START

001711

TEST REQUEST FORM

Sample/Specimen No. 9-064 Cost Code/Work Order No. ED332

Requested By: Org. 80232 Person J. LINDBERG Date 10-4-89

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

Remarks FIELD SAMPLE MW-6-1

Received By: R.G ALEXANDER Date 11-28-89

Approved By: R.G ALEXANDER Date 10-4-89

DEC 1991
RECEIVED
EDMC

SIEVE ANALYSIS DATA SHEET

Sample ID 9-064 Page 1 of 1

Tested By R.G ALEXANDER Date 12-4-89

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

BEFORE TEST WT. (B) N/A AFTER TEST WT. (A) 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	1 1/2	4429.62	Ø	Ø	Ø	100	100
	1		185.14	4.2	4.2	95.8	95.8
	3/4		367.20	8.3	8.3	91.7	91.7
	1/2		859.81	19.4	19.4	80.6	80.6
	3/8		1206.83	27.2	27.2	72.8	72.8
	#4		1887.44	42.6	42.6	57.4	57.4
	#10	4429.62	2458.60	55.5	55.5	44.5	44.5
	#40	135.14	52.39	38.8	38.8	61.2	27.2
	#60		71.34	52.8	52.8	47.2	21.0
	#100		84.82	62.8	62.8	37.2	16.6
	#200		97.77	72.3	72.3	27.7	12.3
	PAN	N/A	N/A	N/A	N/A	N/A	N/A

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 12-8-89

A-6400-204(2-87)

9212110033

SPECIFIC GRAVITY OF SOILS DATA SHEET

Specimen/Sample No. 9-064 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 "G" WATER

	DETERMINATION NO.	1	2	3
	Drying Container No.	N/A	N/A	N/A
	Wt. Container + Oven Dry Soil, ± 0.01g	N/A .__	.__	.__
	Wt. Container, ± 0.01g	N/A .__	.__	.__
* W_o	Wt. Oven Dry Soil, g	40 .00	.__	.__
	Pycnometer No.	2554		
	Wt. Pycnometer, g	135 .72	.__	.__
W_a	Wt. Pycnometer + Wetting Agent, g	387 .04	.__	.__
W_b	Wt. Pycnometer + Wetting Agent + Soil, g	412 .86	.__	.__
	Temperature, T_x at W_b, °C	24.2 C		
G_w	Specific Gravity of Wetting Agent at T_x	1.00	_.__	_.__
G_t	Specific Gravity of Soil at T_x	2.82	_.__	_.__
G_s	Specific Gravity of Soil at 20°C	2.81	_.__	_.__

* LIGHT GRAY/BROWN SILTY SAND

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

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	2.81

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 9-064 Page 1 of 1

Tested By HL Benny Date 2-27-90

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 2.81

% Passing No. 10 Sieve 44.5 (%)

Hygroscopic Correction Factor Ø

WEIGHT OF SAMPLE

Wt. Container + Soil NA (g)

Wt. Container NA (g)

Wt. Soil 56.62 (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

YY = 127.23'

Date	Clock time	Elapsed time (min)	Hydrometer reading	Hydrometer with composite correction	Temp. (°C)	Soil in suspension (%)	Particle diameter (mm)
2-27-90	1113	2.0	18	12	24.4	9.1	0.033
	1116	5.0	15	9	24.4	6.9	0.021
	1126	15.0	12	6	24.1	4.6	0.012
	1141	30.0	10	4	24.1	3.0	0.009
	1211	60.0	9	3	23.8	2.3	0.006
	1521	250.00	7	1 HLB 3-2-90	23.7	0.8	0.003
2-28-90	1111	1,440.0	6	Ø	23.2	Ø	Ø

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

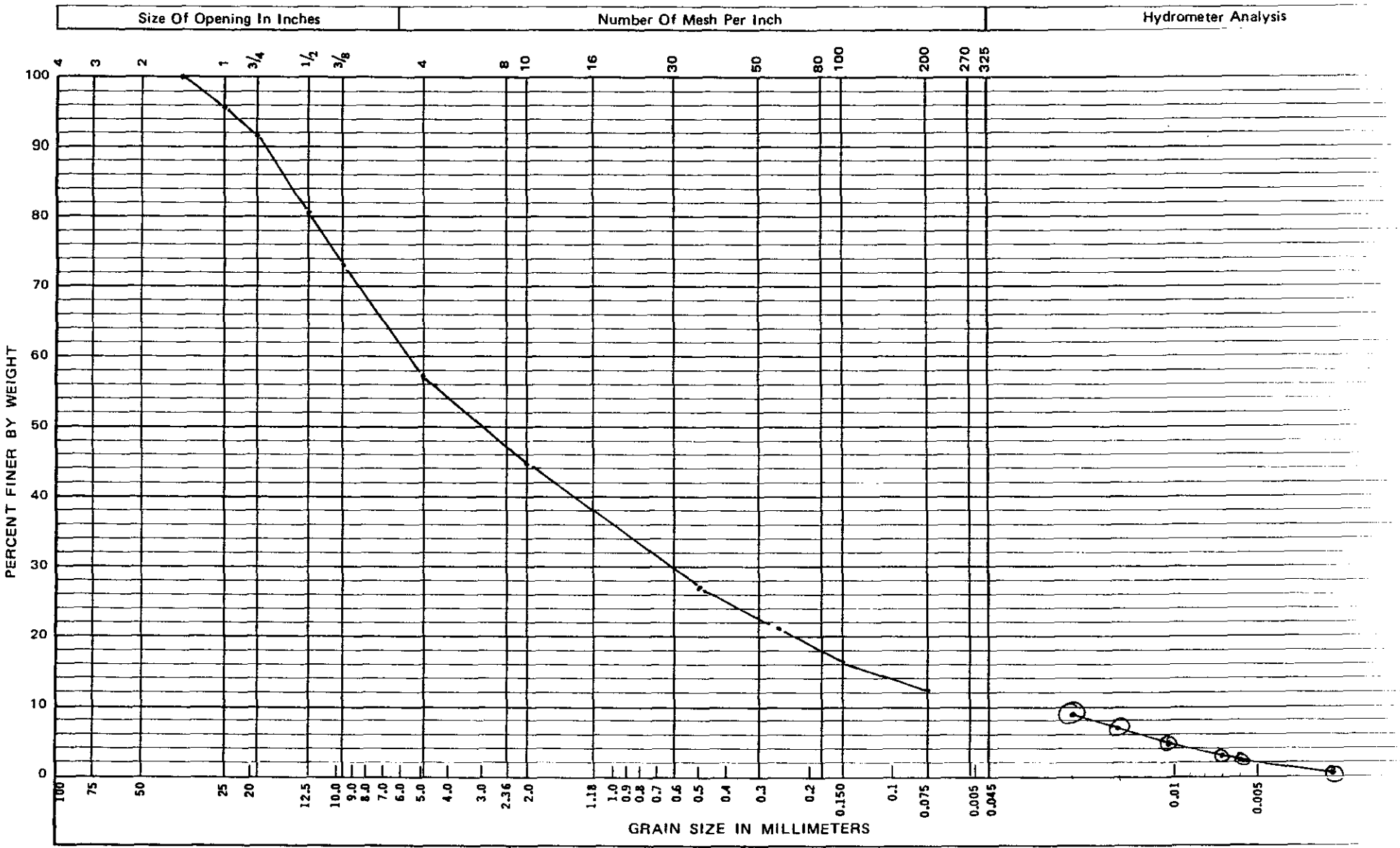
ALL REQUIRED DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS APPROPRIATELY TRAINED AND UTILIZED CALIBRATED TEST INSTRUMENTS AS INDICATED ABOVE. APPROVED TEST PROCEDURES WERE FOLLOWED TO PRODUCE THE ABOVE DATA.

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

A-6400-205 (1.87)

9 2 1 2 1 1 1 9 3 6

GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-064 Procedure No. ETAL-07 Rev. Ø Date Issued 11-15-89

Sample Description:	Plotted by:	Checked by:
SANDY GRAVEL MW-6-1	R.G ALEXANDER	J. Rolyna
	Date: 12-5-89	Date: 12-8-89

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
9-064	5110.39	5018.10	588.48	4521.91	4429.62	2.08

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 12-5-89

9 2 1 2 1 1 3 3 7

RADIATION RELEASE

Bldg. 1100 area Date 11-09-89

Released By H. A. Beard
Operational Health Physics

Remarks MW-4-1

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-4 drilling site Date 11-21-89

Released By Rich Baumgarner
Operational Health Physics

Remarks < Than detectable - sample 11-20 sent to lab. results ok

MW-4-7

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. 1100 Area Date 11-10-89

Released By J. M. Schwingel
Operational Health Physics

Remarks < D / Schwingel

MW-4-2

54-3000-022 (09/88)

RADIATION RELEASE

BLDG. MW-6 DATE 11/14/89

RELEASED BY
RADIATION MONITORING

REMARKS:

MW-6-1

54—3000—022 (5 — 57)

RADIATION RELEASE

BLDG. 1100-Area DATE 11-15-89

RELEASED BY R Bauer
RADIATION MONITORING

REMARKS: MW-4-3

54-3000-022 (5—57)

RADIATION RELEASE

BLDG. MW-6 DATE 11/14/89

RELEASED BY
RADIATION MO

REMARKS:

MW-6-2

54—3000—022 (5 — 57)

RADIATION RELEASE MW-4-5

Bldg. MW-4 drilling site Date 11-21-89

Released By Rich Baumgarner
Operational Health Physics

Remarks - Than Detectable, sample sent to the lab 11-20-89 MW-4 Results ok

MW-4-5

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW 6 drilling site Date 11-21-89

Released By C. D. Fulwyler
Operational Health Physics

Remarks < Detectable sample # mw6-4 (Two) ~~mw6-5 (4)~~

MW-6-4A

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW 6 drilling site Date 11-21-89

Released By C. D. Fulwyler
Operational Health Physics

Remarks < Detectable on sample # mw6-4

MW-6-4B

54-3000-022 (09/88)

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector Miller/Singleton Date Sampled 11-13-89 11-16-89 11-20-89 Time Variable hours

Affiliation of Sampler WHC and Golder Assoc.

Address _____
number street city state zip

Telephone ( ) 6-5005 Company Contact JW Lindberg

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	MW-4-6	plastic Bag	sieve / Hydrom.
	MW-4-7	" "	sieve / Hydrom.
	MW-6-1	" "	sieve / Hydrom & Moisture
	MW-6-2	" "	Sieve Anal &/or Hydrom

Analysis Requested Moisture Content, Sieve Analysis/Hydrometer as indicated in Field Info** above right

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: K.M. Singleton Telephone: 6-

Sample Collected by: K.M. Singleton Date: 11-13-89 Time: 1145 hours 1515 hours

Sample Locations: 1100-EM-1, 1100-3, MW-6 CERCLA

Ice Chest No.: NA Field Logbook Page No.: WHC-N-306-4 2

Remarks: MW-6-3 diluted by Westinghouse & J. Lindberg on 11-15-89 at 13 30 hours Custody record completed for MW-6-3., MW-6-3 for Quick-turn-around sieve analysis

Method of Shipment: Westinghouse, Jerry Alexander, 2101-M Bldg

Sample Identification

1) MW-6-1 Plastic bag ~20 lbs soil	11-13-89 1145 hours
2) MW-6-2 Plastic bag ~15 lbs soil	11-13-89 1515 hours
~~3) MW-6-3 Plastic bag ~20 lbs soil~~	~~11-15-89, 1435 hours~~ JW Lindberg 11/15/89 JW Lindberg

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
K.M. Singleton	JW Lindberg	11/22/89 3:30 PM
Relinquished by: JW Lindberg	Received by: R.G. Alexander	Date/Time: 11/28/89 2:30 pm
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

9212 1100

TEST REQUEST FORM

Sample/Specimen No. 9-065 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 12-4-89

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

Remarks FIELD SAMPLE MW-6-2

Received By: R.G ALEXANDER Date 11-28-89

Approved By: R.G ALEXANDER Date 12-4-89

SIEVE ANALYSIS DATA SHEET

Sample ID 9-065 Page 1 of 1

Tested By R.G ALEXANDER Date 12-4-89

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	2½	4722.22	543.84	11.5	11.5	88.5	88.5
	2		1021.17	21.6	21.6	78.4	78.4
	1½		1190.15	25.2	25.2	74.8	74.8
	1		1888.10	40.0	40.0	60.0	60.0
	¾		2325.62	49.2	49.2	50.8	50.8
	½		2824.52	59.8	59.8	40.2	40.2
	3/8		3112.10	65.9	65.9	34.1	34.1
	#4		3514.74	74.4	74.4	25.6	25.6
	#10	4722.22	3803.06	80.5	80.5	19.5	19.5
	#40	129.77	83.04	64.0	64.0	36.0	7.0
	#60		107.04	82.5	82.5	17.5	3.4
	#100		117.15	90.3	90.3	9.7	1.9
	#200		121.65	93.7	93.7	6.3	1.2

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

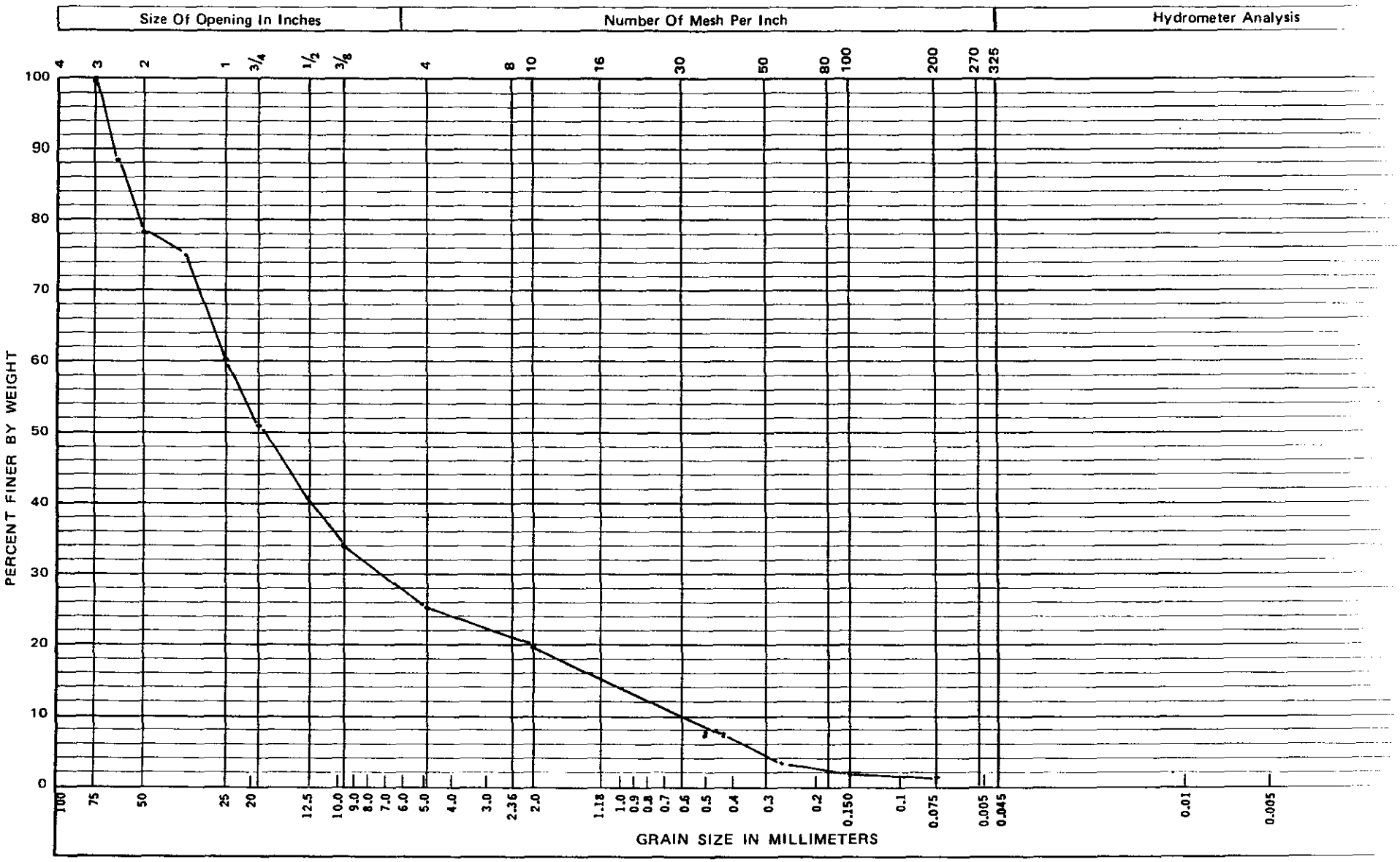
ALL DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS TRAINED AND USED CALIBRATED INSTRUMENTS

Checked By J Pilyca Date 12-8-89

A-6400-204(2-87)

9 2 1 2 7 7 9 9 3

GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-065 Procedure No. ETAL-07 Rev. Ø Date Issued 11-15-89

Sample Description: SANDY GRAVEL MW-6-2	Plotted by: R.G ALEXANDER Date: 12-6-89	Checked by: J Rehyra Date: 12-8-89

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
9-065	5503.55	5306.94	584.72	4918.83	4722.22	4.16

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 12-5-89

9 2 1 2 1 1 1 2 9 4

Westinghouse Hanford Company

CHAIN OF CUSTODY

Company Contact: K.M. Singleton Telephone: 6-

Sample Collected by: K.M. Singleton Date: 11-13-89 Time: 1145 hours 1515 hours

Sample Locations: 1100-EM-1, 1100-3, MW-6 CERCLA

Ice Chest No.: NA Field Logbook Page No.: WHC-N-306-4 2

Remarks: MW-6-3 diluted below; transfer to J. Lindberg on 11-15-89 at 1530 hours. Custody record completed for MW-6-3., MW-6-3 for Quick-turn-around sieve analysis

Method of Shipment: Westinghouse, Jerry Alexander, 2101-M Bldg

Sample Identification

1) MW-6-1 Plastic bag ~20 lbs soil	11-13-89 1145 hours
2) MW-6-2 Plastic bag ~15 lbs soil	11-13-89 1515 hours
~~3) MW-6-3 Plastic bag ~20 lbs soil~~	~~11-15-89, 1435 hours~~ JW Lindberg 11/15/89 JWLindberg

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
K.M. Singleton	JW Lindberg	11/22/89 3:30 PM
JW Lindberg JWLindberg	R.G. Alexander	11/28/89 3:30 pm

9211125

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector Miller/Singleton Date Sampled 11-13-89 11-16-89 11-20-89 Time Variable hours

Affiliation of Sampler WHC and Golder Assoc.

Address _____
number street city state zip

Telephone ( ) 6-5005 Company Contact JW Lindberg

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	MW-4-6	plastic Bag	sieve / Hydrom.
	MW-4-7	" "	sieve / Hydrom.
	MW-6-1	" "	sieve / Hydrom & Moisture
	MW-6-2	" "	Sieve Anal &/or Hydrom

Analysis Requested Moisture Content, Sieve Analysis/Hydrometer as indicated in Field Info** above right

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. 1100 area Date 11-09-89

Released By H. A. Benef
Operational Health Physics

Remarks MW-4-1

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-4 drilling site Date 11-21-89

Released By Rich Baumgarner
Operational Health Physics

Remarks < Than detectable - sample (11-20-
sent to 100K lab. results ok
MW-4-7

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. 1100 Area Date 11-10-89

Released By J. M. Lewinski
Operational Health Physics

Remarks < D. Lewinski
MW-4-2

54-3000-022 (09/88)

RADIATION RELEASE

BLDG. MW-6 DATE 11/13/89

RELEASED BY
RADIATION MONITORING

REMARKS:
MW-6-1

54—3000—022 (5 — 57)

RADIATION RELEASE

BLDG. 1100-Area DATE 11-15-89

RELEASED BY R Bauman
RADIATION MONITORING

REMARKS: MW-4-3

54-3000-022 (5—57)

RADIATION RELEASE

BLDG. MW-6 DATE 11/14/89

RELEASED BY
RADIATION MO

REMARKS:
MW-6-2

54—3000—022 (5 — 57)

RADIATION RELEASE MW-4-5

Bldg. MW-4 drilling site Date 11-21-89

Released By Rich Bumgarner
Operational Health Physics

Remarks < Than Detectable
sample sent to the lab 11-20-89 MW-4
Results ok MW-4-5

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW 6 drilling site Date 11-21-89

Released By C. D. Fulwyler
Operational Health Physics

Remarks < Detectable sample # mw6-4
(Two) ~~mw6-5 (+)~~ MW-6-4A

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW 6 drilling site Date 11-21-89

Released By C. D. Fulwyler
Operational Health Physics

Remarks < Detectable on sample #
mw6-4
MW-6-4B

54-3000-022 (09/88)

TEST REQUEST FORM

Sample/Specimen No. 9-057 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 11-16-89

Test Requested	No. of Samples	Test Lab Information (Instruction Used)
SIEVE ANALYSIS	1	RUN WASH SIEVE
N/A	N/A	N/A
↓	↓	↓

Remarks SAMPLE MW-6-3
USE ETAL-07

Received By: R.G ALEXANDER Date 11-16-89

Approved By: R.G ALEXANDER Date 11-16-89

SIEVE ANALYSIS DATA SHEET

Sample ID 9-057 Page 1 of 1

Tested By R.G ALEXANDER Date 11-16-89

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

EQUIPMENT ITEM	CALIBRATION NO.	DATE DUE
Balance	3304	12-28-89
Thermometer	0001	2-6-90
N/A	N/A	N/A

Sample Description MW-6-3 SANDY GRAVEL Sieve Time 10 (min)

reduced by ☒ splitting ☒ quartering ☐ stockpile

BEFORE TEST WT. (B) 492.43 AFTER TEST WT. (A) 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		492.43					
	#4		Ø	Ø	Ø	100	100
	#8		106.31	21.6	21.6	78.4	78.4
	#16		171.82	34.9	34.9	65.1	65.1
	#30		207.93	42.2	42.2	57.8	57.8
	#50		261.13	53.0	53.0	47.0	47.0
	#100		355.30	72.2	72.2	27.8	27.8
	#200		406.81	82.6	82.6	17.4	17.4
	PAN	492.43	N/A	N/A	N/A	N/A	N/A

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 WASHED SIEVE QUARTER & SPLIT FOR FINE GRADING 492.43 g % RET #4 = 64.8 % PASS #4 = 35.2

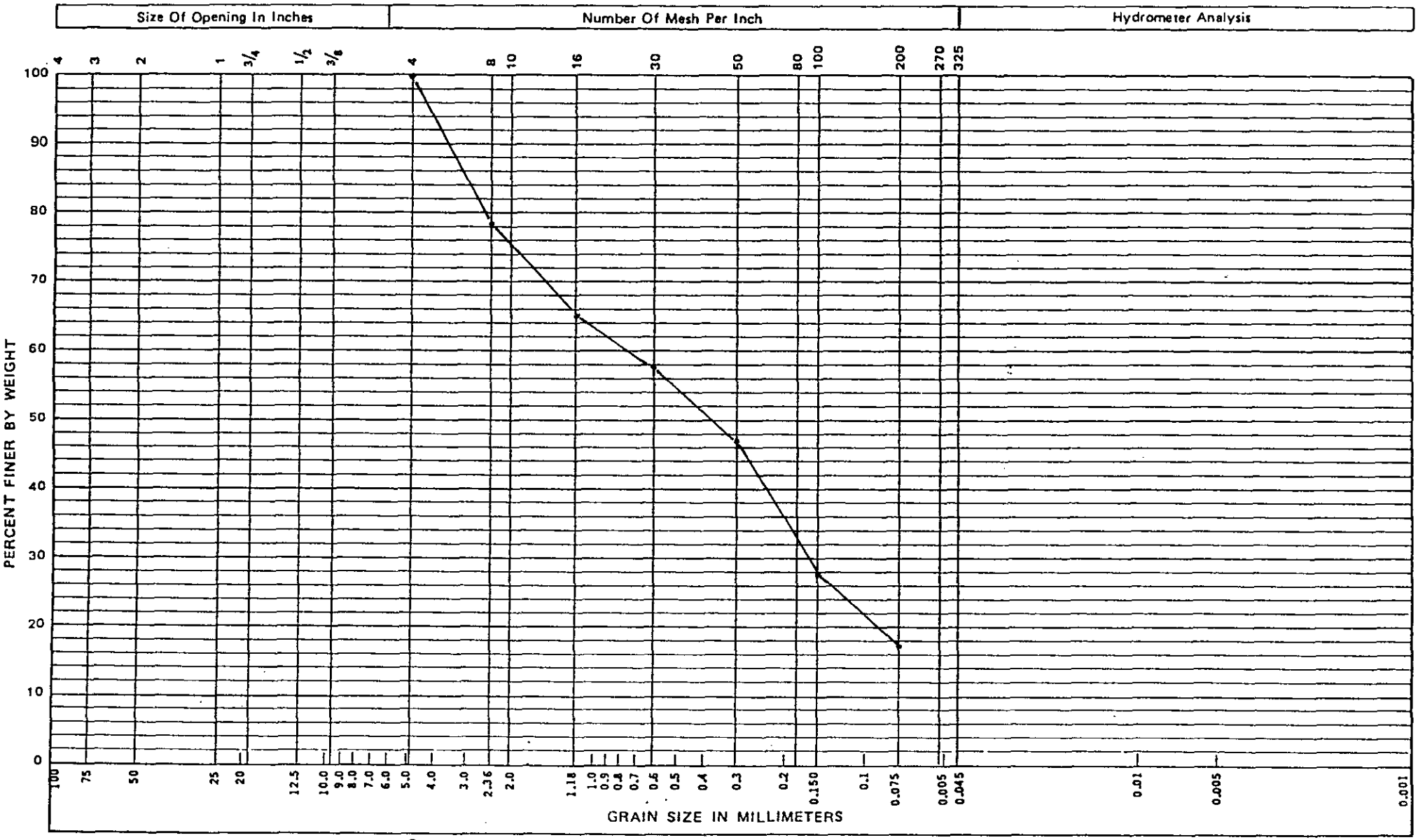
ALL DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS TRAINED AND USED CALIBRATED INSTRUMENTS

Checked By J Rebyra Date 11-17-89

A-6400-204(2-87)

9 2 1 2 0 0

GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-057 Procedure No. ETAL-07 Rev. 0 Date Issued 11-15-89

Sample Description:
SANDY GRAVEL 30% = 0.16 mm
MW-6-3
% RET #4 = 64.8
% PASS #4 = 35.2

Plotted by: R.G ALEXANDER
Date: 11-17-89

Checked by: J F Relyea
Date: 11-17-89

Westinghouse
Hanford Company

CHAIN OF CUSTODY

Company Contact: K.M. Singleton / Jon Lindberg Telephone: 6-5005

Sample Collected by: K.M. Singleton Date: 11-15-89 Time: 1435

Sample Locations: 1100EM-1, 1100-3, MW-6

Ice Chest No.: NA Field Logbook Page No.: WHC-N-306-2 2

Remarks: Wet Sieve, Sieve only the #4 minus, report the the #4 plus.

Method of Shipment: Westinghouse, Hand carry

Sample Identification

1. MW-6-3 Plastic bag ~ 20 lbs soil

RADIATION RELEASE

BLDG. 1100-Area DATE 11-15-89

RELEASED BY L. Bayne
RADIATION MONITORING

REMARKS: MW-6-3

54-3000-022 (5—87)

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
K.M. Singleton	JW Lindberg 11/15/89	11-15-89/1530
Relinquished by:	Received by:	Date/Time:
JW Lindberg	R.G. Alexander	11-16-89 / 0600
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

9212110101

TEST REQUEST FORM

Sample/Specimen No. 9-066 Cost Code/Work Order No. ED332

Requested By: Org. 80232 Person J. LUNDBERG Date 12-04-89

Test Requested	No. of Samples	Test Lab Information (Instruction Used)
HYDRAULIC CONDUCTIVITY	1	ETAL-09
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Remarks FIELD SAMPLE
MW-6-4A
FIELD WET DENSITY = 1.86 g/cc

Received By: R.G ALEXANDER Date 11-28-89

Approved By: R G ALEXANDER Date 12-4-89

HYDRAULIC CONDUCTIVITY OF SOILS DATA SHEET

Sample No. 9-066 Page 1 of 5

Test Operator R.G ALEXANDER Date 12-4-89

EQUIPMENT ITEM	NO.	DATE DUE
Balance	3304	12-28-89
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		

☐ 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 _____ Date _____

Specimen No. 9-066

SAMPLE PREPARATION

Determine Weight of Samples in Container

Container No.	2
Wt. of Sample + Container, g	824.37
Wt. of Container, g	310.67
Wt. of Sample, g	513.70

Determine the Water Content of the "Air Dry" Sample

Container No.	2
Wt. Container & Wet Soil (A), g	824.37
Wt. Container & Dry Soil (B), g	690.77
Wt. of Water, g	133.60
Wt. of Container (C), g	310.67
Wt. of Dry Soil, W_s, g	380.10
Water Content (W), %	35.15

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

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 HC Bany Date 1/3/90

9212110704

Sample No. 9-066

SAMPLE COMPACTION

Compaction Method Static ☐ Tamping ☒

STATIC or TAMPING	Load Applied, g/ Layer length, cm	Layer 1	1.6/25	11 N/A
		2	1.7/25	12
	No. Tamps per Layer/ Layer Length, cm	3	1.4/25	13
		4	1.7/~~28~~ 25	14
		5	1.7/25	15
		6	1.8/25	16
	Total No. of Layers 8	7	1.6/25	17
		8	1.1/25	18
		9	N/A	19
		10	N/A	20

Tamper Foot Diameter cm	1.59
Tamper Applied Load, g	950
Sample Diameter, (d), cm	3.76
Sample Length, (L), cm	12.57
Sample Mold or Permeameter Weight & Compacted Sample, g	468.27
Sample Mold or Permeameter Weight, g	214.38
Weight of Compacted Sample, (E), g	253.89
Weight of Container & Uncompacted Wet Sample, (A), g	824.37
Weight of Container & Uncompacted Dry Sample, (B), g	690.70
Weight of Water, g	133.60
Weight of Container, (C), g	310.67
Weight of Dry Soil, (WS), g	380.10
Water Content, %	35.15
Compacted Bulk Density of Sample, (γm), g/cc	1.82
Compacted Sample Dry Density, (γd), g/cc	1.35

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

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

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 H L Benny Date 1/3/90

HYDRAULIC CONDUCTIVITY DATA SHEET

Sample ID. 9-066 Page 4 of 5

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

DATE	TIME			VOLUME DETERMINANTS							
Year 89 (Mo/Day)	System Down (Hr: Min)	System Up (Hr: Min)	Time Change (Hr: Min)	Effluent Temp (°C)	Effluent Weight (±0.1g)	Container Tare (±0.1g)	Container Tare & Effluent (±0.1g)	System Temp (°C)	Pressure Pore H_2O (psi) CM	Pressure Back H_2O (psi)	Operator Initials
12-6	—	0700	—	—	— RGA 12-7-89	69.70	—	22°	185	N/A	RGA
12-7	0730	0740	24:30	22°	31.42 ~~30.42~~	69.70	101.12	22°	185	N/A	RGA
12-8	1040	1045	27:00	22°	40.40	121.65	161.25	22°	185	N/A	RGA
12-11	1045	1050	72:00	22°	110.08	148.12	258.20	22°	185	N/A	RGA
12-12	1050	1055	24:00	21°	36.92	148.12	185.04	21°	185	N/A	RGA
12-18	1055	1100	144:00	22°	138.00	148.12	286.12	22°	185	N/A	RGA
12-19	1100	1105	24:00	22°	29.93	148.12	178.05	22°	185	N/A	RGA
12-20	1305	—	26:00	22°	35.44	148.12	183.56	22°	185	N/A	RGA
12-20	STOP		TEST	—	—	—	—	—	—	—	—

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 1/3/90

A-6400-234.2 (7-86)

9212110205

HYDRAULIC CONDUCTIVITY DATA SHEET

Sample ID 9-066 Page 5 of 5

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

Date Year 89 (Mo/Day)	Hydraulic Conductivity (cm/sec)	Hydraulic Gradient (cm/cm)	Effluent Analysis (Sample Number)	Effluent Analysis Lab. Notebook Location	Effluent Description	Operator Initials
12-6	START	TEST	—	—	—	RGA
12-7	2.18×10^{-6}	14.72	N/A	N/A	CLEAR	RGA
12-8	2.54×10^{-6}	14.72	N/A	N/A	CLEAR	RGA
12-11	2.60×10^{-6}	14.72	N/A	N/A	CLEAR	RGA
12-12	2.62×10^{-6}	14.72	N/A	N/A	CLEAR	RGA
12-18	1.63×10^{-6}	14.72	N/A	N/A	CLEAR	RGA
12-19	2.12×10^{-6}	14.72	N/A	N/A	CLEAR	RGA
12-20	2.32×10^{-6}	14.72	N/A	N/A	CLEAR	RGA
12-20	STOP	TEST	—	—	—	—
	~~2.3 ± 0.3 $\times 10^{-6}$~~ CM/SEC RGA 12-20-89					
	$2.3 \pm 0.3 \times 10^{-6}$ 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 HL Benny Date 1/3/90

A-6400-234.3 (7-86)

9217126

Westinghouse
Hanford Company

CHAIN OF CUSTODY

Company Contact: JW Lindberg Telephone 6-5005

Sample Collected by: Kevin Singleton / Lenny Bulter Date: 11/20/89 Time: 3:00 PM

Sample Locations: MW-6 CERCLA 1100-EM-1 near 1100-3 pit

Ice Chest No.: N/A Field Logbook & Page No.: WHC-N-306-4 page 3 and 4

Remarks:

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

Method of Shipment: Hand carry

Shipped to: Jerry Alexander 210HM Physical Testing Lab

Sample Identification

MW-6-4A plastic bags
MW-6-4B plastic bags
MW-6-5 plastic bags

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
JW Lindberg JW Lindberg	R.G. Alexander	11/28/89 3:30 PM
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

FVR\071889-B

9 2 1 0 0 3

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector Singleton/Weekes Date Sampled 10-23-89 11-20-89 Time Variable hours

Affiliation of Sampler WHC

Address _____
number street city state zip

Telephone ( ) 6-5005 Company Contact JW Lindberg

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	MW-6-4A	Plastic Bag	Permeability Test (re-compacted)
	MW-6-4B	" "	Sieve/Hydrometer
	MW-6-5	" "	Sieve/Hydrometer
	MW-8-1	" "	Moisture Content/Sieve & or Hydrometer

Analysis Requested See Field Info** above right

Special Handling and/or Storage JW Lindberg will provide volume of material collected for MW-6-4A.

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. 1100 area Date 11-09-89

Released By H. A. Beard
Operational Health Physics

Remarks MW-4-1

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-4 drilling site Date 11-21-89

Released By Rich Bumgarner
Operational Health Physics

Remarks < Than detectable - sample (11-20-89) sent to lab. results OK

MW-4-7

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. 1100 Area Date 11-10-89

Released By C. M. Swingler
Operational Health Physics

Remarks < D / sample

MW-4-2

54-3000-022 (09/88)

RADIATION RELEASE

BLDG. MW-6 DATE 11/13/89

RELEASED BY
RADIATION MONITORING

REMARKS:

MW-6-1

54—3000—022 (5 — 57)

RADIATION RELEASE

BLDG. 1100-Area DATE 11-15-89

RELEASED BY R Bumgarner
RADIATION MONITORING

REMARKS: MW-4-3

54-3000-022 (5—57)

RADIATION RELEASE

BLDG. MW-6 DATE 11/14/89

RELEASED BY
RADIATION MO

REMARKS:

MW-6-2

54—3000—022 (5 — 57)

RADIATION RELEASE MW-4-5

Bldg. MW-4 drilling site Date 11-21-89

Released By Rich Bumgarner
Operational Health Physics

Remarks - Than Detectable, sample sent to the lab 11-20-89 MW-4 Results, OK

MW-4-5

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW 6 drilling site Date 11-21-89

Released By C. D. Fulwyler
Operational Health Physics

Remarks < Detectable sample # mw6-4 (Two) ~~mw6-5~~ (+)

MW-6-4A

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW 6 drilling site Date 11-21-89

Released By C. D. Fulwyler
Operational Health Physics

Remarks - Detectable on sample # mw6-4

MW-6-4B

54-3000-022 (09/88)

TEST REQUEST FORM

Sample/Specimen No. 9-067 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 12-5-89

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

Remarks FIELD SAMPLE MW-6-4B

Received By: R.G ALEXANDER Date 11-28-89

Approved By: RG ALEXANDER Date 12-5-89

SIEVE ANALYSIS DATA SHEET

Sample ID 9-067 Page 1 of 1

Tested By R.G ALEXANDER Date 11-15-89

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 SILTY SAND Sieve Time 10 (min)

reduced by ☒ splitting ☐ quartering ☐ stockpile

BEFORE TEST WT. (B) N/A AFTER TEST WT. (A) 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							
							100
	#10	482.69	1.24	0.3	0.3	99.7	99.7
	#40		4.49	0.9	0.9	99.1	99.1
	#60		13.16	2.8	2.8	97.2	97.2
	#100		79.77	16.5	16.5	83.5	83.5
	#200		290.62 RLA ~~+89.24~~	60.2 RLA ~~39.2~~	60.2 RLA ~~39.2~~	39.8 RLA ~~60.8~~	39.8 RLA ~~60.8~~ 12-7-89
	PAN		N/A	N/A	N/A	N/A	N/A

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 GRADING

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

Checked By J F Relyea Date 12-8-89

A-6400-204(2-87)

9 2 1 2 1 1 1 1 2

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
9-067	3151.21	2489.44	584.82	2566.39	1904.62	34.75

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 12-6-89

9212113

HYDROMETER ANALYSIS DATA SHEET

Sample ID 9-067 Page ____ of ____

Tested By HLBenny Date 3-7-90

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~~ 0002 HLB 3-7-90	2-9-91

Specific gravity of Sample 2.63

% Passing No. 10 Sieve 99.7 (%)

Hygroscopic Correction Factor Ø

WEIGHT OF SAMPLE

Wt. Container + Soil NA (g)

Wt. Container NA (g)

Wt. Soil 95.67 (g)

COMPOSITE CORRECTION

1st Reading 7 at 24.2 °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

W= 95.96

Date	Clock time	Elapsed time (min)	Hydrometer reading	Hydrometer with composite correction	Temp. (°C)	Soil in suspension (%)	Particl diamet (mm)
3-7-90	1038	2.0	27	20	25.5	20.8	0.03
↓	1041	5.0	21	14	25.4	14.6	0.02
↓	1051	15.0	15	8	24.9	8.3	0.01
↓	1106	30.0	13	6	24.2	6.3	0.00
↓	1136	60.0	11	4	24.0	4.2	0.00
↓	1446	250.00	10	3	23.8	3.1	0.00
3-8-90	1036	1,440.0	7	Ø	21.7	Ø	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 3-14-90

SPECIFIC GRAVITY OF SOILS DATA SHEET

Specimen/Sample No. 9-067 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 "0" 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	411.92	.__	.__
	Temperature, T_x at W_b, °C	23.5c	.	.
G_w	Specific Gravity of Wetting Agent at T_x	1.00	_.__	_.__
G_t	Specific Gravity of Soil at T_x	2.64	_.__	_.__
G_s	Specific Gravity of Soil at 20°C	2.63	_.__	_.__

* GRAY/TAN SAND (FINE)

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

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	2.63

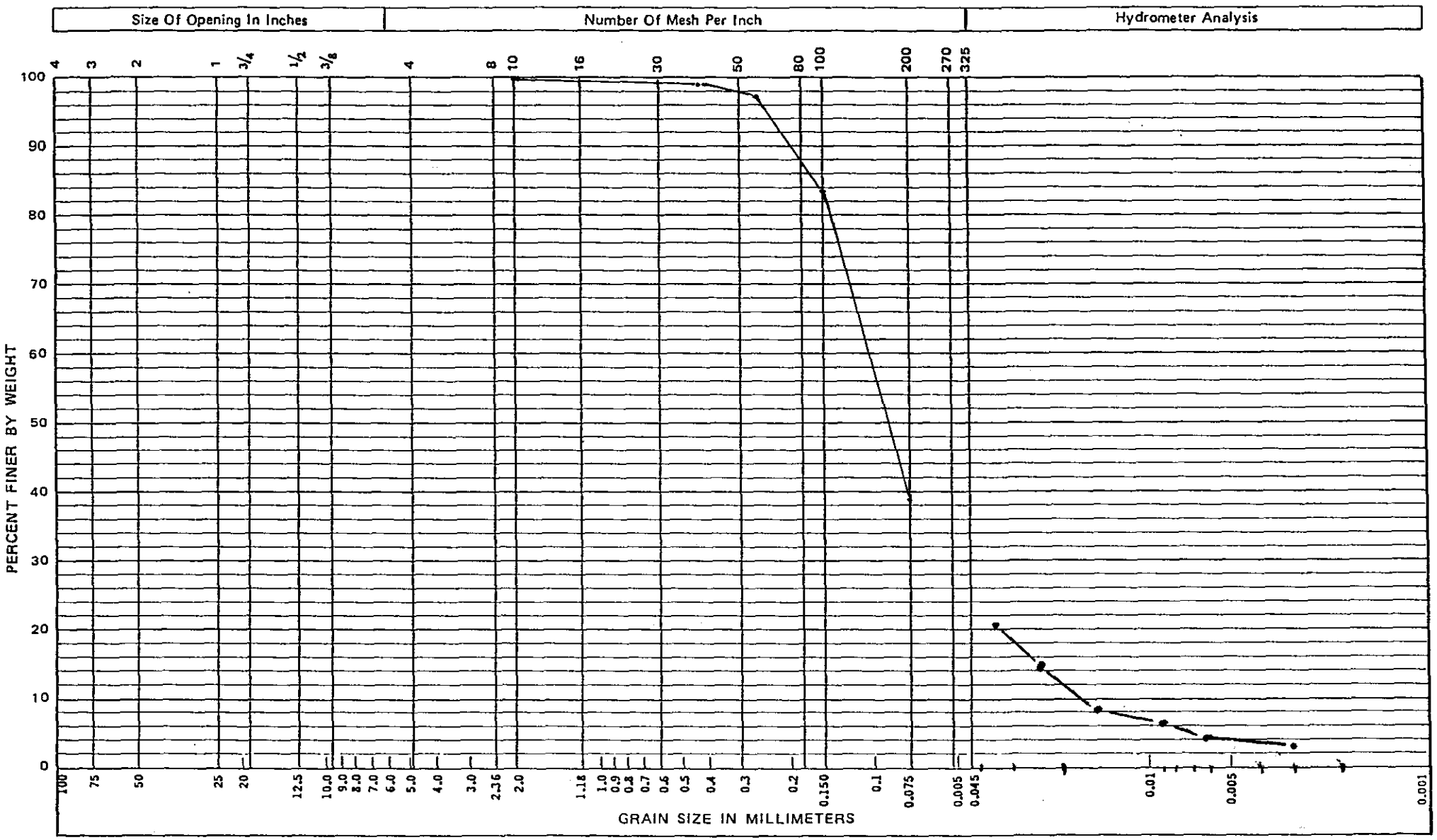
ALL REQUIRED DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS APPROPRIATELY TRAINED AND UTILIZED CALIBRATED TEST INSTRUMENTS AS INDICATED ABOVE. APPROVED TEST PROCEDURES WERE FOLLOWED TO PRODUCE THE ABOVE DATA.

Checked By H L Benny Date 3-1-90

A-6400-235 (9-86)

9 2 1 2 1 1 1 7 1 5

GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-067 Procedure No. ETAL-07 Rev. Ø Date Issued 11-15-89

Sample Description: SILTY SAND MW-6-4B	Plotted by: R.G ALEXANDER Date: 12-7-89	Checked by: J F Relyea Date: 12-8-89

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector Singleton/Weekes Date Sampled 10-23-89 11-20-89 Time Variable hours

Affiliation of Sampler WHC

Address _____
number street city state zip

Telephone ( ) 6-5005 Company Contact JW Lindberg

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	MW-6-4A	Plastic Bag	Permeability Test (re-compacted)
	MW-6-4B	" "	Sieve/Hydrometer
	MW-6-5	" "	Sieve/Hydrometer
	MW-8-1	" "	Moisture Content/Sieve & or Hydrometer

Analysis Requested See Field Info** above right

Special Handling and/or Storage JW Lindberg will provide volume of material collected for MW-6-4A.

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

9 2 1 2 1 0 7 1 7

Westinghouse
Hanford Company

CHAIN OF CUSTODY

Company Contact: JW Lindberg Telephone 6-5005

Sample Collected by: Kevin Singleton / Lenny Bulter Date: 11/20/89 Time: 3:00 PM

Sample Locations: MW-6 CERCLA 1100-EM-1 near 1100-3 pit

Ice Chest No.: N/A Field Logbook & Page No.: WHC-N-306-4 pages 3 and 4

Remarks:

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

Method of Shipment: Hand carry

Shipped to: Jerry Alexander 2104M Physical Testing Lab

Sample Identification

MW-6-4A plastic bags
MW-6-4B plastic bags
MW-6-5 plastic bags

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
JW Lindberg JW Lindberg	R.G Alexander	11/28/89 3:30 PM
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

FVR\071889-B

9 2 1 2 1 1 0 7 1 8

RADIATION RELEASE

Bldg. 1100 Area Date 11-09-89

Released By H. A. Beard
Operational Health Physics

Remarks MW-4-1

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-4 drilling site Date 11-21-89

Released By Rich Bumgarner
Operational Health Physics

Remarks < Than detectable - sample (11-20-
sent to 100K lab. results OK

MW-4-7

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. 1100 Area Date 11-10-89

Released By J. M. Lewinski
Operational Health Physics

Remarks < D / sample

MW-4-2

54-3000-022 (09/88)

RADIATION RELEASE

BLDG. MW-6 DATE 11/15/89

RELEASED BY
RADIATION MONITORING

REMARKS:

MW-6-1

54—3000—022 (5 — 57)

RADIATION RELEASE

BLDG. 1100-Area DATE 11-15-89

RELEASED BY R Bumgarner
RADIATION MONITORING

REMARKS: MW-4-3

54-3000-022 (5—57)

RADIATION RELEASE

BLDG. MW-6 DATE 11/14/89

RELEASED BY
RADIATION MO

REMARKS:

MW-6-2

54—3000—022 (5 — 57)

RADIATION RELEASE MW-4-5

Bldg. MW-4 drilling site Date 11-21-89

Released By Rich Bumgarner
Operational Health Physics

Remarks - Than Detectable,
sample sent to the lab 11-20-89 MW-4
Results, OK MW-4-5

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW 6 drilling site Date 11-21-89

Released By C. D. Fulwyler
Operational Health Physics

Remarks < Detectable sample # mw6-4
(Two) ~~mw6-5 (+)~~ MW-6-4A

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW 6 drilling site Date 11-21-89

Released By C. D. Fulwyler
Operational Health Physics

Remarks < Detectable on sample #
mw6-4 MW-6-4B

54-3000-022 (09/88)

TEST REQUEST FORM

Sample/Specimen No. 9-068 Cost Code/Work Order No. ED 332

Requested By: Org. 80232 Person J. LINDBERG Date 12-5-89

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

Remarks FIELD SAMPLE MW-6-5

Received By: R.G ALEXANDER Date 11-28-89

Approved By: R.G ALEXANDER Date 12-6-89

SIEVE ANALYSIS DATA SHEET

Sample ID 9-068 Page 1 of 1

Tested By R.G ALEXANDER Date 12-5-89

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

BEFORE TEST WT. N/A (B) AFTER TEST WT. N/A (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"	2975.86	Ø	Ø	Ø	100	100
	1 1/2		241.38	8.1	8.1	91.9	91.9
	1		598.92	20.1	20.1	79.9	79.9
	3/4		769.84	25.9	25.9	74.1	74.1
	1/2		893.92	30.0	30.0	70.0	70.0
	3/8		1005.15	33.8	33.8	66.2	66.2
	#4		1220.62	41.0	41.0	59.0	59.0
	#10	2975.86	1380.38	46.4	46.4	53.6	53.6
	#40	103.62	5.13	5.0	5.0	95.0	50.9
	#60		16.72	16.1	16.1	83.9	45.0
	#100		39.32	37.9	37.9	62.1	32.3
	#200		67.50	65.1	65.1	34.9	18.7

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 J Relyea Date 12-8-89

A-6400-204(2-87)

SPECIFIC GRAVITY OF SOILS DATA SHEET

Specimen/Sample No. 9-068 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 "CP" 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	387.06	.__	.__
W_b	Wt. Pycnometer + Wetting Agent + Soil, g	412.02	.__	.__
	Temperature, T_x at W_b, °C	25.5 C	.	.
G_w	Specific Gravity of Wetting Agent at T_x	1.00	_.__	_.__
G_t	Specific Gravity of Soil at T_x	2.66	_.__	_.__
G_s	Specific Gravity of Soil at 20°C	2.65	_.__	_.__

* LIGHT BROWN SILTY SAND

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

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	2.65

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)

HYDROMETER ANALYSIS DATA SHEET

Sample ID 9-068

Page 1 of 1

Tested By Harold Benny Date 2-27-90

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 2.65

% Passing No. 10 Sieve 53.6 (%)

Hygroscopic Correction Factor Ø

WEIGHT OF SAMPLE

Wt. Container + Soil NA (g)

Wt. Container NA (g)

Wt. Soil 50.14 (g)

COMPOSITE CORRECTION

1st Reading 6 ~~NA~~ HCB 3-1-90 at 23.8 ~~NA~~ °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

W 93.54

Date	Clock time	Elapsed time (min)	Hydrometer reading	Hydrometer with composite correction	Temp. (°C)	Soil in suspension (%)	Particle diameter (mm)
2-27-90	1105	2.0	17	11	24.4	11.8	0.034
	1108	5.0	13	7	24.4	7.5	0.022
	1118	15.0	11	5	24.3	5.3	0.013
	1133	30.0	11	5	24.1	5.3	0.009
	1203	60.0	9	3	23.8	3.2	0.006
	1513	250.00	8	2	23.7	2.1	0.003
	1105	1,440.0	7	1	23.2	1.1	0.001

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

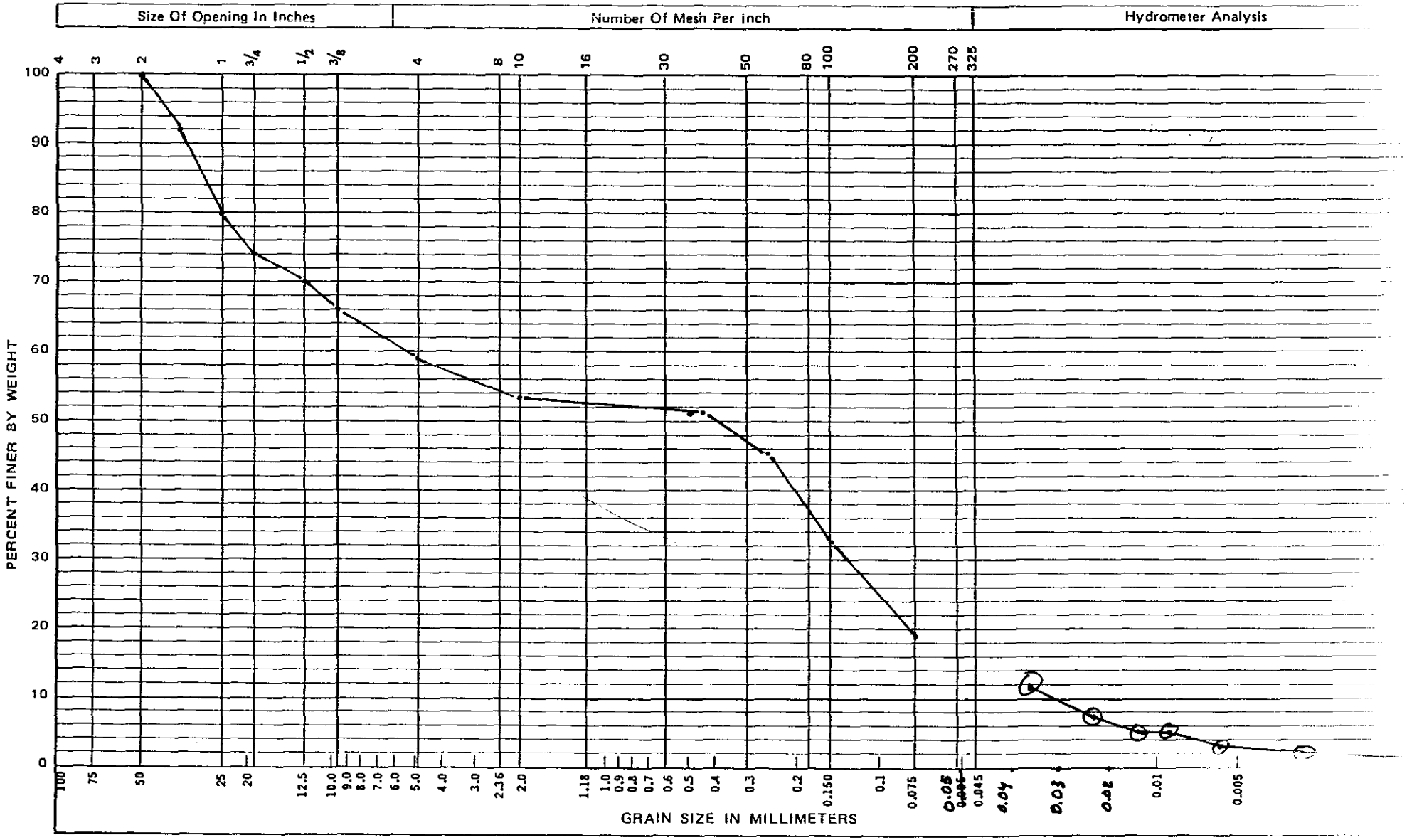
ALL REQUIRED DATA ARE ACCURATELY AND COMPLETELY RECORDED. THE TEST OPERATOR WAS APPROPRIATELY TRAINED AND UTILIZED CALIBRATED TEST INSTRUMENTS AS INDICATED ABOVE. APPROVED TEST PROCEDURES WERE FOLLOWED TO PRODUCE THE ABOVE DATA.

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

A-6400-205 (1.87)

9 2 1 2 1 1 0 2 4

GRAIN SIZE ANALYSIS PLOT



Specimen No. 9-068 Procedure No. ETAL-07 Rev. Ø Date Issued 11-15-89

Sample Description: SANDY GRAVEL MW-6-5	Plotted by: R.G ALEXANDER Date: 12-6-89	Checked by: J Ruhyer Date: 12-8-89

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
9-068	4044.51	3559.86	584.00	3460.51	2975.86	16.29

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 12-6-89

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector Singleton/Weekes Date Sampled 10-23-89 11-20-89 Time Variable hours

Affiliation of Sampler WHC

Address _____
number street city state zip

Telephone ( ) 6-5005 Company Contact JW Lindberg

LABORATORY SAMPLE NUMBER	COLLECTOR'S SAMPLE NO.	TYPE OF SAMPLE*	FIELD INFORMATION**
	MW-6-4A	Plastic Bag	Permeability Test (re-compacted)
	MW-6-4B	" "	Sieve/Hydrometer
	MW-6-5	" "	Sieve/Hydrometer
	MW-8-1	" "	Moisture Content/Sieve & Hydrometer

Analysis Requested See Field Info** above right

Special Handling and/or Storage JW Lindberg will provide volume of material collected for MW-6-4A.

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.

Westinghouse
Hanford Company

CHAIN OF CUSTODY

Company Contact: JW Lindberg Telephone 6-5005

Sample Collected by: Kevin Singleton / Lenny Bulter Date: 11/20/89 Time: 3:00 PM

Sample Locations: MW-6 CERCLA 1100-EM-1 near 1100-3 pit

Ice Chest No.: N/A Field Logbook & Page No.: WHC-N-306-4 page 3 and 4

Remarks:

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

Method of Shipment: Hand carry

Shipped to: Jerry Alexander 2101M Physical Testing Lab

Sample Identification

MW-6-4A plastic bags
MW-6-4B plastic bags
MW-6-5 plastic bags

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
JW Lindberg JW Lindberg	R.G Alexander	11/28/89 3:30 PM
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

FVR\071889-B

9212117.27

RADIATION RELEASE

Bldg. Drilling mw 6 site Date 11-21-89

Released By C. D. Fulwyler
Operational Health Physics

Remarks ← Detectable sample #
mw-6-5 MW-6-5

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-7-89

Released By [illegible]
Operational Health Physics

Remarks MW-10-2
sieve & moisture anal.

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 10-23-89

Released By [illegible]
Operational Health Physics

Remarks MW-8-1

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-7-89

Released By [illegible]
Operational Health Physics

Remarks MW-10-3

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapid Date 10-30-89

Released By [illegible]
Operational Health Physics

Remarks MW-8-2

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-10-89

Released By [illegible]
Operational Health Physics

Remarks MW-10-4
41.5'-42'

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 10-30-89

Released By [illegible]
Operational Health Physics

Remarks MW-8-3

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. MW-7 Date 12-11-89

Released By [illegible]
Operational Health Physics

Remarks

54-3000-022 (09/88)

RADIATION RELEASE

Bldg. Horn Rapids Date 11-6-89

Released By [illegible]
Operational Health Physics

Remarks [redacted] 9.5 ft to 10.5 ft
MW-10-1

54-3000-022 (09/88)