIBRATION DUE DATE 2-6-90

SAMPLE NO.	WET WT. + CAN	DRY WT. + CAN	CAN WT.	WET WT. SOIL	DRY WT. SOIL	% WATER
9-084	5222.05	5057.13	588.48	4633.57	4468.65	3.69

ALL REQUIRED DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS APPROPRIATELY TRAINED AND TEST PROCEDURES FOLLOWED TO PRODUCE THE ABOVE DATA

TEST OPERATOR: R.G ALEXANDER DATE 12-18-89

Westinghouse
Hanford Company

CHAIN OF CUSTODY

Company Contact: JON LINDBERG Telephone 6-5005

Sample Collected by: Weekes / Anderson & Lindberg Date: Dec. 11, 1989 Time: Variable

Sample Locations: Horn Rapids Landfill, 1100-EM-1, MW-15

Ice Chest No.: NA Field Logbook & Page No.: WHC-N-306-2 pages 15-20

Remarks: Samples collected at MW-15 from 11/21/89 to 12/1/89

Bill of Lading No.: NA Off Site Property No.: NA

Method of Shipment: Hand Carry

Shipped to: Jerry Alexander Bldg. 2101-M Physical Testing Laboratory

Sample Identification	
MW-15-1	Plastic Bags
MW-15-2	Plastic Bags
MW-15-3	Plastic Bags
MW-15-4	Plastic Bags
MW-15-5	Plastic Bags
MW-15-6	Plastic Bags
MW-15-7	Plastic Bags
MW-15-9	Plastic Bags
MW-15-10	Plastic Bags
MW-15-11	Plastic Bags
MW-15-12	Plastic Bags
~~MW-15-13~~	JW Lindberg 12-11-89 JW Lindberg

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
JW Lindberg JW Lindberg	R G Alexander	12-12-89/0630
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

FVR\071889-B

9212113

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector Anderson/Lindberg Date Sampled 11/28/89 to 4/30/89 Time Variable hours

Affiliation of Sampler Golder/WHC

Address Richland, WA
number street city state zip

Telephone (509) 376-5005 Company Contact JON LINDBERG

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	MW-6 to MW-7	Soil	Plastic bags
	MW-8 to MW-11	Soil	Plastic bags

Analysis Requested Sieve/Hydrometer Analysis ASTM-D-422; including Atterberg Limits (ASTM D-4318) on MW-11.

Special Handling and/or Storage none

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.

RADIATION RELEASE

Bldg. Horn Rapids Date 11-21-89

Released By M Copeland
Operational Health Physics

Remarks 5' Sample
MW-15-1

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-21-89

Released By M Copeland
Operational Health Physics

Remarks 10' Sample
MW-15-2

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-22-89

Released By M Copeland
Operational Health Physics

Remarks 15' Sample
MW-15-3

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-27-89

Released By M Copeland
Operational Health Physics

Remarks Sample @ 20'
MW-15-4

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-27-89

Released By M Copeland
Operational Health Physics

Remarks Sample @ 25 ft.
MW-15-5

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-28-89

Released By M Copeland
Operational Health Physics

Remarks MW-15-6
30' Sample

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-28-89

Released by M Copeland
Operational Health Physics

Remark 35' Sample
MW-15-7

54-3000-022 (09/88)

TEST REQUEST FORM

Sample/Specimen No. 9-085 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 12-18-89

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

Remarks FIELD SAMPLE MW-15-7

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

Approved By: R.G ALEXANDER Date 12-18-89

SIEVE ANALYSIS DATA SHEET

Sample ID 9-085 Page 1 of 1

Tested By R.G ALEXANDER Date 12-18-89

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

EQUIPMENT ITEM	CALIBRATION NO.	DATE DUE
Balance	3304	12-28-89
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) (A)
BEFORE TEST WT. N/A AFTER TEST WT. N/A $\frac{B-A}{B} \times 100$ = N/A % LOSS

Sieve ID Number	Sieve Size	Sample Weight	Cumulative Wt. Retained (g)	% Retained	Cumulative % Retained	Cumulative % Pass	% Pass
N/A	2½	4547.57	621.30	13.7	13.7	86.3	86.3
	1½		1166.64	25.7	25.7	74.3	74.3
	1		1277.86	28.1	28.1	71.9	71.9
	¾		1361.41	29.9	29.9	70.1	70.1
	½		1658.12	36.5	36.5	63.5	63.5
	⅜		1892.11	41.6	41.6	58.4	58.4
	#4		2248.14	49.4	49.4	50.6	50.6
	#10	4547.57	2506.65	55.1	55.1	44.9	44.9
	#40	158.40	25.14	15.9	15.9	84.1	37.8
	#60		74.09	46.8	46.8	53.2	23.9
	#100		118.64	74.9	74.9	25.1	11.3
	#200		137.21	86.6	86.6	13.4	6.0

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 N/A %

D=Original Dry Weight of Sample N/A g

E=Dry Weight of Sample After Drying N/A g

C = <(D-E)/D> X 100

Remarks
WASH FINE GRADING

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

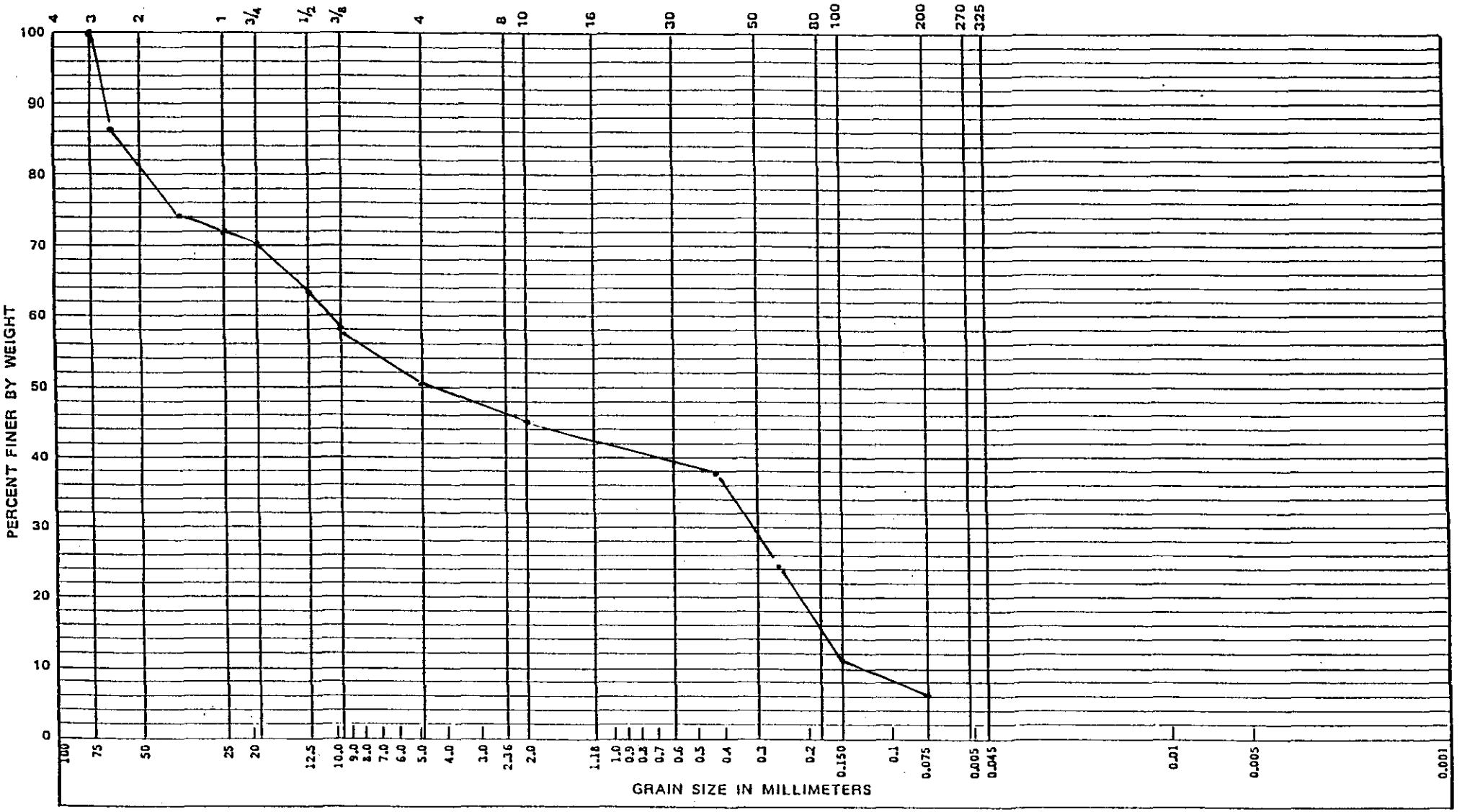
Checked By HC Berry Date 1/3/90

A-6400-204(2-87)

9212217

9212 0218

GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-085 Procedure No. ETAL-07 Rev. Ø Date Issued 11-15-89

Sample Description: SANDY GRAVEL MW-15-7

Plotted by: R.G ALEXANDER Date: 12-18-89

Checked by: H.L Bamy Date: 1/3/90

BD-6400-136 (9-85)

SOIL MOISTURE DATA SHEET

PROCEDURE NO. ETAL-14 REV. NO. 0

THERMOMETER NO. 0006 CALIBRATION DUE DATE 2-6-90

SAMPLE NO.	WET WT. + CAN	DRY WT. + CAN	CAN WT.	WET WT. SOIL	DRY WT. SOIL	% WATER
9-085	5512.78	5132.29	584.72	4928.06	4547.57	8.37

ALL REQUIRED DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS APPROPRIATELY TRAINED AND TEST PROCEDURES FOLLOWED TO PRODUCE THE ABOVE DATA

TEST OPERATOR: R.G ALEXANDER DATE 12-18-89

Westinghouse
Hanford Company

CHAIN OF CUSTODY

Company Contact: JON LINDBERG Telephone 6-5005

Sample Collected by: Weekes / Anderson / Lindberg Date: Dec. 11, 1989 Time: Variable

Sample Locations: Horn Rapids Landfill, 1100-EM-1, MW-15

Ice Chest No.: NA Field Logbook & Page No.: WHC-N-306-2 pages 15-20

Remarks: Samples collected at MW-15 from 11/21/89 to 12/1/89

Bill of Lading No.: NA Off Site Property No.: NA

Method of Shipment: Hand Carry

Shipped to: Jerry Alexander Bldg. 2101-M Physical Testing Laboratory

Sample Identification	
MW-15-1	Plastic Bags
MW-15-2	Plastic Bags
MW-15-3	Plastic Bags
MW-15-4	Plastic Bags
MW-15-5	Plastic Bags
MW-15-6	Plastic Bags
MW-15-7	Plastic Bags
MW-15-9	Plastic Bags
MW-15-10	Plastic Bags
MW-15-11	Plastic Bags
MW-15-12	Plastic Bags
~~MW-15-13~~	~~JW Lindberg 12-11-89~~ JW Lindberg

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
JW Lindberg JW Lindberg	R G Alexander	12-12-89/0630
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

FVR\071889-B

9213120

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector Anderson/Lindberg Date Sampled 11/28/89 & 11/30/89 Time Variable hours

Affiliation of Sampler Golder/WHC

Address Richland, WA
number street city state zip

Telephone (509) 376-5005 Company Contact JON LINDBERG

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	MW-6 to MW-7	Soil	Plastic bags
	MW-8 to MW-11	Soil	Plastic bags

Analysis Requested Sieve/Hydrometer Analysis ASTM-D-422; including Atterberg Limits (ASTM D-4318) on MW-11.

Special Handling and/or Storage none

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.

Revision 0
Date September 1986

RADIATION RELEASE

Bldg. Horn Rapids Date 11-21-89

Released By M.A Copeland
Operational Health Physics

Remarks 5' Sample

MW-15-1

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-21-89

Released By M.A Copeland
Operational Health Physics

Remarks 10' Sample

MW-15-2

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-22-89

Released By M.A Copeland
Operational Health Physics

Remarks 15' Sample

MW-15-3

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-27-89

Released By M.A Copeland
Operational Health Physics

Remarks Sample @ 20'

MW-15-4

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-27-89

Released By M.A Copeland
Operational Health Physics

Remarks Sample @ 25'

MW-15-5

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-28-89

Released By M.A Copeland
Operational Health Physics

Remarks MW-15-6
30' Sample

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-28-89

Released By M.A Copeland
Operational Health Physics

Remark 35' Sample

MW-15-7

54-3000-022 (09/88)

TEST REQUEST FORM

Sample/Specimen No. 9-077 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 11-30-89

Test Requested	No. of Samples	Test Lab Information (Instruction Used)
SIEVE ANALYSIS	1	ETAL-07 SCALP ON #4 SIEVE
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Remarks FIELD SAMPLE MW-15-8

Received By: R G ALEXANDER Date 11-29-89

Approved By: R G ALEXANDER Date 11-30-89

9212-0123

SIEVE ANALYSIS DATA SHEET

Sample ID 9-077 Page 1 of 1

Tested By R.G ALEXANDER Date 11-30-89

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

EQUIPMENT ITEM	CALIBRATION NO.	DATE DUE
Balance	3304	12-28-89
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) (A)
BEFORE TEST WT. 495.11 AFTER TEST WT. N/A $\frac{B-A}{B}$ X 100 = N/A % LOSS

Sieve ID Number	Sieve Size	Sample Weight	Cumulative Wt. Retained (g)	% Retained	Cumulative % Retained	Cumulative % Pass	% Pass
N/A							
		495.11					
	#4		Ø	Ø	Ø	100	100
	#10		39.64	~~7.4~~ 8.0	~~7.4~~ 8.0	92.0	92.0
	#40		123.15	24.9	24.9	75.1	75.1
	#60		297.22	60.0	60.0	40.0	40.0
	#100		406.42	82.1	82.1	17.9	17.9
	#200		449.56	90.8	90.8	9.2	9.2
N/A	PAN	495.11	N/A	N/A	N/A	N/A	N/A

JR 11-30-89

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 N/A %

D=Original Dry Weight of Sample N/A g

E=Dry Weight of Sample After Drying N/A g

C = <(D-E)/D> X 100

Remarks
WASH FINE GRADING
+4 = 49.2 %
-4 = 50.8 %

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

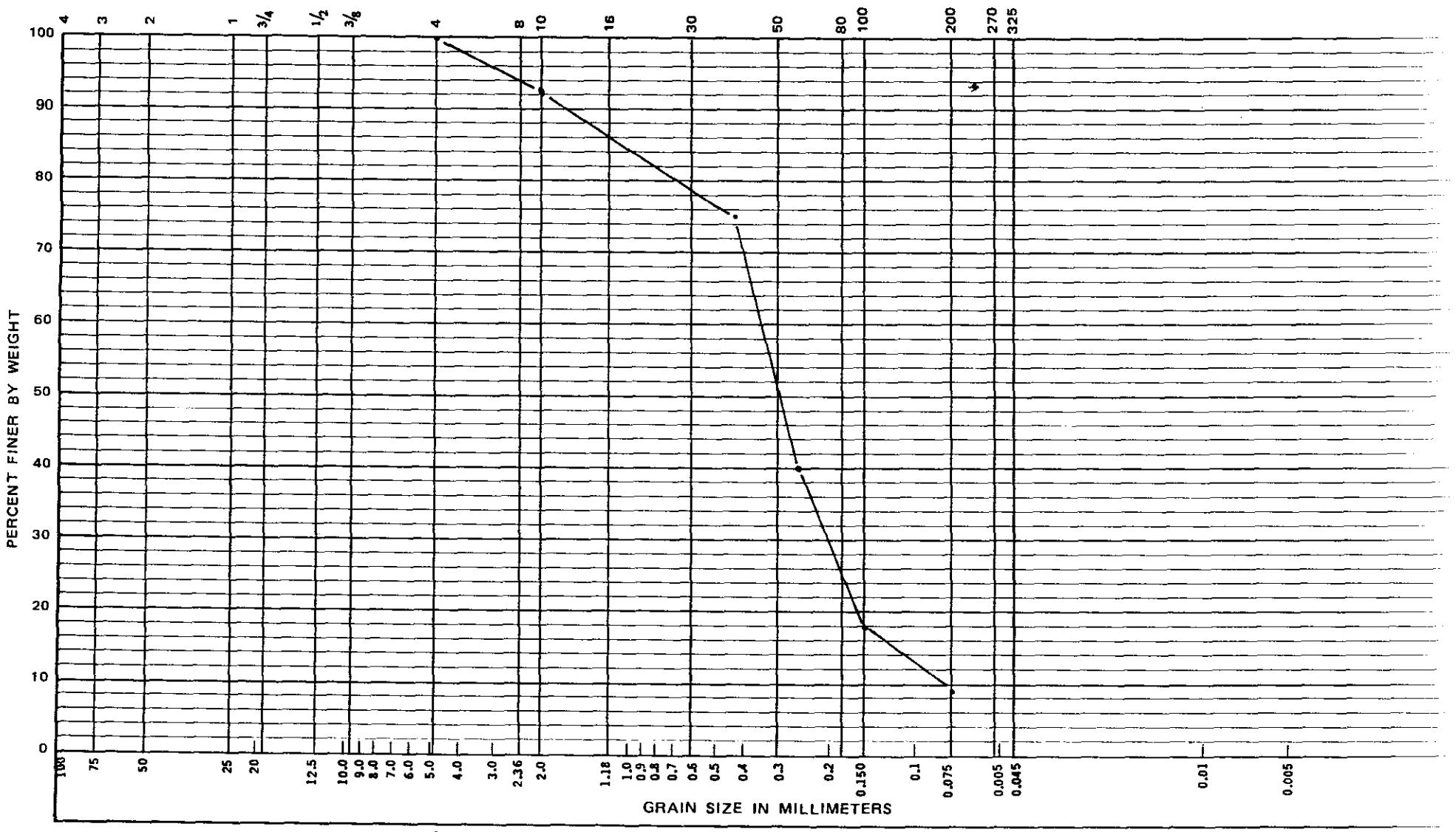
Checked By J Relyea Date 11-30-89

A-6400-204(2-87)

9211324

9212 [illegible] 0325

GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-077 Procedure No. ETAL-07 Rev. Ø Date Issued 11-15-89

Sample Description:
SANDY GRAVEL
MW-15-8
30% PASS = 0.2 mm

Plotted by: R.G ALEXANDER
Date: 11-30-89

Checked by: J F Relyea
Date: 11-30-89

BD-6400-136 (9-85)

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector Steve Anderson / JW Lindberg Date Sampled 11/29/89 Time ____ hours

Affiliation of Sampler Golder Assoc / WHC

Address N/A
number street city state zip

Telephone ( ) 63005 Company Contact JW Lindberg

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	MW-15-8	Soil	In double plastic bags

Analysis Requested Sieve analysis on (-)#4 to (+)#200. Report % (-)#200 Silt/and % gravel (+#4). Draw curve, report 30% passing.

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.

Revision 0
Date September 1986

Westinghouse
Hanford Company

CHAIN OF CUSTODY

Company Contact: JON LINDBERG Telephone 6-5005

Sample Collected by: Steve Anderson / Jon Lindberg Date: 11/29/89 Time: see log

Sample Locations: MW-15

Ice Chest No.: N/A Field Logbook & Page No.:

Remarks: Quick-Turn-Around sieve analysis for determination of filter pack and screen slot size.

Bill of Lading No.: N/A Off Site Property No.: N/A

Method of Shipment: Hand Carry

Shipped to: Jerry Alexander 2101-M Physical Testing Lab

Sample Identification

MW-15-8 Plastic bag w/ ducktape seal

RADIATION RELEASE

Bldg. Hoss Rapids Date 11-29-89

Released By M Copeland
Operational Health Physics

Remarks MW-15-8
40' Sample

54-3000-022 (09/88)

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
J Lindberg	R.G. ALEXANDER	11/29/89 / 3:15
Relinquished by:	Received by:	Date/Time:
	R.G. Alexander	
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

FVR\071889-B

9212130237

TEST REQUEST FORM

Sample/Specimen No. 9-086 Cost Code/Work Order No. ED332

Requested By: Org. 80232 Person J. LINDBERG Date 12-20-89

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

Remarks FIELD SAMPLE MW-15-9

Received By: R.C ALEXANDER Date 12-12-89

Approved By: RG ALEXANDER Date 12-20-89

9212-1228

SIEVE ANALYSIS DATA SHEET

Sample ID 9-086 Page 1 of 1

Tested By R.G ALEXANDER Date 12-20-89

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

EQUIPMENT ITEM	CALIBRATION NO.	DATE DUE
Balance	3304	12-28-89
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) (A)

BEFORE TEST WT. N/A AFTER TEST WT. N/A $\frac{B-A}{B}$ x 100 = N/A % LOSS

Sieve ID Number	Sieve Size	Sample Weight	Cumulative Wt. Retained (g)	% Retained	Cumulative % Retained	Cumulative % Pass	% Pass
N/A	2	3847.79	Ø	Ø	Ø	100	100
	1½		273.07	7.1	7.1	92.9	92.9
	1		565.71	14.7	14.7	85.3	85.3
	¾		790.05	20.5	20.5	79.5	79.5
	½		914.15	23.8	23.8	76.2	76.2
	⅜		1111.02	28.9	28.9	71.1	71.1
	#4		1167.84	30.4	30.4	69.6	69.6
	#10	3847.79	1229.78	32.0	32.0	68.0	68.0
	#40	175.76	9.57	5.4	5.4	94.6	64.3
	#60		173.58	41.9	41.9	58.1	39.5
	#100		124.64	70.9	70.9	29.1	19.8
	#200		151.67	86.3	86.3	13.7	9.3

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 N/A %

D=Original Dry Weight of Sample N/A g

E=Dry Weight of Sample After Drying N/A g

C = <(D-E)/D> X 100

Remarks WASH FINE GRADING

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

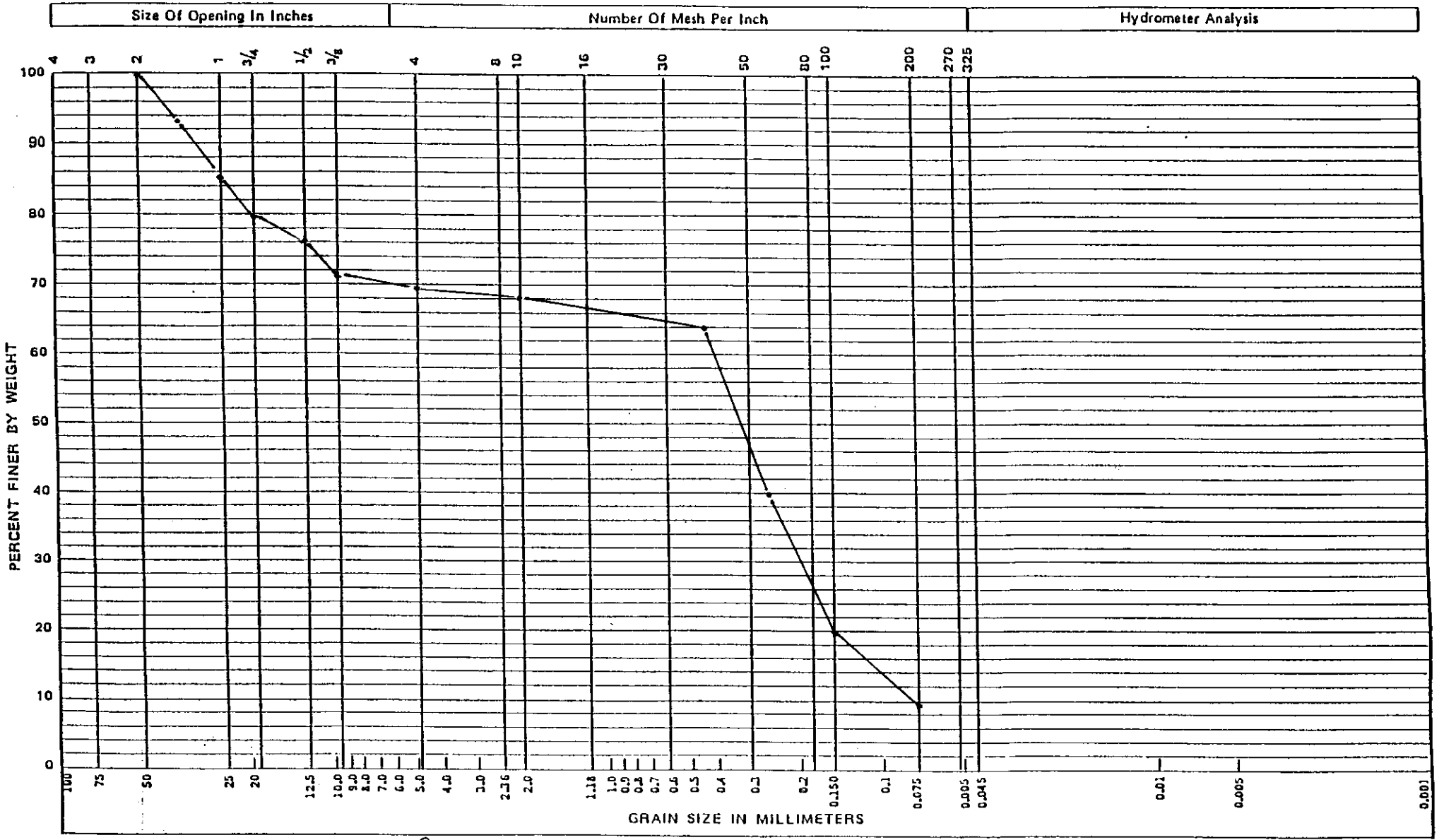
Checked By HC Barry Date 1/3/90

A-6400-204(2-87)

9212129

9212 [illegible] 30

GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-086 Procedure No. ETHL-07 Rev. 1 Date Issued 11-15-89

Sample Description: SANDY GRAVEL
MW-15-9

Plotted by: R.G ALEXANDER
Date: 12-22-89

Checked by: HC Berry
Date: 1/3/90

BD-6400-136 (9-85)

SOIL MOISTURE DATA SHEET

PROCEDURE NO. ETAL-14 REV. NO. Ø

THERMOMETER NO. 0006 CALIBRATION DUE DATE 2-6-90

SAMPLE NO.	WET WT. + CAN	DRY WT. + CAN	CAN WT.	WET WT. SOIL	DRY WT. SOIL	% WATER
9-086	4940.49	4437.18	589.39	4351.10	3847.79	13.1

ALL REQUIRED DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS APPROPRIATELY TRAINED AND TEST PROCEDURES FOLLOWED TO PRODUCE THE ABOVE DATA

TEST OPERATOR: R.G ALEXANDER DATE 12-21-89

Westinghouse
Hanford Company

CHAIN OF CUSTODY

Company Contact: JON LINDBERG Telephone 6-5005

Sample Collected by: Weekes/Anderson/Lindberg Date: Dec. 11, 1989 Time: Variable

Sample Locations: Horn Rapids Landfill, 1100-EM-1, MW-15

Ice Chest No.: NA Field Logbook & Page No.: WHC-N-306-2 pages 15-20

Remarks: Samples collected at MW-15 from 11/21/89 to 12/1/89

Bill of Lading No.: NA Off Site Property No.: NA

Method of Shipment: Hand Carry

Shipped to: Jerry Alexander Bldg. 2101-M Physical Testing Laboratory

Sample Identification

MW-15-1	Plastic Bags
MW-15-2	Plastic Bags
MW-15-3	Plastic Bags
MW-15-4	Plastic Bags
MW-15-5	Plastic Bags
MW-15-6	Plastic Bags
MW-15-7	Plastic Bags
MW-15-9	Plastic Bags
MW-15-10	Plastic Bags
MW-15-11	Plastic Bags
MW-15-12	Plastic Bags
~~MW-15-13~~	~~JW Lindberg 12-11-89~~ JW Lindberg

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
JW Lindberg JW Lindberg	RG Myers	12-12-89/0630
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

FVR\071889-B

9212110232

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector Anderson/Lindberg Date Sampled 11/28/89 & 4/30/89 Time Variable hours

Affiliation of Sampler Golder/WHC

Address Richland, WA
number street city state zip

Telephone (509) 376-5005 Company Contact JON LINDBERG

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	MW-6 to MW-7	Soil	Plastic bags
	MW-8 to MW-11	Soil	Plastic bags

Analysis Requested Sieve/Hydrometer Analysis ASTM-D-422; including Atterberg Limits (ASTM D-4318) on MW-11.

Special Handling and/or Storage none

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.

RADIATION RELEASE

Bldg. Horn Rapids Date 11-21-89

Released By M Copeland
Operational Health Physics

Remarks 5' Sample MW-15-1

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-21-89

Released By M Copeland
Operational Health Physics

Remarks 10' Sample MW-15-2

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-22-89

Released By M Copeland
Operational Health Physics

Remarks 15' Sample MW-15-3

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-27-89

Released By M Copeland
Operational Health Physics

Remarks Sample @ 20' MW-15-4

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-27-89

Released By M Copeland
Operational Health Physics

Remarks Sample @ 25 ft. MW-15-5

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-28-89

Released By M Copeland
Operational Health Physics

Remarks MW-15-6 30' Sample

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-28-89

Released by M Copeland
Operational Health Physics

Remark 35' Sample MW-15-7

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-29-89

Released By M Copeland
Operational Health Physics

Remarks MW-15-9 45' Sample

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-30-89

Released By ZW
Operational Health Physics

Remarks MW 15-10

54-3000-022 (09/88)

9211034

TEST REQUEST FORM

Sample/Specimen No. 9-087 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 12-20-89

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

Remarks FIELD SAMPLES MW-15-10

Received By: R.G ALEXANDER Date 12-[illegible]

Approved By: R-G ALEXANDER Date 12-20-89

SIEVE ANALYSIS DATA SHEET

Sample ID 9-087 Page 1 of 1

Tested By R G Alexander Date 12-20-89

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

EQUIPMENT ITEM	CALIBRATION NO.	DATE DUE
Balance	3304	12-28-89
Thermometer	0006	2-6-90
N/A	N/A	N/A

Sample Description SANDY GRAVEL Sieve Time ____ (min)

reduced by ☒ splitting ☒ quartering ☐ stockpile

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

Sieve ID Number	Sieve Size	Sample Weight	Cumulative Wt. Retained (g)	% Retained	Cumulative % Retained	Cumulative % Pass	% Pass
N/A	3 1/2	4955.26	1208.75	24.4	24.4	75.6	75.6
↓	1 1/2	↓	1375.23	27.8	27.8	72.2	72.2
	1		1654.47	33.4	33.4	66.6	66.6
	3/4		1842.74	37.2	37.2	62.8	62.8
	1/2		2205.23	44.5	44.5	55.5	55.5
	3/8		2438.47	49.2	49.2	50.8	50.8
	#4		2943.80	59.4	59.4	40.6	40.6
	#10	4955.26	3312.28	66.8	66.8	33.2	33.2
	#40	110.95	25.27	22.8	22.8	77.2	25.6
	#60	↓	72.39	65.2	65.2	34.8	11.6
	#100		97.77	88.1	88.1	11.9	4.0
	#200		105.24	94.9	94.9	5.1	1.7

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 N/A %

D=Original Dry Weight of Sample N/A g

E=Dry Weight of Sample After Drying N/A g

C = <(D-E)/D> X 100

Remarks
WASH FINE GRADING
(1) 4" ROCK IS SPLIT SAMPLE
SAMPLE UNDER SIZE

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

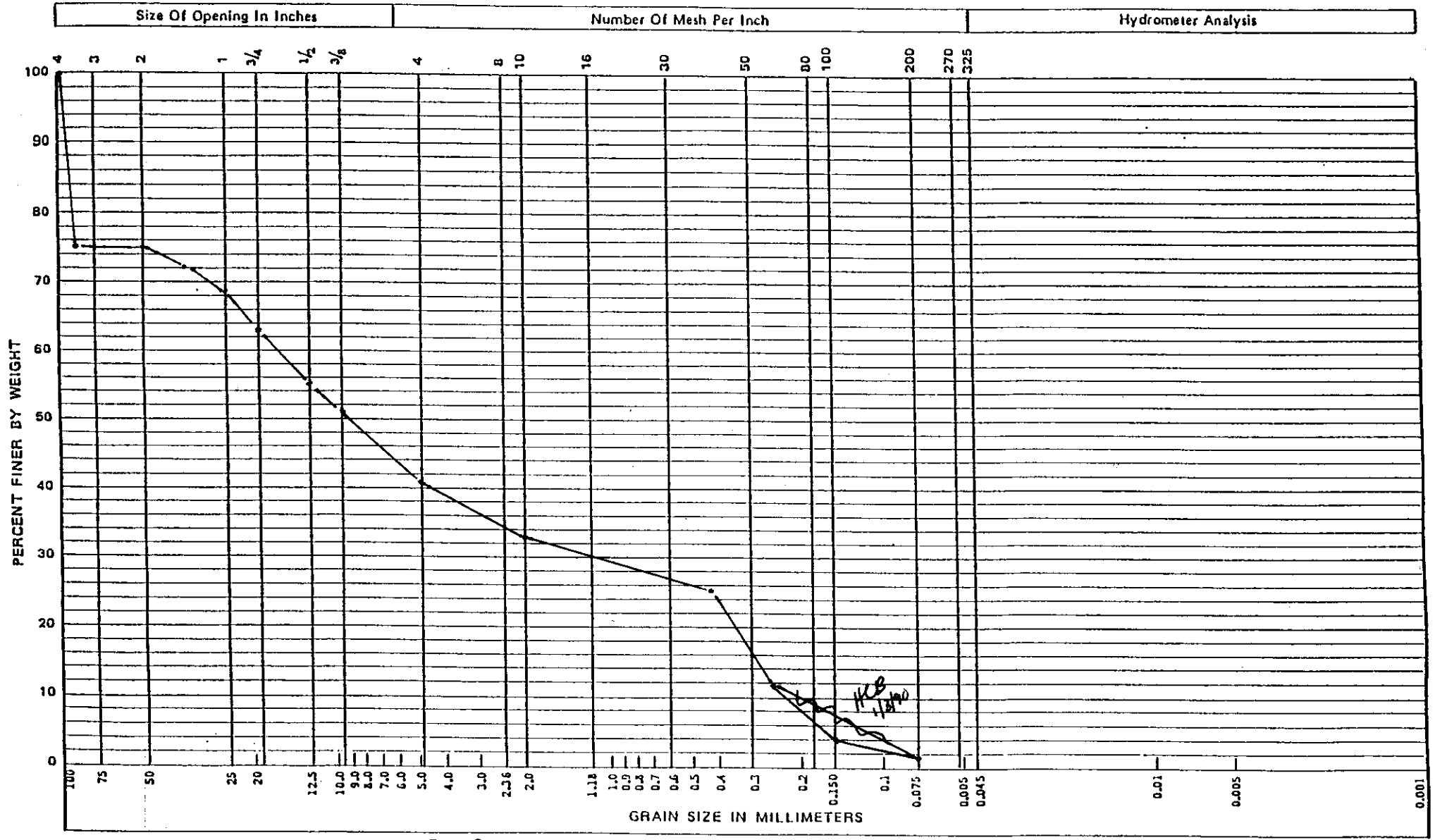
Checked By H L Barry Date 1/3/90

A-6400-204(2-87)

9212-0636

9212137

GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-087 Procedure No. ETAC-07 Rev. 1 Date Issued 11-15-89

Sample Description: SANDY GRAVEL MW-15-10

Plotted by: R.G ALEXANDER Date: 12-20-89

Checked by: HC Benny Date: 1/3/90

BD-6400-136 (9-85)

SOIL MOISTURE DATA SHEET

PROCEDURE NO. ETAL-14 REV. NO. Ø

THERMOMETER NO. 0006 CALIBRATION DUE DATE 2-6-90

SAMPLE NO.	WET WT. + CAN	DRY WT. + CAN	CAN WT.	WET WT. SOIL	DRY WT. SOIL	% WATER
9-081	5543.74	5253.49	588.48	4955.26	4665.01	6.22

ALL REQUIRED DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS APPROPRIATELY TRAINED AND TEST PROCEDURES FOLLOWED TO PRODUCE THE ABOVE DATA

TEST OPERATOR: R.G ALEXANDER DATE 12-21-89

Westinghouse
Hanford Company

CHAIN OF CUSTODY

Company Contact: JON LINDBERG Telephone 6-5005

Sample Collected by: Weekes / Anderson & Lindberg Date: Dec. 11, 1989 Time: Variable

Sample Locations: Horn Rapids Landfill, 1100-EM-1, MW-15

Ice Chest No.: NA Field Logbook & Page No.: WHC-N-306-2 pages 15-20

Remarks: Samples collected at MW-15 from 11/21/89 to 12/1/89

Bill of Lading No.: NA Off Site Property No.: NA

Method of Shipment: Hand Carry

Shipped to: Jerry Alexander 2101-M Bldg. Physical Testing Laboratory

Sample Identification

MW-15-1 Plastic Bags	
MW-15-2 Plastic Bags	
MW-15-3 Plastic Bags	
MW-15-4 Plastic Bags	
MW-15-5 Plastic Bags	
MW-15-6 Plastic Bags	
MW-15-7 Plastic Bags	
MW-15-9 Plastic Bags	
MW-15-10 Plastic Bags	
MW-15-11 Plastic Bags	
MW-15-12 Plastic Bags	
~~MW-15-13~~ JW Lindberg 12-11-89 JW Lindberg	

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
JW Lindberg JW Lindberg	RG Alexander	12-12-89/0630

FVR\071889-B

9212139

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector Anderson/Lindberg Date Sampled 11/28/89 to 11/30/89 Time Variable hours

Affiliation of Sampler Golder/WHC

Address Richland, WA
number street city state zip

Telephone (509) 376-5005 Company Contact JON LINDBERG

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	MW-6 to MW-7	Soil	Plastic bags
	MW-8 to MW-11	Soil	Plastic bags

Analysis Requested Sieve/Hydrometer Analysis ASTM-D-422; including Atterberg Limits (ASTM D-4318) on MW-11.

Special Handling and/or Storage none

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.

Revision 0
Date September 1986

RADIATION RELEASE

Bldg. Horn Rapids Date 11-21-89

Released By M Copeland
Operational Health Physics

Remarks 5' Sample
MW-15-1

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-21-89

Released By M Copeland
Operational Health Physics

Remarks 10' Sample
MW-15-2

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-22-89

Released By M Copeland
Operational Health Physics

Remarks 15' Sample
MW-15-3

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-22-89

Released By M Copeland
Operational Health Physics

Remarks Sample @ 20'
MW-15-4

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-27-89

Released By M Copeland
Operational Health Physics

Remarks Sample @ 25 ft.
MW-15-5

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-28-89

Released By M Copeland
Operational Health Physics

Remarks MW-15-6
30' Sample

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-28-89

Released by M Copeland
Operational Health Physics

Remark 35' Sample
MW-15-7

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-29-89

Released By M Copeland
Operational Health Physics

Remarks MW-15-9
45' Sample

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-30-89

Released By JW
Operational Health Physics

Remarks MW 15-10

54-3000-022 (09/88)

TEST REQUEST FORM

Sample/Specimen No. 9-088 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 12-27-89

Test Requested	No. of Samples	Test Lab Information (Instruction Used)
SIEVE ANALYSIS	1	ETAL-07
HYDROMETER	1	ETAL-07 (IF REQ
ATTERBERG	1	ETAL-18
N/A	N/A	N/A

Remarks FIELD SAMPLE MW-15-11

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

Approved By: R.G ALEXANDER Date 12-27-89

SIEVE ANALYSIS DATA SHEET

Sample ID 9-088 Page 1 of 1

Tested By R.G ALEXANDER Date 12-27-89

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

EQUIPMENT ITEM	CALIBRATION NO.	DATE DUE
Balance	3304	8-25-90
Thermometer	0006	2-6-90
N/A	N/A	N/A

Sample Description SILTY SAND Sieve Time _____ (min)

reduced by ☒ splitting ☐ quartering ☐ stockpile

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

Sieve ID Number	Sieve Size	Sample Weight	Cumulative Wt. Retained (g)	% Retained	Cumulative % Retained	Cumulative % Pass	% Pass
N/A	2"	1047.57	ø	ø	ø	100	100
	1 1/2		ø	ø	ø	100	100
	1		75.63	7.2	7.2	92.8	92.8
	3/4		84.70	8.1	8.1	91.9	91.9
	1/2		109.75	10.5	10.5	89.5	89.5
	3/8		117.42	11.2	11.2	88.8	88.8
	#4		135.78	13.0	13.0	87.0	87.0
	#10	1047.57	151.78	14.5	14.5	85.5	85.5
	#40	129.86	3.40	2.6	2.6	97.4	83.3
	#60		5.46	4.2	4.2	95.8	81.9
	#100		7.35	5.7	5.7	94.3	80.6
	#200	129.86	28.60	22.0	22.0	78.0	66.7

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 N/A %

D=Original Dry Weight of Sample N/A g

E=Dry Weight of Sample After Drying N/A g

C = <(D-E)/D> X 100

Remarks
WASH FINE GRADING

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

Checked By H.C Benny Date 1/4/90

A-6400-204(2-87)

9212243

SPECIFIC GRAVITY OF SOILS DATA SHEET

Specimen/Sample No. 9-088 Page 1 of 1

Test Operator R. G ALEXANDER 2-26-90

EQUIPMENT ITEM	NO.	DATE DUE
Balance	3304	3-25-90
Oven Thermometer	0007	8-16-90
Thermometer	0002	2-9-91
Pycnometer	2554	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	25 .00	.__	.__
	Pycnometer No.	2554		
	Wt. Pycnometer, g	135 .72	.__	.__
W_a	Wt. Pycnometer + Wetting Agent, g	387 .06	.__	.__
W_b	Wt. Pycnometer + Wetting Agent + Soil, g	401 .22	.__	.__
	Temperature, T_x at W_b, °C	23.8 C		
G_w	Specific Gravity of Wetting Agent at T_x	1.00	_.__	_.__
G_t	Specific Gravity of Soil at T_x	2.31	_.__	_.__
G_s	Specific Gravity of Soil at 20°C	2.30	_.__	_.__

* WHITE VOLCANIC ASH

$$G_t = \frac{G_{w*}\gamma_{w*}W_o}{W_o + (W_a - W_b)}$$

γ_w = Unit Weight Of Water (g/cc)

*$G_s = K \cdot G_t$

K values found in ASTM D854-58, Table 1

Average Specific Gravity At 20°c	2.30

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

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 3-1-90

A-6400-235 (9-86)

9211-0144

HYDROMETER ANALYSIS DATA SHEET

Sample ID 9-088 Page 1 of 1

Tested By H L Benny Date 2-23-90

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

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

Specific gravity of Sample 2.30

% Passing No. 10 Sieve 85.5 (%)

Hygroscopic Correction Factor Ø

WEIGHT OF SAMPLE

Wt. Container + Soil NA (g)

Wt. Container NA (g)

Wt. Soil 50.00 (g)

COMPOSITE CORRECTION

1st Reading 6 at 23.8 °C

2nd Reading NA at NA °C

HYGROSCOPIC MOISTURE CONTENT

Wt. Container + Air Dry Soil NA (g)

Wt. Container + Oven Dry Soil NA (g)

Wt. Container NA (g)

Water Content NA (%)

REMARKS

Tube A
Test stopped when readings same as blank.

Assume "a" = 1.11, K = 0.01447

Date	Clock time	Elapsed time (min)	Hydrometer reading	Hydrometer with composite correction	Temp. (°C)	Soil in suspension (%)	Particle diameter (mm)
2-23-90	1410	2.0	24	18	24.4	34.2	0.036
	1413	5.0	13	7	24.4	13.3	0.024
	1423	15.0	9	3	24.5	5.7	0.014
	1438	30.0	7	1	24.5	1.9	0.011 Rd ~~0.007~~
	1508	60.0	7	1	24.6	1.9	0.007 Rd ~~0.005~~
↓	1818	250.00	6	Ø	24.4	Ø	Ø
2-24-90	NA	1,440.0	NA	NA	NA	NA	NA

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.

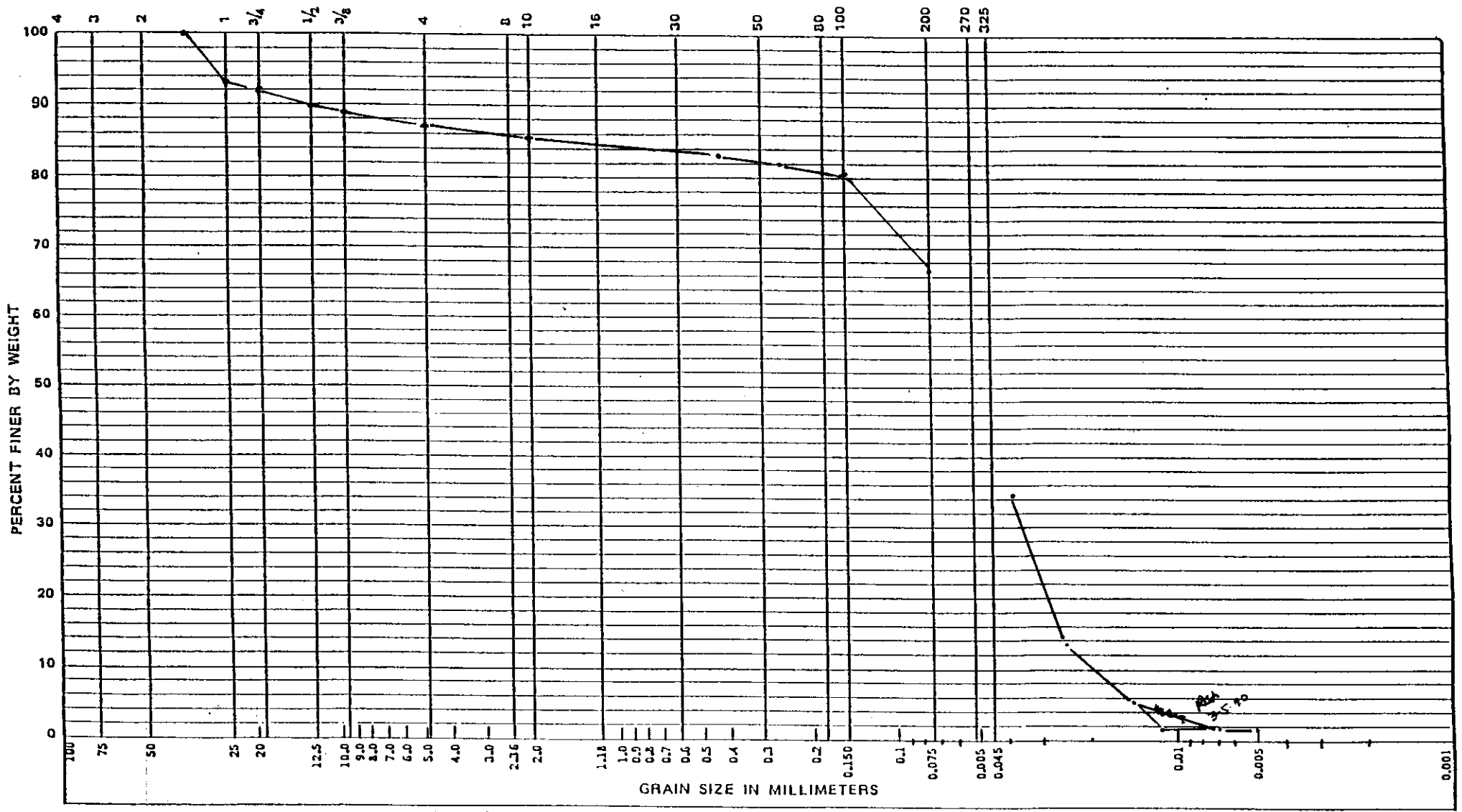
Checked By R.G Alexander Date 3-5-90

A-6400-205 (1.87)

9212100245

9212-0046

GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-088 Procedure No. EAL-07 Rev. 1 Date Issued 11-15-89

Sample Description:	Plotted by:	Checked by:
Silty Sand MW-15-11	R.G Alexander	H.C Benoy
	Date: 12-28-89	Date: 1/4/90

BD-6400-136 (9-85)

SOIL MOISTURE DATA SHEET

PROCEDURE NO. ESTL-14 REV. NO. 0

THERMOMETER NO. 0006 CALIBRATION DUE DATE 2-6-90

SAMPLE NO.	WET WT. + CAN	DRY WT. + CAN	CAN WT.	WET WT. SOIL	DRY WT. SOIL	% WATER
9-088	2018.85	1636.05	588.48	1430.37	1047.57	36.5

ALL REQUIRED DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS APPROPRIATELY TRAINED AND TEST PROCEDURES FOLLOWED TO PRODUCE THE ABOVE DATA

TEST OPERATOR: R G ALEXANDER DATE 1-3-90

Westinhouse Hanford Company	CHAIN OF CUSTODY

Company Contact R. G. ALEXANDER Telephone 3-4590

Sample Collected by WEEKES/ANDERSON/LINDBERG Date 12-11-89 Time VARIABLE

Sample Locations HORN RAPIDS LANDFILL, HOD-EM-1, MW-15

Ice Chest No. N/A Field Logbook and Page No. WHC-N-306-2 PAGES 15-20

Remarks SAMPLES COLLECTED FROM 11-21-89 TO 12-1-89 AT MW-15

Bill of Lading No. N/A Offsite Property No. N/A

Method of Shipment HAND CARRY

Shipped to J. LINDBERG 450 HILLS

Sample Identification

MW-15-11 PLASTIC BAG

Chain of Possession

Relinquished by:	Received by:	Date/Time:
R.G ALEXANDER		12-13-89/ 1500 hrs.
Relinquished by:	Received by: (GAI)	Date/Time:
		12/14/89 1423 hrs.
Relinquished by: (GAI)	Received by: JWLindberg	Date/Time:
		12/19/89 0845 hrs.
Relinquished by: JWLindberg 12/20/89	Received by: RG ALEXANDER	Date/Time:
		12/20/89 1530 HRS

A-6000-407 (07/89)

9213219

Westinghouse
Hanford Company

CHAIN OF CUSTODY

Company Contact: JON LINDBERG Telephone 6-5005

Sample Collected by: Weekes / Anderson & Lindberg Date: Dec. 11, 1989 Time: Variable

Sample Locations: Horn Rapids Landfill, 1100-EM-1, MW-15

Ice Chest No.: NA Field Logbook & Page No.: WHC-N-306-2 pages 15-20

Remarks: Samples collected at MW-15 from 11/21/89 to 12/1/89

Bill of Lading No.: NA Off Site Property No.: NA

Method of Shipment: Hand Carry

Shipped to: Jerry Alexander Bldg. 2101-M Physical Testing Laboratory

Sample Identification

MW-15-1 Plastic Bags	
MW-15-2 Plastic Bags	
MW-15-3 Plastic Bags	
MW-15-4 Plastic Bags	
MW-15-5 Plastic Bags	
MW-15-6 Plastic Bags	
MW-15-7 Plastic Bags	
MW-15-9 Plastic Bags	
MW-15-10 Plastic Bags	
MW-15-11 Plastic Bags	
MW-15-12 Plastic Bags	
~~MW-15-13~~ JW Lindberg 12-11-89 JW Lindberg	

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
JW Lindberg JW Lindberg	R G Alexander	12-12-89/0630
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

FVR\071889-B

9212100249

MW-15

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector Anderson/Lindberg Date Sampled 11/28/89 & 11/30/89 Time Variable hours

Affiliation of Sampler Golder/WHC

Address Richland, WA
number street city state zip

Telephone (509) 376-5005 Company Contact JON LINDBERG

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	MW-6 to MW-7	Soil	Plastic bags
	MW-8 to MW-11	Soil	Plastic bags

Analysis Requested Sieve/Hydrometer Analysis ASTM-D-422; including Atterberg Limits (ASTM D-4318) on MW-11.

Special Handling and/or Storage none

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.

9-21-0250

RADIATION RELEASE

Bldg. Horn Rapids Date 11-21-89

Released By M Copeland
Operational Health Physics

Remarks 5' Sample
MW-15-1

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-21-89

Released By M Copeland
Operational Health Physics

Remarks 10' Sample
MW-15-2

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-22-89

Released By M Copeland
Operational Health Physics

Remarks 15' Sample
MW-15-3

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-27-89

Released By M Copeland
Operational Health Physics

Remarks Sample @ 20'
MW-15-4

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-27-89

Released By M Copeland
Operational Health Physics

Remarks Sample @ 25 ft.
MW-15-5

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-28-89

Released By M Copeland
Operational Health Physics

Remarks MW-15-6
30' Sample

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-28-89

Released by M Copeland
Operational Health Physics

Remark 35' Sample
MW-15-7

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-29-89

Released By M Copeland
Operational Health Physics

Remarks MW-15-9
45' Sample

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-30-89

Released By JW
Operational Health Physics

Remarks MW 15-10

54-3000-022 (09/88)

RADIATION RELEASE

Well MW-15 12/15/89

Bldg. Date

Released By
Operational Health Physics

Remarks MW-15-11

54-3000-022 (09/88)

TEST REQUEST FORM

Sample/Specimen No. 9-089 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 1-3-90

Test Requested	No. of Samples	Test Lab Information (Instruction Used)
SIEVE ANALYSIS	RCA 1-3-90 ☑ 1	ETAL-07
HYDROMETER	1	ETAL-07 (IF REQ)
HYDRAULIC CONDUCTIVITY	1	ETAL-09
ATTERBERG LIMITS	1	ETAL-18

Remarks FIELD SAMPLE MW-15-12

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

Approved By: R.G ALEXANDER Date 1-3-90

9211352

SIEVE ANALYSIS DATA SHEET

Sample ID 9-089 Page 1 of 1

Tested By RG ALEXANDER Date 1-3-90
RGA 1-3-90

Procedure ETAL-07 Rev ~~X~~ 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 SILTY SAND Sieve Time 10 (min)

reduced by ☒ splitting ☐ quartering ☐ stockpile

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

Sieve ID Number	Sieve Size	Sample Weight	Cumulative Wt. Retained (g)	% Retained	Cumulative % Retained	Cumulative % Pass	% Pass
N/A							
	#4	∅	∅	∅	∅	100	100
	#10	125.14	2.05	1.6	1.6	98.4	98.4
	#40		2.99	2.4	2.4	97.6	97.6
	#60		3.34	2.7	2.7	97.3	97.3
	#100		3.76	3.0	3.0	97.0	97.0
	#200		14.56	11.6	11.6	88.4	88.4
	#230		33.72	26.9	26.9	73.1	73.1
	#270		44.35	35.4	35.4	64.6	64.6
	#400		64.83	51.8	51.8	48.2	48.2

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 88.4 %

D=Original Dry Weight of Sample 125.14g

E=Dry Weight of Sample After Washing/Sieve 14.56g

C = <(D-E)/D> X 100

Remarks
WASH GRADING

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

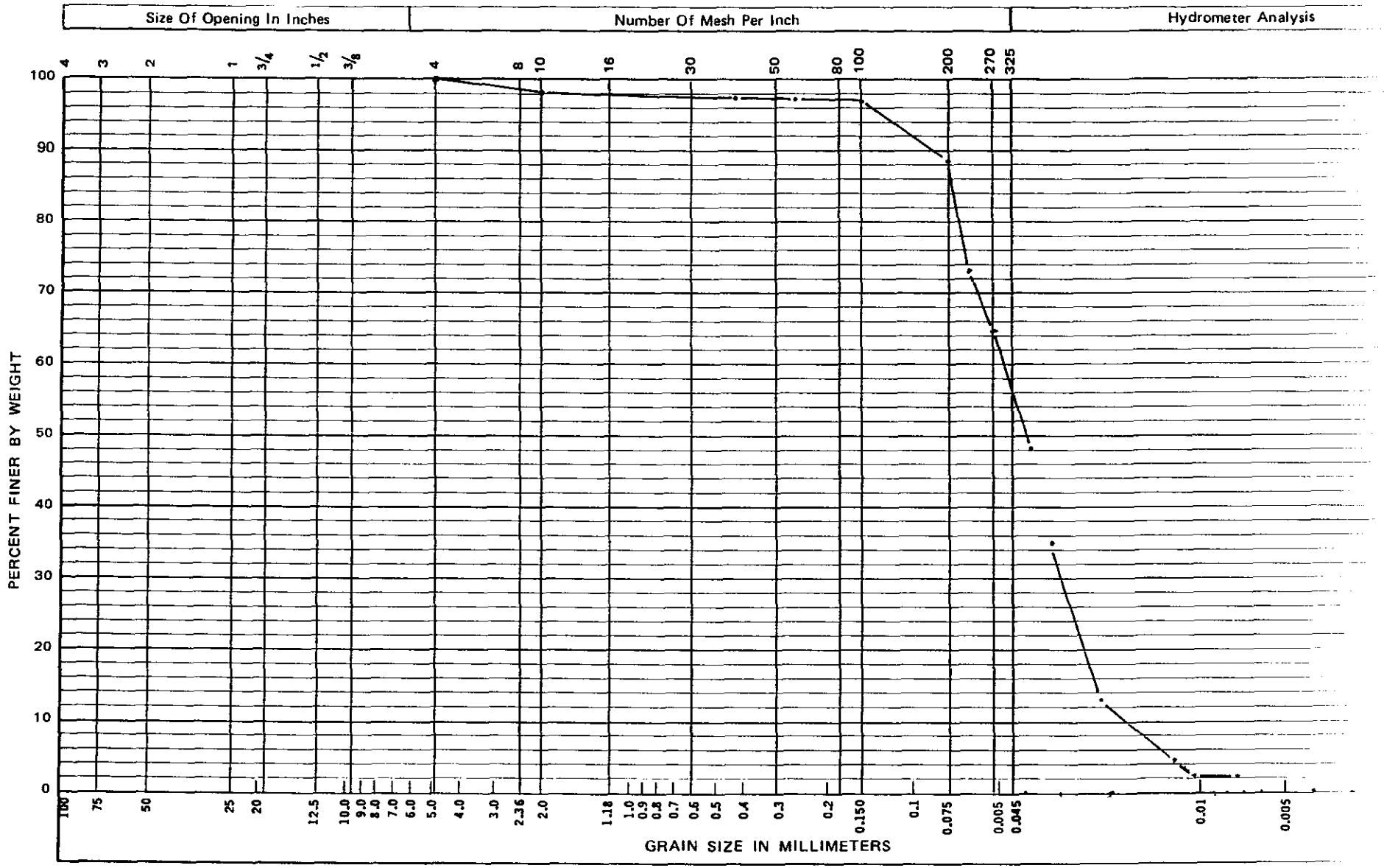
Checked By HCBenny Date 2/2/90

A-6400-204(2-87)

9213153

9212 0354

GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-089 Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

Sample Description:	Plotted by:	Checked by:
SILTY SAND MW-15-12	R.G ALEXANDER	H.L Benny
	Date: 1-5-90	Date: 1-26-90

SOIL MOISTURE DATA SHEET

PROCEDURE NO. ETAL-14 REV. NO. 0

THERMOMETER NO. 0006 CALIBRATION DUE DATE 2-6-90

SAMPLE NO.	WET WT. + CAN	DRY WT. + CAN	CAN WT.	WET WT. SOIL	DRY WT. SOIL	% WATER
9-089	1743.16	1387.18	311.48	1431.68	1075.70	33.09

ALL REQUIRED DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS APPROPRIATELY TRAINED AND TEST PROCEDURES FOLLOWED TO PRODUCE THE ABOVE DATA

TEST OPERATOR: R-G ALEXANDER DATE 1-4-90

HYDROMETER ANALYSIS DATA SHEET

Sample ID 9-089 Page 1 of 1

Tested By HL Benny Date 2-23-90

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

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

Specific gravity of Sample 2.30 (SEE 9-088)

% Passing No. 10 Sieve 98.4 (%)

Hygroscopic Correction Factor Ø

WEIGHT OF SAMPLE

Wt. Container + Soil NA (g)

Wt. Container NA (g)

Wt. Soil 50.0 (g)

COMPOSITE CORRECTION

1st Reading 6 at 23.8 °C

2nd Reading NA at NA °C

HYGROSCOPIC MOISTURE CONTENT

Wt. Container + Air Dry Soil NA (g)

Wt. Container + Oven Dry Soil NA (g)

Wt. Container NA (g)

Water Content NA (%)

REMARKS

Tube B

Test stopped when readings same as blank.

w = 5a81

Pan 45

Assume "a" = 1.11, K = 0.01447

Date	Clock time	Elapsed time (min)	Hydrometer reading	Hydrometer with composite correction	Temp. (°C)	Soil in suspension (%)	Particle diameter (mm)
2-23-90	14:50	2.0	22	16	24.9	35.0	~~0.038~~ 0.048
2-23-90	14:53	5.0	12	6	24.9	13.1	0.022
2-23-90	15:03	15.0	8	2	24.9	4.4	0.014
2-23-90	15:18	30.0	7	1	24.8	2.2	~~0.011~~ 0.007
2-23-90	15:48	60.0	7	1	24.7	2.2	~~0.007~~ 0.005
2-23-90	18:58	250 00	6	Ø	24.4	Ø	Ø
NA	NA	1,440.0	NA	NA	NA	NA	NA

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 Hayland Date 3-6-90

A-6400-205 (1.87)

9212-1356

HYDRAULIC CONDUCTIVITY OF SOILS DATA SHEET

Sample No. 9-089 Page 1 Of 5

Test Operator R.G ALEXANDER Date 1-4-90

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

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

Sample Preparation

PARTICLE SIZE
(Sieve Mesh Range)

N/A	To	N/A
	To	
	To	
	To	
	To	
	To	
	To	

WEIGHT

N/A	%
	%
	%
	%
	%
	%
	%
Total	100 %

OTHER COMPONENTS

N/A	

N/A	%
	%
	%
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 H.C BENNY Date 1-26-90

9212100357

9212-1158

SAMPLE PREPARATION

Determine Weight of Samples in Container

Container No.	4
Wt. of Sample + Container, g	1743.16
Wt. of Container, g	311.48
Wt. of Sample, g	1431.68

Determine the Water Content of the "Air Dry" Sample

Container No.	4
Wt. Container & Wet Soil (A), g	1743.16
Wt. Container & Dry Soil (B), g	1387.18
Wt. of Water, g	355.98
Wt. of Container (C), g	311.48
Wt. of Dry Soil, W_s, g	1075.70
Water Content (W), %	33.09

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

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 HLBenny Date 1-26-90

Sample No. 9-689

SAMPLE COMPACTION

Compaction Method Static N/A Tamping N/A

		Layer			
STATIC	Load Applied, g/ Layer length, cm	1	N/A	11	N/A
or		2	↓	12	↓
TAMPING	No. Tamps per Layer/ Layer Length, cm	3	↓	13	↓
		4	↓	14	↓
		5	↓	15	↓
		6	↓	16	↓
	Total No. of Layers N/A	7	↓	17	↓
	INTACT SAMPLE FROM SPLIT TUBE IN 4" LUCITE TUBE	8	↓	18	↓
		9	↓	19	↓
		10	↓	20	↓

Tamper Foot Diameter cm	N/A
Tamper Applied Load, g	N/A
Sample Diameter, (d), cm	9.56
Sample Length, (L), cm	7.36
Sample Mold or Permeameter Weight & Compacted Sample, g	959.71
Sample Mold or Permeameter Weight, g	88.86
Weight of Compacted Sample, (E), g	870.85
Weight of Container & Uncompacted Wet Sample, (A), g	1743.16
Weight of Container & Uncompacted Dry Sample, (B), g	1387.18
Weight of Water, g	355.98
Weight of Container, (C), g	311.48
Weight of Dry Soil, (WS), g	1075.70
Water Content, %	33.09
Compacted Bulk Density of Sample, (γm), g/cc	1.65
Compacted Sample Dry Density, (γd), g/cc	1.24

$$\gamma m = \frac{E}{(\pi)(d/2)^2(L)}$$

$$\gamma d = \left(\frac{\gamma m}{W + 100}\right) 100$$

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 1-26-90

9 2 1 2 1 0 3 5 9

HYDRAULIC CONDUCTIVITY DATA SHEET

Sample ID. 9-089 Page 4 of 5

Procedure No. ETAL-09 Date Issued 11-15-89

DATE	TIME			VOLUME DETERMINANTS							Operator Initials
				Effluent		Container		System	Pressure		
Year 90 (Mo/Day)	System Down (Hr: Min)	System Up (Hr: Min)	Time Change (Hr: Min)	Temp (°C)	Weight (±0.1g)	Tare (±0.1g)	Tare & Effluent (±0.1g)	Temp (°C)	Pore H_2O ~~(psi)~~ CM	Back H_2O (psi)	
1-10	—	12:45	—	—	—	150.58	—	—	195.0	N/A	RGA
1-10	14:15	STOP	1:30	22	560.40	150.58	710.98	22	195.0	N/A	RGA
1-11	—	0930	—	—	—	150.58	RGA ~~711.37~~	—	195.0	N/A	RGA
1-11	1100	1105	1:30	22	560.99	150.58	711.87	22	195.0	N/A	RGA
1-11	1205	1210	1:00	22	376.34	150.38	527.72	22	195.0	N/A	RGA
1-11	1310	1315	1:00	22	360.20	150.38	510.58	22	195.0	N/A	RGA
1-12	—	0900	—	—	—	150.58	—	—	104.1	N/A	RGA
1-12	1200	STOP	3:00	21°	535.74	150.58	686.32	21	104.1	N/A	RGA
1-15	—	0800	—	—	—	150.58	—	—	104.1	N/A	RGA
1-15	1100	1115	3:00	21	488.29	150.58	638.87	21	104.1	N/A	RGA
1-15	1445	STOP	3:30	22	558.68	150.58	709.26	22	104.1	N/A	RGA
1-16	—	0730	—	—	—	150.58	—	—	104.1	N/A	RGA
1-16	10:00	10:05	~~5:30~~ 2:30 RGA	22°	390.47	~~150.58~~	641.05	22	104.1	N/A	RGA
1-16	12:35	STOP	2:30	22	381.72	150.58	532.30	22	104.1	N/A	RGA
1-17	—	0800	—	—	—	150.58	~~526.82~~ — RGA	—	104.1	N/A	RGA
1-17	10:30	10:35	2:30	22	375.24	150.58	525.82	22	104.1	N/A	RGA
1-17	15:35	13:40	3:30	22	452.54	150.58	603.12	22	104.1	N/A	RGA
1-17	16:40	STOP	3:00	22	419.09	150.58	569.67	22	104.1	N/A	RGA
1-18	—	0730	—	—	—	150.58	—	—	104.1	N/A	RGA
1-18	1130	1135	4:00	21	560.00	150.58	710.58	21	104.1	N/A	RGA
1-18	14:35	STOP	3:00	21	421.64	150.58	572.22	21	104.1	N/A	RGA
1-18	—	STOP TEST		—	—	—	—	—	—	—	RGA

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 Berry Date 2/2/90

9212-1-03360

HYDRAULIC CONDUCTIVITY DATA SHEET

Sample ID 9-089 Page 5 of 5

Procedure No. ETAL-09 Date Issued 11-15-89

Date Year 90 (Mo/Day)	Hydraulic Conductivity (cm/sec)	Hydraulic Gradient (cm/cm)	Effluent Analysis (Sample Number)	Effluent Analysis Lab. Notebook Location	Effluent Description	Operator Initials
1-10	RGA START 5.46	TEST	—	—	—	RGA
1-10	~~5.46~~ 5.46×10^{-5}	26.50	—	—	CLEAR	RGA
1-11	START	TEST	—	—	—	RGA
1-11	5.46×10^{-5}	26.50	—	—	CLEAR	RGA
1-11	5.49×10^{-5}	26.50	—	—	CLEAR	RGA
1-11	5.26×10^{-5}	26.50	—	—	CLEAR	RGA
1-12	START	TEST	—	—	—	RGA
1-12	4.89×10^{-5}	14.14	—	—	CLEAR	RGA
1-15	START	TEST	—	—	—	RGA
1-15	4.45×10^{-5}	14.14	—	—	CLEAR	RGA
1-15	4.37×10^{-5}	14.14	—	—	CLEAR	RGA
1-16	START	TEST	—	—	—	RGA
1-16	4.27×10^{-5}	14.14	—	—	CLEAR	RGA
1-16	4.19×10^{-5}	14.14	—	—	CLEAR	RGA
1-17	START	TEST	—	—	—	RGA
1-17	4.11×10^{-5}	14.14	—	—	CLEAR	RGA
1-17	4.13×10^{-5}	14.14	—	—	CLEAR	RGA
1-17	3.82×10^{-5}	14.14	—	—	CLEAR	RGA
1-18	START	TEST	—	—	CLEAR	RGA
1-18	3.83×10^{-5}	14.14	—	—	CLEAR	RGA
1-18	3.84×10^{-5}	14.14	—	—	CLEAR	RGA
—	STOP	TEST	—	—	—	—
	$3.8 \pm 0.2 \times 10^{-5}$ CM/SEC					

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 _____ Date _____

9212-1-0261

Westinghouse
Hanford Company

CHAIN OF CUSTODY

Company Contact: JON LINDBERG Telephone 6-5005

Sample Collected by: Weekes/Anderson/Lindberg Date: Dec. 11, 1989 Time: Variable

Sample Locations: Horn Rapids Landfill, 1100-EM-1, MW-15

Ice Chest No.: NA Field Logbook & Page No.: WHC-N-306-2 pages 15-20

Remarks: Samples collected at MW-15 from 11/24/89 to 12/1/89

Bill of Lading No.: NA Off Site Property No.: NA

Method of Shipment: Hand Carry

Shipped to: Jerry Alexander Bldg. 2101-M Physical Testing Laboratory

Sample Identification	
MW-15-1 Plastic Bags	
MW-15-2 Plastic Bags	
MW-15-3 Plastic Bags	
MW-15-4 Plastic Bags	
MW-15-5 Plastic Bags	
MW-15-6 Plastic Bags	
MW-15-7 Plastic Bags	
MW-15-9 Plastic Bags	
MW-15-10 Plastic Bags	
MW-15-11 Plastic Bags	
MW-15-12 Plastic Bags	
~~MW-15-13~~ JW Lindberg 12-11-89 JW Lindberg	

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
JW Lindberg JW Lindberg	RG Myhre	12-12-89/0630
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

FVR\071889-B

9212100362

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector Anderson/Lindberg Date Sampled 12-1-89 Time 0855 hours

Affiliation of Sampler Golder/WHC

Address Richland, WA
number street city state zip

Telephone (509) 376-5005 Company Contact Jon Lindberg

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	MW-12	Soil	Lexan Tube (split Spoon)

Analysis Requested Permeability, Sieve/Hydrometer Analysis, Atterberg Limits (Klute and Dirksen, ASTM D-422, ASTM D-4318).

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.

Revision 0
Date September 1986

RADIATION RELEASE

Bldg. Hornkapids Date 12-1-89

Released By M Copeland
Operational Health Physics

Remarks SLA. split spoon
Sample MW-15-12

54-3000/022 (09/88)

MW-15-12