

APPENDIX B

Clay Liner Materials

ACKENHEIL ENGINEERS & GEOLOGISTS

PERMEABILITY TEST IN TRIAXIAL CELL

ASTM D5084-90

LAB NO: 757

PROJECT NAME: Minden

DATE TESTED: 11/12/01

CLIENT NAME: Wastetron

TESTED BY: GAW

AEG JOB NO: 01118

SAMPLE NO.: 1

SAMPLE LOCATION:

CHECKED BY:

SAMPLE DESCRIPTION: Brown Lean Clay

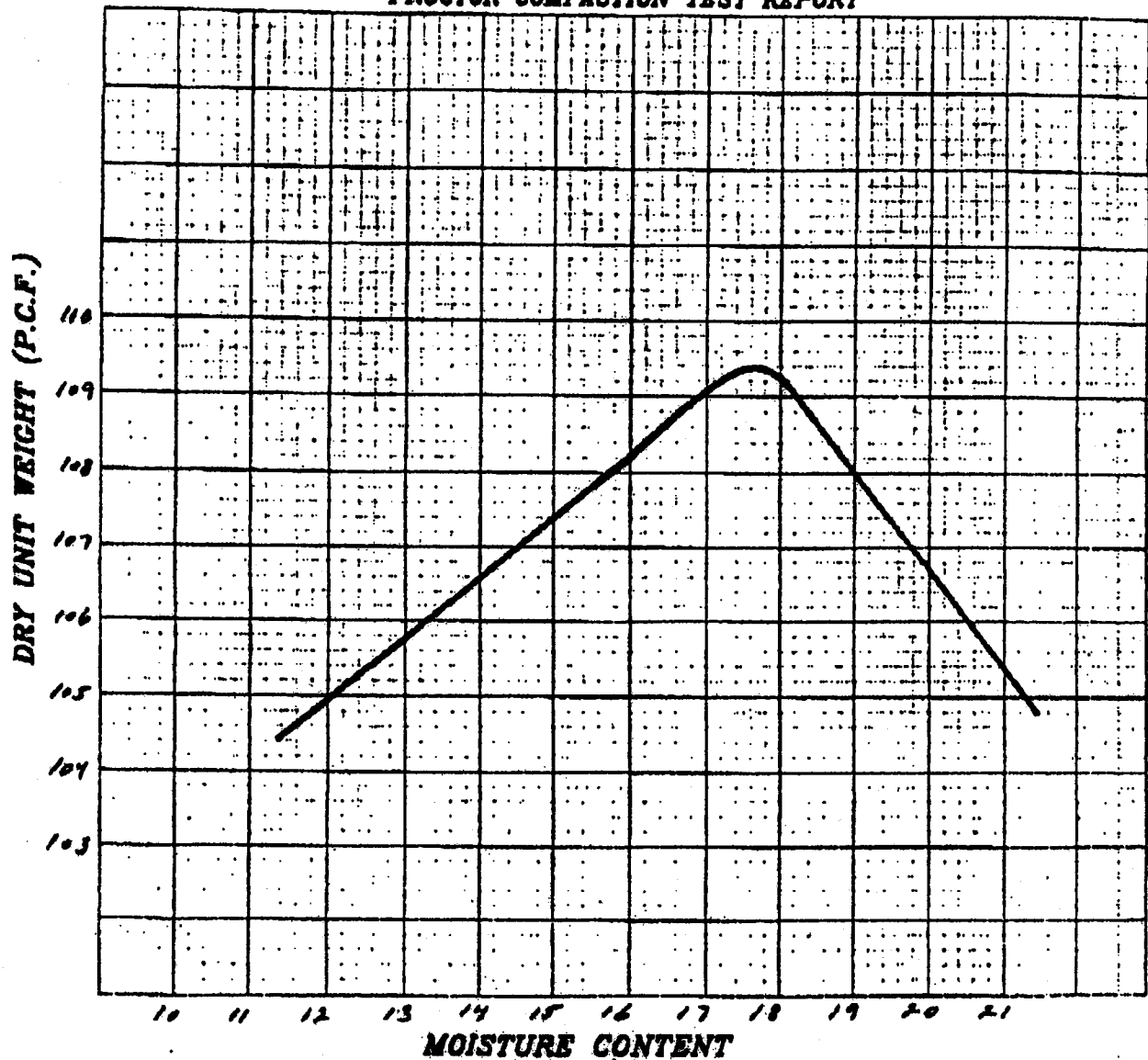
SUBJECT	INITIAL RESULTS	FINAL RESULTS
Diameter of Sample = D	7.230 cm ✓	7.351 cm ✓
Length of Sample = L	10.058 cm ✓	10.351 cm ✓
Weight of Wet Sample = Ww	817.7 gm ✓	858.8 gm ✓
Water Content = WC	20.1 % ✓	28.2 % ✓
Specific Gravity of Solids = G	2.65	2.65
Area of Sample = A (Pi x D ² /4)	41.16 cm ²	42.44 cm ²
Weight of Dry Sample = Wd (Ww/(1+WC/100))	680.85 gm	680.51 gm
Density - Wet = Dw (Ww/V)	1.88 gm/cc	1.95 gm/cc
Density - Dry = Dd (Wd/V)	1.84 gm/cc	1.85 gm/cc
Volume of Sample = V (A x L)	413.80 cc	439.30 cc
Volume of Solids = Vs (Wd/G)	256.92 cc	256.80 cc
Volume of Water = Vw ((WC/100) x Vs x G)	136.85 cc	178.30 cc
Volume of Air = Va (V - Vs - Vw)	20.13 cc	4.20 cc
Void Ratio = e ((Vs + Vw)/Vs)	0.61	0.71
Void Volume = Vv (Vs + Vw)	156.88 cc	182.50 cc
Porosity = n ((Vw/V) x 100)	37.9 %	41.5 %
Consolidation Pressure (Confining - Back Pressure)	psi	psi
Test Started = ti	Test No. 1	Test No. 2
Test Finished = tf	10:30 hr	11:30 hr
Total Time of Test = (ti - tf)	11:30 hr	12:30 hr
Initial Head Difference = hi	3600 sec	3600 sec
Final Head Difference = hf	151.7 cm	150.1 cm
Cross-sectional Area of Pipette = a	150.1 cm	148.5 cm
Permeability = k	0.899 cm ²	0.899 cm ²
	3.2E-07 cm/sec	3.3E-07 cm/sec
Test Started = ti	Test No. 3	Test No. 4
Test Finished = tf	12:30 hr	1:30 hr
Total Time of Test = (ti - tf)	1:30 hr	2:30 hr
Initial Head Difference = hi	3600 sec	3600 sec
Final Head Difference = hf	148.5 cm	145.9 cm
Cross-sectional Area of Pipette = a	148.9 cm	145.5 cm
Permeability = k	0.899 cm ²	0.899 cm ²
	3.3E-07 cm/sec	2.9E-07 cm/sec

Average Hydraulic Conductivity = k = 3.2E-07 cm/sec

Water Temperature (C)= 20
Temperature Correction = 1.000

Corrected k = 3.2E-07 cm/sec

ACKENHEIL ENGINEERS & GEOLOGISTS PROCTOR COMPACTION TEST REPORT



Standard <u>X</u> Modified _____	Project <u>Weston</u>
Optimum Moisture Content <u>17.5%</u>	Sample Location <u>Minden</u>
Maximum Dry Density <u>109.3 lb/cf</u>	Boring No. _____
Soil Description <u>Brown Shale Clay with Rock</u>	Sample No. <u>Minden Borrow Site #1</u>
Classification _____ S G _____	Date <u>10/19/01</u>
LL _____ PL _____ PI _____	Lab No. <u>752</u>
Dwg. By <u>GAW</u> Check By <u>[Signature]</u>	Dwg. No. _____

ACKENHEIL ENGINEERS & GEOLOGISTS

PERMEABILITY TEST IN TRIAXIAL CELL

LAB NO: 753

ASTM D5084-90

PROJECT NAME: MindenDATE TESTED: 10/19/03CLIENT NAME: WasteironTESTED BY: GAWAEG JOB NO: 01116SAMPLE NO.: 1SAMPLE LOCATION: Minden Borrow Site #1CHECKED BY: [Signature]SAMPLE DESCRIPTION: Brown Lean Clay with Sand Remolded to about 90% Standard Proctor

SUBJECT	INITIAL RESULTS	FINAL RESULTS
Diameter of Sample = D	7.112 cm	7.112 cm
Length of Sample = L	14.224 cm	14.224 cm
Weight of Wet Sample = Ww	1096.5 gm	1128.3 gm
Water Content = WC	25.4 %	27.1 %
Specific Gravity of Solids = G	2.65	2.65
Area of Sample = A (PI x D ² /4)	39.73 cm ²	39.73 cm ²
Weight of Dry Sample = Wd (Ww/(1+WC/100))	802.41 gm	867.73 gm
Density - Wet = Dw (Ww/V)	1.92 gm/cc	2.00 gm/cc
Density - Dry = Dd (Wd/V)	1.60 gm/cc	1.57 gm/cc
Volume of Sample = V (A x L)	565.12 cc	565.12 cc
Volume of Solids = Vs (Wd/G)	340.53 cc	334.99 cc
Volume of Water = Vw ((WC/100) x Vs x G)	184.09 cc	240.57 cc
Volume of Air = Va (V - Vs - Vw)	40.50 cc	-10.44 cc
Void Ratio = e ((Vs - Vw)/Vs)	0.68	0.69
Void Volume = Vv (Vs + Vw)	224.59 cc	230.13 cc
Porosity = n ((Vw/V) x 100)	30.7 %	40.7 %
Consolidation Pressure (Confining - Back Pressure)	psi	psi
Test No. 1	Test No. 2	
Test Started = ti	8:30 hr	9:00 hr
Test Finished = tf	9:00 hr	9:30 hr
Total Time of Test = (ti - tf)	1800 sec	1800 sec
Initial Head Difference = hi	156.1 cm	145.3 cm
Final Head Difference = hf	148.3 cm	134.5 cm
Cross-sectional Area of Pipette = a	0.899 cm ²	0.899 cm ²
Permeability = k	6.4E-08 cm/sec	6.8E-08 cm/sec
Test No. 3	Test No. 4	
Test Started = ti	9:30 hr	10:00 hr
Test Finished = tf	10:00 hr	10:30 hr
Total Time of Test = (ti - tf)	1800 sec	1800 sec
Initial Head Difference = hi	134.5 cm	159.1 cm
Final Head Difference = hf	123.7 cm	148.3 cm
Cross-sectional Area of Pipette = a	0.899 cm ²	0.899 cm ²
Permeability = k	7.5E-08 cm/sec	6.3E-08 cm/sec

Average Hydraulic Conductivity = k = 6.8E-08 cm/secWater Temperature (C) = 20
Temperature Correction = 1.000Corrected k = 6.8E-08 cm/sec

