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Rev. 07/10/02

HTW DRILLING LOG

HOLE NO: RO0001

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 2 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	Acker Rig/Mack 88
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	State Street
9. SURFACE ELEVATION	414.10
10. DATE STARTED	11/20/91
11. DATE COMPLETED	11/20/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	15.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	6	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	7	0	1 QC	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Grout	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Coarse, brown-black construction debris and FILL	FILL	15	OAL OOL OOO OOL	19 14 14 7	Samples taken with 2-inch stainless steel split spoon
		Coarse, maroon-black FILL					Boring advanced with 2-1/4 inch HSA
		Stiff dark grey CLAY	CL	18	OOK OOL	1 2 3 8	
		Firm, dark grey CLAY to stiff mottled grey-brown CLAY			OOK OLD		
409	5		CL	19		2 2 4 6	
		Stiff mottled grey-brown CLAY			OOL OOL		
			CL	21	OOM OOL	2 4 6 9	
		Firm grey Silty CLAY	CL				
		Loose grey fine SAND	SP	20		2 5 4 3	
		Loose, damp, Sandy SILT	SM				

HTW DRILLING LOG

HOLE NO. RO0001

PROJECT NL/Taracorp

INSPECTOR Eric Page

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		SAME: Loose, damp, Sandy SILT			OON OOL		
		Loose grey-green coarse SAND to loose grey-green, very fine SAND - trace Silty SAND	SP	14	OOT OOL	6 5 4 3	
399	15	Bottom of Boring at 15 ft					
394	20						
389	25						

HTW DRILLING LOG

HOLE NO RO0002

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 2 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	Acker Rig/Mack 88
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	4-1/4" HSA, 2" SS
8. HOLE LOCATION	State Street
9. SURFACE ELEVATION	414.40
10. DATE STARTED	11/25/91
11. DATE COMPLETED	11/25/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	14.00
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	15.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	0	0	1QA/2QC	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Grout	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Gravelly, black topsoil to soft dark grey Clay FILL to coarse black FILL	FILL	14		2 2 4 14	Samples taken with 2-inch stainless steel split spoon
					OAL OOL		
		Coarse black cinders with small stiff dark grey CLAY lense			OOD OOL		Boring advanced with 2-1/4 inch HSA
			CL	15		3 3	
					OOK OOL	3 3	
		Stiff dark grey CLAY stained		--	OOK OLQ		
		Firm dark grey CLAY to firm light brown CLAY					
409	5		CL	14		2 2 2 4	
		Firm light brown CLAY			OOL OOL		
			CL	17		1 2	
					OOM OOL	3 4	
		Light brown CLAY	CL				
				19		3 5	
					OON OOL OON OLM OON OLX	8 7	
		Medium dense light brown fine SAND	SP				

HTW DRILLING LOG

HOLE NO. RO0002

PROJECT NL/Taracorp

INSPECTOR Eric Page

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		SAME: Medium dense, light brown, fine SAND					
		Loose light brown fine SAND to loose light brown medium coarse SAND	SP	18	OOT OOL	4 5 6 7	
399	15	Bottom of Boring at 15 ft					
394	20						
389	25						

HTW DRILLING LOG

HOLE NO TA0001

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 2 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	Acker Rig/Mack 88
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	State Street
9. SURFACE ELEVATION	417.40
10. DATE STARTED	11/22/91
11. DATE COMPLETED	11/22/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	15.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	6	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	0	0	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Grout	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Black, coarse cindery FILL	FILL	17	00J 00G	3 10 8 8	Samples taken with 2-inch stainless steel split spoon
		Black, coarse cindery FILL					Boring advanced with 2-1/4 inch HSA
				18	00K 00G	4 7 5 8	
		Stiff, dark grey CLAY	CL				
				19		3 4 5 5	
412	5	Loose, light brown, fine Clayey SAND to loose, light brown fine SAND	SP				
		Moist, loose, light brown fine SAND	SP	19		2 4 5 5	
					00M 00G		
			SP	19		3 3 5 3	
					00N 00G		

HTW DRILLING LOG

HOLE NO. TA0001

PROJECT NL/Taracorp

INSPECTOR Eric Page

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		SAME: Moist, loose, light brown fine SAND	SP				
				19	00T 00G	5 4 3 3	
402	15	Bottom of Boring at 15 ft					
397	20						
392	25						

HTW DRILLING LOG

HOLE NO: TA0002

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 2 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	Acker Rig/Mack 88
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA
8. HOLE LOCATION	State Street
9. SURFACE ELEVATION	418.70
10. DATE STARTED	11/22/91
11. DATE COMPLETED	11/22/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	15.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	6	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	0	0	%

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Grout	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		3 inches asphalt then coarse, light tan, black and maroon FILL, bricks, mortar, etc.		11	00J 00G	- 3 7 17	Samples taken with 2-inch stainless steel split spoon
		Black coarse FILL to fine black FILL	FILL	16	00K 00G		Boring advanced with 2-1/4 inch HSA
		Black, wet Sand and gravel FILL					
414	5	Brown SILT to stiff brown Silty CLAY	ML/CL	17	00L 00G	2 1 5 6	
		Medium black wet SAND	SP				
		Loose green-grey SILT with lenses of black SILT to loose green-grey Sandy SILT	ML	16	00M 00G	2 2 1 1	
		Loose green-grey SILT					
		Black stiff organic CLAY	ML/CL OL	20		1 2 4 5	

HTW DRILLING LOG

HOLE NO: TR0006

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 2 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	Acker Rig/Mack 88
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4"HSA, 2" SS
8. HOLE LOCATION	State Street
9. SURFACE ELEVATION	414.33
10. DATE STARTED	11/18/91
11. DATE COMPLETED	11/18/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	12.00
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	15.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	6	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	7	0	2 QC	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Grout	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Gravel, then cindery, black coarse FILL	FILL	14		4 6 5 5	Samples taken with 2-inch stainless steel split spoon
		Wet, black Sandy FILL to wet coarse black FILL to a yellow-orange coarse sand sized chert then coarse black slag FILL	FILL	13	OAL OOL OOD OOL	2 11 23 10	Boring advanced with 2-1/4 inch HSA
		Dark brown sand sized FILL to yellow-orange coarse sand sized FILL. Black Sand (coarse)			OOK OOL	8 7 5 4	
409	5	Dark CLAY peat with organic fibers	OL	14			
		Stiff dark grey CLAY	CL	16	OOL OOL	2 4 6 7	
		Stiff dark CLAY with some small glass fragments	CL	11	OOM OOL	3 3 6 6	

HTW DRILLING LOG

HOLE NO. TR0006

PROJECT NL/Taracorp

INSPECTOR Eric Page

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		SAME: Stiff, dark CLAY with glass fragments	CL		00N 00L 00N 0LM 00N 0LX		
						11 18 23 31	
		Grey very fine Sand well sorted, wet, saturated	SP				
399	15	Bottom of Boring at 15 ft			00T 00L		
394	20						
389	25						

HTW DRILLING LOG

HOLE NO TR0007

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 2 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	Acker Rig/Mack 88
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	4-1/4" HSA, 2" SS
8. HOLE LOCATION	State Street
9. SURFACE ELEVATION	414.70
10. DATE STARTED	11/18/91
11. DATE COMPLETED	11/18/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	15.00
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	15.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	6	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	7	0	1 QC	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Grout	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Black cinders, slag and battery chips. Dolomite fragments and oxidized Sand FILL	FILL	17	OAL OOL	5 10 15 18	Samples taken with 2-inch stainless steel split spoon
		Coarse black construction FILL		14	OODOOL	2 2 3 4	Boring advanced with 2-1/4 inch HSA
		Dark grey medium stiff CLAY	CL				
		Dark grey CLAY changing to firm mottled grey-brown CLAY			OOK OOL		
410	5		CL	16		2 2 3 5	
		Stiff mottled brown CLAY	CL	17	OOL OOL OOL OLD	2 3 5 8	
					OOM OOL		
		Stiff mottled brown CLAY	CL	17		3 3 7 10	
		Medium dense, light tan-brown, fine grained well sorted SAND	SP		OON OOL		

HTW DRILLING LOG

HOLE NO. TR0007

PROJECT NL/Taracorp

INSPECTOR Eric Page

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		SAME: Medium dense, light tan-brown, fine grained, well sorted SAND	SP				
		Loose, light brown medium SAND changing to loose fine light brown SAND changes to loose buff, coarse SAND then loose light brown Sandy SILT					
400	15	Bottom of Boring at 15 ft		19	OOT OOL	8 5 2 4	
395	20						
390	25						

HTW DRILLING LOG

HOLE NO: TR0008

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 2 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	Acker Rig/Mack 88
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	4-1/4" HSA, 2" SS
8. HOLE LOCATION	State Street
9. SURFACE ELEVATION	414.40
10. DATE STARTED	11/18/91
11. DATE COMPLETED	11/18/94
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	14.00
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	15.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	6	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	7	0	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Grout	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Black cindery coarse Sand to medium black Sand FILL last 5 inches construction rubble-brick, mortar, etc.	FILL	18		4 7 14 8	Samples taken with 2-inch stainless steel split spoon
		Medium dense, black SAND	SP		OAL OOL OOD OOL		Boring advanced with 2-1/4 inch HSA
		Stiff black CLAY		17		2 3 5 7	
			CL		OOK OOL		
		Stiff grey CLAY					
409	5		CL	18	OOL OOL	2 3 5 8	
		Stiff grey CLAY to mottled stiff light brown CLAY changing to light brown Silty CLAY	CL	20	OOM OOL	2 4 5 6	
		Loose, light brown Silty SAND to loose light brown fine SAND to loose light brown medium grained SAND	SP	19	OON OOL	2 3 4 9	

HTW DRILLING LOG

HOLE NO. TR0008

PROJECT NL/Taracorp

INSPECTOR Eric Page

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		SAME: Loose, light brown, medium grained SAND	SP				
		Medium dense coarse SAND, wet	SP				
399	15	Bottom of Boring at 15 ft		19	OOT OOL	6 6 6 10	
394	20						
389	25						

HTW DRILLING LOG

HOLE NO: TR0009

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 2 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	Acker Rig/Mack 88
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	4-1/4" HSA, 2" SS
8. HOLE LOCATION	State Street
9. SURFACE ELEVATION	413.80
10. DATE STARTED	11/18/91
11. DATE COMPLETED	11/18/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	14.50
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	15.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	6	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	7	0	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Grout	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Black cinders, moist to black fine Sand FILL to dark medium stiff CLAY. Some orange mottled CLAY near bottom.	FILL	18		5 4 3 5	Samples taken with 2-inch stainless steel split spoon
		Soft black-grey low plastic CLAY to firm light brown low plastic Silty CLAY	CL	13	OAL OOL OOD OOL	1 3 3 5	Boring advanced with 2-1/4 inch HSA
		Firm dark brown Silty CLAY			OOK OOL		
409	5	Loose, coarse Silty SAND	SP	17	OOL OOL	2 4 6 7	
		Medium dense, light brown-tan fine SAND to medium coarse SAND	SP	19	OOM OOL	2 6 8 10	
			SP	20		4 8 14 14	

HTW DRILLING LOG

HOLE NO. TR0009

PROJECT NL/Taracorp

INSPECTOR Eric Page

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		SAME: Medium coarse, light brown SAND	SP		OON OOL		
		Loose, light tan-brown medium coarse grain to light brown fine SAND, wet	SP	20		4 5 5 6	
399	15	Bottom of Boring at 15 ft			OOT OOL		
394	20						
389	25						

HTW DRILLING LOG

HOLE NO: TR0010

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 2 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	Acker Rig/Mack 88
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	4-1/4" HSA, 2" SS
8. HOLE LOCATION	State Street
9. SURFACE ELEVATION	414.50
10. DATE STARTED	11/15/91
11. DATE COMPLETED	11/15/91
12. OVERBURDEN THICKNESS	N/A
13. DEPTH DRILLED INTO ROCK	N/A
14. TOTAL DEPTH OF HOLE	15.00
15. DEPTH GROUNDWATER ENCOUNTERED	14.00
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	6	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	7	0	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Grout	Jorge Garcia

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Dark black-brown Silty CLAY mottled to black SAND fine-medium grain, wet	FILL	14		4 5 6 3	Samples taken with 2-inch stainless steel split spoon
		Firm, dark mottled grey-brown CLAY; orange oxidation stains	CL	15	OAL OOL OOD OOL	3 5 6 8	Boring advanced with 2-1/4 inch HSA
		Firm, light brown low plastic CLAY, moist	CL	17	OOK OOL	3 5 7 7	
410	5	Loose, light brown SAND, damp-moist, fine to medium grained	SP	24	OOL OOL OOM OOL	4 8 12 10	
			SP	22	OON OOL		

HTW DRILLING LOG

HOLE NO. TR0010

PROJECT NL/Taracorp

INSPECTOR Jorge Garcia

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		SAME: Loose, light brown SAND, damp, fine to medium grained	SP				
		Loose, light brown SAND, medium grained, wet	SP		OOT OOL	4 4 4 5	
400	15	Bottom of Boring at 15 ft					
395	20						
390	25						

HTW DRILLING LOG

HOLE NO	BV0001
1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 2 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	Acker Rig/Mack 88
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	State Street
9. SURFACE ELEVATION	415.60
10. DATE STARTED	11/21/91
11. DATE COMPLETED	11/21/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	15.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	6	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	7	0	3 QC	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Grout	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Hard rubber battery chip FILL (black) to coarse, black-brown FILL to coarse sand sized black FILL with yellow grains inclusive	FILL	20	OAL OOL OOD OOL	5 10 12 12	Samples taken with 2-inch stainless steel split spoon
		Dark grey cindery Clay FILL					Boring advanced with 2-1/4 inch HSA
		Loose brown Sandy SILT	SM	18		3 2 3 4	
		Stiff dark grey CLAY			OOK OOL		
411	5		CL	17	OOL OOL	1 3 3 6	
		Stiff mottled brown CLAY	CL	18	OOL OLD	1 3 3 5	
		Stiff mottled brown CLAY	CL		OOM OOL		
		Medium dense light brown Sandy SILT	SM			2 4 10 12	
		Medium dense brown fine SAND	SP	21			

HTW DRILLING LOG

HOLE NO: TR0001

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 2 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	Acker Rig/Mack 88
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	State Street
9. SURFACE ELEVATION	417.60
10. DATE STARTED	11/20/91
11. DATE COMPLETED	11/20/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	12.00
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	15.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	6	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	7	0	1 QC	%

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Grout	E. Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Coarse black FILL to coarse blue-black FILL	Fill	12	0AC 00L 00D 00L	5 12 50/3	Samples collected with stainless steel split-spoon sampler (2"OD)
		Soft, grey, medium CLAY	CL	15		1 2 3 7	Boring advanced with 2-1/4 inch HSA's
		Stiff grey SILT	ML				
		Firm, blue-grey, Silty CLAY to stiff brown Silty CLAY	CL	15	00K 00L 00L 00L	2 3 4 6	
413	5						
		Mottled brown CLAY		18		3 4 7 8	
		Stiff, mottled brown Silty CLAY with Silt lenses	CL	18	00M 00L 00N 00L	5 8 7 10	

HTW DRILLING LOG

HOLE NO. TR0001

PROJECT NL/Taracord

INSPECTOR E. Page

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		SAME: Stiff, mottled brown Silty CLAY with Silt lenses	CL				
		Light brown fine SAND, moist, wet	SP	18	00T 00L 00T 0LD	4 6 8 6	
403	15	Bottom of Boring at 15 ft					
398	20						
393	25						

HTW DRILLING LOG

HOLE NO: TR0002

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 2 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	Acker Drill Rig
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	State Street
9. SURFACE ELEVATION	417.00
10. DATE STARTED	11/19/91
11. DATE COMPLETED	11/19/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	14.00
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	15.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	6	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	7	0	1 QC	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Grout	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Black, very coarse FILL to blue-grey, very coarse FILL (slag/cinders)	FILL	15		4 5 7 8	Samples taken with 2-inch stainless steel split spoon
		Black, very coarse cindery FILL, changes to yellow coarse sand sized FILL			OAC OOL OOD OOL		Boring advanced with 2-1/4 inch HSA
			FILL	10		4 4 8 13	
		Stiff, dark brown lightly mottled CLAY			OOK OOL		
412	5		CL	15		3 4 3 6	
		Stiff, light brown, mottled CLAY			OOL OOL		
			CL	21		4 4 6 8	
		Stiff dark brown CLAY to firm dark brown Silty CLAY			OOM OOL		
			CL	18		2 5 7 8	
		Medium dense light brown Sandy SILT	SM		OON OOL		

HTW DRILLING LOG

HOLE NO. TR0002

PROJECT NL/Taracorp

INSPECTOR Eric Page

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		SAME: Medium dense, light brown Sandy SILT	SM		OON OOL		
		Medium dense, fine light brown SAND to medium dense light brown SAND			OOT OOL		
402	15	Bottom of Boring at 15 ft	SP	18	OOT OLD	8 14 14 9	
397	20						
392	25						

HTW DRILLING LOG

HOLE NO. TR0003

PROJECT: NL/Taracorp

INSPECTOR: Eric Page

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		SAME: Dense, light brown fine SAND	SP		DON OOL		
		Medium dense brown coarse SAND			OOT OOL OOT OLM OOT OLX		
399	15	Bottom of Boring at 15 ft	SP	17		15 7 7 14	
394	20						
389	25						

HTW DRILLING LOG

HOLE NO: TR0004

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 2 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	Acker Rig/Mack 88
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	State Street
9. SURFACE ELEVATION	414.30
10. DATE STARTED	11/20/91
11. DATE COMPLETED	11/20/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	14.50
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	15.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	6	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	7	0	1 QC	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Grout	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Blue-grey coarse FILL to black	FILL			7	Samples taken with 2-inch stainless steel split spoon
		Coarse FILL changing to fine black cindery FILL		14		3 3 4	
		Firm dark grey CLAY	CL		OAC OOL		
		Firm dark grey CLAY to stiff light tan-brown mottled CLAY			OOD OOL		Boring advanced with 2-1/4 inch HSA
			CL	12		2 4 5 4	
		Firm, light brown mottled CLAY to stiff light brown Silty CLAY			OOK OOL		
409	5		CL	19		2 3 5 6	
		Firm light brown Silty CLAY	CL		OOL OOL		
		Loose light brown SILT	ML	18		3 2 3 8	
		Loose light brown fine SAND					
		Medium dense light brown fine SAND	SP		OOM OOL OOM OLD		
			SP	18		3 7	
					OON OOL	14 14	

HTW DRILLING LOG

HOLE NO. TR0004

PROJECT NL/Taracorp

INSPECTOR Eric Page

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		SAME: MEdium dense, light brown fine SAND	SP				
		Medium dense light brown medium SAND to medium dense light brown wet fine SAND					
399	15	Bottom of Boring at 15 ft	SP	17	OOT OOL	7 8 7 8	
394	20						
389	25						

HTW DRILLING LOG

HOLE NO: TR0003

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 2 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	Acker Rig/Mack 88
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	State Street
9. SURFACE ELEVATION	414.30
10. DATE STARTED	11/20/91
11. DATE COMPLETED	11/20/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	14.00
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	15.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	6	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	7	0	2 QC	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Grout	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Silty topsoil to black coarse FILL to stiff brown Clay FILL to black fine FILL	FILL	20		6 7 7 4	Samples taken with 2-inch stainless steel split spoon sampler
		Stiff black CLAY	CL	13	OAC OOL OOD OOL	2 2 5 8	Boring advanced with 2-1/4 inch HSA
409	5	Stiff black CLAY to medium brown CLAY	CL	18	OOK OOL	2 2 5 8	
		Firm, medium brown CLAY to firm light brown Silty CLAY	CL	18	OOL OOL	2 2 4 5	
		Firm brown Silty CLAY	CL		OOM OOL		
		Dense light brown fine SAND	SP	18		8 12 21 33	

HTW DRILLING LOG

HOLE NO: TR0005

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 2 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	Acker Rig/Mack 88
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	State Street
9. SURFACE ELEVATION	416.80
10. DATE STARTED	11/19/91
11. DATE COMPLETED	11/19/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	14.00
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	15.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	6	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	7	0	1 QA	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Grout	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Black, gravelly Clay FILL to dark grey Clay FILL to light tan-brown Silty Clay FILL to dark red coarse FILL		17		6 7 8 6	Samples taken with 2-inch stainless steel split spoon
		Black gravelly Clay FILL to red-orange coarse slag FILL	FILL	8	OAL OOL OOD OOL	3 4 5 4	Boring advanced with 2-1/4 inch HSA
		Soft grey CLAY to soft mottled grey-brown CLAY			OOK OOL		
412	5		CL	16		1 2 1 3	
		Firm mottled grey-brown CLAY			OOL OOL OOL OLQ		
		Firm mottled grey-brown CLAY	CL	18	OOM OOL	2 3 4 6	

HTW DRILLING LOG

HOLE NO. TR0005

PROJECT NL/Taracorp

INSPECTOR Eric Page

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		SAME: Firm, mottled grey-brown CLAY	CL		OON OOL		
		Medium dense moist fine light brown SAND	SP	18		5 7 7 10	
402	15	Bottom of Boring at 15 ft			OOT OOL		
397	20						
392	25						

HTW DRILLING LOG

HOLE NO. BV0001

PROJECT NL/Taracorp

INSPECTOR Eric Page

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		SAME: Medium dense, brown, fine SAND			OON OOL		
		Medium dense, light brown, fine to medium size SAND	SP	19	OOT OOL OOT OLM OOT OLX	7 20 32 25	
401	15	Bottom of boring at 15 ft					
396	20						
391	25						

HTW DRILLING LOG

HOLE NO. TA0002

PROJECT NL/Taracorp

INSPECTOR Eric Page

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		SAME: Black, stiff organic CLAY	OL		OON OOG		
		Dark brown Clayey SILT to brown SILT	ML	22		6 8 6 8	
		Moist brown fine SAND	SP		OOT OOG		
404	15	Bottom of Boring at 15 ft					
399	20						
394	25						

HTW DRILLING LOG

HOLE NO: TA0003

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 2 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	Acker Rig/Mack 88
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA
8. HOLE LOCATION	State Street
9. SURFACE ELEVATION	420.00
10. DATE STARTED	11/22/91
11. DATE COMPLETED	11/22/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	15.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	6	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	0	0	%

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Grout	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		4 inches asphalt Coarse, maroon, black and buff construction rubble FILL		14	00J 00G	6 4 4	Samples taken with 2-inch stainless steel split spoon
		Coarse, black FILL	FILL				Boring advanced with 2-1/4 inch HSA
				15	00K 00G	3 5 4 3	
		Coarse, black FILL					
415	5	Loose green-grey SILT	ML	13	00L 00G	3 2 3 3	
		Loose, grey-green Sandy SILT	SM	16	00M 00G	2 2 1 2	
		Loose, grey-green SILT	ML				
		Stiff dark grey organic CLAY	OL	19		1 2 3 5	

HTW DRILLING LOG

HOLE NO. TA0003

PROJECT NL/Taracord

INSPECTOR Eric Page

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		SAME: Stiff, dark grey organic CLAY	OL		OON OOG		
		Stiff, mottled brown CLAY, brown Sandy SILT at bottom	CL SM	18	OOT OOG	~30630	
405	15	Bottom of Boring at 15 ft					
400	20						
395	25						

TEST BORING LOGS

OTHER REMOTE AREAS

TEST BORING LOGS

VENICE ALLEYS

HTW DRILLING LOG

HOLE NO: VE0001

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	Venice Alley
9. SURFACE ELEVATION	416.20
10. DATE STARTED	12/2/91
11. DATE COMPLETED	12/2/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	4.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	0	0	%

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		3 inches fill to firm, brown CLAY to firm, light brown Silty CLAY	CL	20		6 3 2 3	Boring advanced with 2-1/4 inch HSA
		Loose, light brown Silty CLAY	CL			2 1 1 2	
		Bottom of Boring at 4 ft					
411	5						

HTW DRILLING LOG

HOLE NO: VE0002

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	Venice Alley
9. SURFACE ELEVATION	414.20
10. DATE STARTED	12/2/91
11. DATE COMPLETED	12/2/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	4.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	1	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Coarse, brown-black FILL	FILL	19	SVE0002-100JT	8 8 7 8	Sample taken with 2-inch stainless steel split spoon. Boring advanced with 2-1/4 inch HSA
		Loose, brown SILT	ML				
		Loose, light brown fine SAND	SP			3 3 2 3	
		Bottom of Boring at 4 ft					
409	5						

HTW DRILLING LOG

HOLE NO: VE0003

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	Venice Alley
9. SURFACE ELEVATION	410.60
10. DATE STARTED	12/2/91
11. DATE COMPLETED	12/2/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	6.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	0	0	%

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Black FILL to brown Sand FILL with black chips	FILL	17		8 5 8 5	Boring advanced with 2-1/4 inch HSA
		Light brown, fine Sand FILL	FILL	12		2 1 1 2	
		Loose, brown Sandy SILT	SM				
		Loose Silty SAND					
406	5		SP	15		1 2 2 1	
		Bottom of Boring at 6 ft					

HTW DRILLING LOG

HOLE NO	VE0004
1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA
8. HOLE LOCATION	Venice Alley
9. SURFACE ELEVATION	410.40
10. DATE STARTED	12/2/91
11. DATE COMPLETED	12/2/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	6.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	1	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		4 inches gravel; 2 inches battery chips Coarse black-red FILL, clay consistency	FILL	22	SVE0004-100JT	8 10 7 9	Sample taken with 2-inch stainless steel split spoon Boring advanced with 2-1/4 inch HSA
		Gravelly black Sand FILL					
			FILL	14		4 3 2 2	
		Coarse black FILL					
		Brown Silty SAND					
405	5		SP	19		1 2 1 2	
		Bottom of Boring at 6 ft					

HTW DRILLING LOG

HOLE NO: VE0005

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	Venice Alley
9. SURFACE ELEVATION	408.70
10. DATE STARTED	12/2/91
11. DATE COMPLETED	12/2/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	10.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	0	1	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		2 inches battery chips, coarse black FILL to stiff brown Clay FILL	FILL	17		3 2 7 6	Sample taken with 2-inch stainless steel split spoon. Boring advanced with 2-1/4 inch HSA
		Light brown Silty Clay FILL, trace gravel		12		2 3 4 4	
		Light brown Silty Clay FILL, thin layers of coarse Black FILL			SVE0005-100LT		
404	5			12		2 2 4 5	
				16		3 3 4 5	
				8		6 5 1 2	
		Bottom of Boring at 10 ft					

HTW DRILLING LOG

HOLE NO: VE0006

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	Venice Alley
9. SURFACE ELEVATION	408.90
10. DATE STARTED	12/2/91
11. DATE COMPLETED	12/2/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	4.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	0	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Coarse, black FILL	FILL	17		12 14 10 6	Boring advanced with 2-1/4 inch HSA
		Stiff, light brown Silty CLAY	CL				
		Stiff, light brown Silty CLAY	CL	14		4 4 4 4	
		Bottom of Boring at 4 ft					
404	5						

HTW DRILLING LOG

HOLE NO: VE0007

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 1 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	Venice Alley
9. SURFACE ELEVATION	413.10
10. DATE STARTED	12/3/91
11. DATE COMPLETED	12/3/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	4.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	0	0	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Jorge Garcia

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Black battery chips 2 inches thick Brown-black slag/cinders	FILL	12		8 5 3 2	Boring advanced with 2-1/4 inch HSA
		Brown Sandy SILT	SM				
		Light brown SAND, fine grain	SP	10		2 1 1 2	
		Bottom of Boring at 4 ft					
408	5						

HTW DRILLING LOG

HOLE NO	VE0008
1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	Venice Alley
9. SURFACE ELEVATION	409.20
10. DATE STARTED	12/3/91
11. DATE COMPLETED	12/3/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	10.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	1	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Pea gravel, black gravel cinders (FILL)		18		10 3 3 3	Sample taken with 2-inch stainless steel split spoon
		Loose, fine grained Silty SAND, trace gravel	FILL				Boring advanced with 2-1/4 inch HSA
		Loose, brown fine grained Silty SAND with gravel and slag (FILL)		12		1 2 2 2	
404	5	Brown silty CLAY with gravel and slag, small SAND lens about 4-5 inches thick (FILL) to blue-white sulphurus slag, coarse		11	SVE0008-100LT	1 3 3 8	
		Blue-white sulphurus slag, coarse (FILL)		8		4 4 4 2	
		Blue-white sulphurus slag change to brown sandy CLAY, soft, moist, organic staining		9		3 2 1 2	
		Bottom of Boring at 10 ft	CL				

HTW DRILLING LOG

HOLE NO: VE0009

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	Venice Alley
9. SURFACE ELEVATION	409.30
10. DATE STARTED	12/3/91
11. DATE COMPLETED	12/3/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	6.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	0	1	1 QC	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Jorge Garcia

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Gravel, pea gravel, black battery chips 2 inches thick (FILL) to light brown fine grained Silty SAND overlying FILL, dark slag, cinders	FILL	18	SVE0009-100JT 100JTD	3 6 8 9	Sample taken with 2-inch stainless steel split spoon Boring advanced with 2-1/4 inch HSA
		Black slag/cinders with sand and silt to light brown SAND, fine grained to light brown SAND medium grained	SP	19		4 6 7 3	
		Light brown CLAY with mottled with Silt	CL	18		2 2 4 5	
404	5						
		Bottom of Boring at 6 ft					

HTW DRILLING LOG

HOLE NO	VE0010
1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	Venice Alley
9. SURFACE ELEVATION	413.20
10. DATE STARTED	12/3/91
11. DATE COMPLETED	12/3/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	4.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	0	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Jorge Garcia

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Pea gravel, dark battery chips about 6 inches thick mixed with sand, cinders, gravel (FILL) to light brown SAND, fine with cinders	FILL	14		8 8 8 8	Boring advanced with 2-1/4 inch HSA
		Loose light brown fine grained SAND to loose light brown Silty SAND	SP SM	17		2 2 2 2	
		Bottom to Boring at 4 ft					
408	5						

FINAL REPORT
APPENDIX C, D, & E

NL/TARACORP SUPERFUND SITE GRANITE CITY, ILLINOIS

Prepared for

U.S. Envrionmental Protection Agency
Region V
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

March, 1993

U.S. Department of the Army
Corps of Engineers, Omaha District
Omaha, Nebraska

FINAL REPORT
APPENDIX C, D, & E

NL/TARACORP SUPERFUND SITE GRANITE CITY, ILLINOIS

Prepared for

U.S. Department of the Army
Corps of Engineers, Omaha District
Omaha, Nebraska

March, 1993

Woodward-Clyde

Woodward-Clyde Consultants
2318 Millpark Drive
St. Louis, Missouri 63043

WCC Project No. 89MC114V

TEST BORING LOGS

MAIN INDUSTRIAL PROPERTY

HTW DRILLING LOG

HOLE NO: BV0002

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 2 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	Acker Rig/ Mack 88
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	State Street
9. SURFACE ELEVATION	416.00
10. DATE STARTED	11/21/91
11. DATE COMPLETED	11/21/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	15.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	6	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	7	0	0	%

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Grout	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Coarse black gravelly FILL	FILL	22	OAL OOL	8 11 12 15	Samples taken with 2-inch stainless steel split spoon
		Coarse black-brown FILL with lense of stiff dark grey Clay FILL		13	OOO OOL OOK OOL	4 3 5 8	Boring advanced with 2-1/4 inch HSA
411	5	Coarse black-brown FILL and coarse sand sized FILL		14	OOL OOL	5 7 7 42	
		Hard fragments, limestone, etc. Gravelly coarse sand sized black FILL		10	OOM OOL	5 5 6	
		Coarse black slag FILL, vitrified		18	OON OOL	2 5 27 50/2.5"	

HTW DRILLING LOG

HOLE NO BV0002

PROJECT NL/Taracorp

INSPECTOR Eric Page

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		SAME: Coarse, black, vitrified slag FILL					
		Medium dense, light brown fine SAND	SP	18	OOT OOL	5 7 12 15	
401	15	Bottom of Boring at 15 ft					
396	20						
391	25						

HTW DRILLING LOG

HOLE NO: BV0003

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 2 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	Acker Rig/Mack 88
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	State Street
9. SURFACE ELEVATION	416.40
10. DATE STARTED	11/22/91
11. DATE COMPLETED	11/22/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	12.50
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	15.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	7	0	0	%

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Grout	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Black coarse FILL, cindery with little clay and construction debris	FILL	14	OAC OOL OOD OOL	8 13 9 8	Samples taken with 2-inch stainless steel split spoon
		Brown-black coarse FILL	FILL	15	OOK OOL	5 6 4 5	Boring advanced with 2-1/4 inch HSA
		Loose, light brown SILT	ML				
		Loose, light brown Sandy SILT	SM				
411	5	Firm, dark grey CLAY	CL	17	OOL OOL OOM OOM	2 2 3 4	
		Firm, dark grey CLAY	CL	19		2 2 4 5	
		Loose, moist, light tan-brown fine SAND	SP	14	OON OOL	2 2 4 5	

HTW DRILLING LOG

HOLE NO. BV0003

PROJECT NL/Taracorp

INSPECTOR Eric Page

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		SAME: Loose, moist, light tan-brown fine SAND					
		Medium dense, moist, light tan-brown fine SAND					Water at 12.5 ft
			SP		OOT OOL	3 6 7 8	
401	15	Bottom of Boring at 15 ft					
396	20						
391	25						

HTW DRILLING LOG

HOLE NO: VE0011

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA
8. HOLE LOCATION	Venice Alley
9. SURFACE ELEVATION	412.20
10. DATE STARTED	12/3/91
11. DATE COMPLETED	12/3/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	4.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	0	1	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Jorge Garcia

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Black gravel, battery chips about 3 inches thick	FILL		SVE0011-100JT	8	Sample taken with 2-inch stainless steel split spoon
		Light brown, fine grained SAND		21		7 9 8	Boring advanced with 2-1/4 inch HSA
		Loose, light brown SAND medium grain size to loose, brown, fine grained Silty SAND	SP			3 3 4 4	
			SP/SM	18			
		Bottom of Boring at 4 ft					
407	5						

HTW DRILLING LOG

HOLE NO: VE0012

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	Venice Alley
9. SURFACE ELEVATION	408.10
10. DATE STARTED	12/3/91
11. DATE COMPLETED	12/3/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	4.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	0	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Jorge Garcia

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Dark black-brown gravel, slag, cinders with SAND (FILL)	FILL	13		7 4 8 8	Boring advanced with 2-1/4 inch HSA
		Light brown Clayey SAND, slightly moist	SC				
		Loose, light brown, fine grained SAND	SP	17		6 5 6 4	
		Bottom of Boring at 4 ft					
403	5						

HTW DRILLING LOG

HOLE NO: VE0013

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	Venice Alley
9. SURFACE ELEVATION	408.40
10. DATE STARTED	12/3/91
11. DATE COMPLETED	12/3/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	4.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	1	0	%

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Jorge Garcia

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Gravel, asphalt, black battery chips about 2 inches thick, slag, cinders	FILL	12	SVE0013-100JT	35 7 6 4	Sample taken with 2-inch stainless steel split spoon. Boring advanced with 2-1/4 inch HSA
		Firm, mottled grey-brown Silty CLAY	CL	15			
		Bottom of Boring at 4 ft					
403	5						

HTW DRILLING LOG

HOLE NO: VE0014

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 1 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	Venice Alley
9. SURFACE ELEVATION	407.60
10. DATE STARTED	12/3/91
11. DATE COMPLETED	12/3/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	6.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	0	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Jorge Garcia

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Gravel, dark black slag cinders, trace battery chips, black sand, soft (fly ash) FILL	FILL	18		14 6 4 6	Boring advanced with 2-1/4 inch HSA
		Firm, dark grey CLAY to firm, brown mottled Silty CLAY	CL	19		2 2 3 4	
			CL				
		Firm, light brown Silty CLAY	CL	16		1 1 3 4	
403	5						
		Loose light brown, fine grained Silty SAND	SP				
		Bottom of Boring at 6 ft					

HTW DRILLING LOG

HOLE NO: VE0015

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 1 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	Venice Alley
9. SURFACE ELEVATION	407.70
10. DATE STARTED	12/3/91
11. DATE COMPLETED	12/3/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	6.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	1	1 QA	%

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Jorge Garcia

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Brown gravel with brown battery chips about 3 inches thick to brown slag, cinders and sand (FILL)	FILL	21		21 11 8 7	Sample taken with 2-inch stainless steel split spoon. Boring advanced with 2-1/4 inch HSA
		Stiff, dark brown-grey mottled CLAY with slag and gravel (FILL)		17	SVE0015 -100KT -100KTQ	2 2 4 6	
		Stiff, brown-grey mottled Silty CLAY	CL	18		2 2 4 6	
403	5						
		Bottom of Boring at 6 ft					

HTW DRILLING LOG

HOLE NO VE0016

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 1 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham.
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4 " HSA, 2" SS
8. HOLE LOCATION	Venice Alley
9. SURFACE ELEVATION	410.60
10. DATE STARTED	12/3/91
11. DATE COMPLETED	12/3/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	4.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	0	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Jorge Garcia

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Brown-black gravel with battery chips, slag, cinders, coarse	FILL	20		8 8 5 8	Boring advanced with 2-1/4 inch HSA
		Loose light brown fine grained SAND	SP				
		Loose, light brown, fine grained SAND		23		3 2 2 2	
		Loose light brown Silty SAND	SM				
		Bottom of Boring at 4 ft					
406	5						

HTW DRILLING LOG

HOLE NO: VE0017

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	Venice Alley
9. SURFACE ELEVATION	410.90
10. DATE STARTED	12/3/91
11. DATE COMPLETED	12/3/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	4.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	1	0	%

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Jorge Garcia

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Black battery chips 8 inches thick Brown sandy cinders and slag	FILL	18	SVE0017-100JT	4 12 8 7	Sample taken with 2-inch stainless steel split spoon Boring advanced with 2-1/4 inch HSA
		Loose light brown fine grained SAND	SP				
		Loose, light brown, fine grained SAND	SP	15		3 2 2 2	
		Loose light brown, fine grained SAND, damp	SP				
		Bottom of Boring at 4 ft					
406	5						

HTW DRILLING LOG

HOLE NO: VE0018

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	Venice Alley
9. SURFACE ELEVATION	409.60
10. DATE STARTED	12/3/91
11. DATE COMPLETED	12/3/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	4.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	0	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Jorge Garcia

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Gravel with black battery chips, slag, cinders and SAND	FILL			7 16 9 10	Boring advanced with 2-1/4 inch HSA
		Stiff black-brown Silty CLAY		18			
		Firm, mottled black-brown Silty CLAY	CL			4 8 5 6	
		Medium dense, light brown, fine grained SAND	SP	17			
		Stiff light brown Sandy CLAY	CL				
		Bottom of Boring at 4 ft					
405	5						

HTW DRILLING LOG

HOLE NO: VE0019

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	Venice Alley
9. SURFACE ELEVATION	408.80
10. DATE STARTED	12/4/91
11. DATE COMPLETED	12/4/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	4.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	0	0	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Jorge Garcia

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Pea gravel, gravel, slag, cinders, trace battery chips	FILL			3 3 3 3	Boring advanced with 2-1/4 inch HSA
		Loose light brown SAND with SILT	SP	20			
				23		2 2 2 2	
		Bottom of Boring at 4 ft					
404	5						

HTW DRILLING LOG

HOLE NO: VE0020

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 1 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2-1/4" HSA, 2" SS
8. HOLE LOCATION	Venice Alley
9. SURFACE ELEVATION	410.00
10. DATE STARTED	12/4/91
11. DATE COMPLETED	12/4/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	4.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	1	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Jorge Garcia

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Gravel and pea gravel, black battery chips 2-5 inches thick, slag, cinders, sand and SILT	FILL	22	SVE0020-100JT	40 24 20 14	Sample taken with 2-inch stainless steel split spoon Boring advanced with 2-1/4 inch HSA
		Black slag, cinders				4 3 3 2 4	
		Loose, light brown, fine grained SAND, trace SILT	SP	16			
		Bottom of Boring at 4 ft					
405	5						

HTW DRILLING LOG

HOLE NO: OR0026-1

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 3108 Colgate
9. SURFACE ELEVATION	
10. DATE STARTED	5/13/92
11. DATE COMPLETED	5/13/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	1.60
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	3	1	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Brown, Clayey SILT, trace battery chips, trace cinders	ML		SOR00281 -00A00L -00B00L		Battery chips 1/4" to 1" diameter
		Brown, Silty CLAY	CL		-00C00L		
		Bottom of Boring at 1.6 ft			-00C00T		
	5						

HTW DRILLING LOG

HOLE NO: OR0026-2

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 3108 Colgate
9. SURFACE ELEVATION	
10. DATE STARTED	5/13/92
11. DATE COMPLETED	5/13/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	1.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	3	0	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Brown, Clayey SILT	ML		SOR00262 00AL 00BL 00CL		No battery chips
		Bottom of Boring at 1 ft					
	5						

HTW DRILLING LOG

HOLE NO: OR0025-4

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 1 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 1628 Delmar
9. SURFACE ELEVATION	
10. DATE STARTED	5/13/92
11. DATE COMPLETED	5/13/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	1.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	0	1	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Brown, gravelly CLAY, trace battery chips, becomes silty with depth	CL		SOR00254		Battery chips 1/8" to 1/4" diameter
		Brown, Clayey SAND	SC		00A00T		
		Bottom of Boring at 1 ft					
	5						

HTW DRILLING LOG

HOLE NO: OR0025-5

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 1628 Delmar
9. SURFACE ELEVATION	
10. DATE STARTED	5/13/92
11. DATE COMPLETED	5/13/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	1.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	0	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Dark brown, Gravelly SILT, trace battery chips	GM				No samples collected
		Dark brown, Clayey SILT	ML				
		Dark brown, low plastic, very Silty CLAY	CL				
		Bottom of Boring at 1 ft					
	5						

HTW DRILLING LOG

HOLE NO: OR0024

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 1 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Eric Page
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill/Sand Rd. Farmers Field
9. SURFACE ELEVATION	
10. DATE STARTED	5/20/92
11. DATE COMPLETED	5/20/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	1.60
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	3	1	1QA/1QC	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Dark brown, Silty CLAY, trace battery chips	CL		SOR0024001 0ABL 0ABT 0ABLD 0ABLQ 00CL 00DL		Battery chips 1/4" to 1" diameter
		No chips past 1 ft					
		Bottom of Boring at 1.6 ft					
	5						

HTW DRILLING LOG

HOLE NO OR0025-3

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 1628 Delmar
9. SURFACE ELEVATION	
10. DATE STARTED	5/13/92
11. DATE COMPLETED	5/13/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	1.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	1	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Eric Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Dark brown, Sandy SILT, trace clay, trace battery chips in upper 1 inch	SM		SOR00253		
		Brown, Clayey SAND	SC		00A00T		
		Bottom of Boring at 1 ft					
	5						

HTW DRILLING LOG

HOLE NO: OR0022

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Eric Page
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - Sand Rd. Farmers Field
9. SURFACE ELEVATION	
10. DATE STARTED	5/20/92
11. DATE COMPLETED	5/20/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	2.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	2	1	0	%

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Dark brown-black, Clayey SILT, trace cinders and gravel, 10% battery chips	ML		SOR00221		Gumbo soils
					0ABL		
		Dark brown-black, Silty CLAY			0ABT		
			CL		00CL		
		Bottom of Boring at 2 ft					
	5						

HTW DRILLING LOG

HOLE NO. OR0023

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Eric Page
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - Sand Rd. Farmers Field
9. SURFACE ELEVATION	
10. DATE STARTED	5/20/92
11. DATE COMPLETED	5/20/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	1.50
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	2	1	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Dark brown to black, Clayey SILT, trace battery chips	ML		SOR0022100		1/4" to 2" diameter battery chips
		Dark brown to black, Silty CLAY, no chips			0ABT		
			CL		0ABL		Gumbo soils
		Bottom of Boring at 1.5 ft			00CL		
	5						

HTW DRILLING LOG

HOLE NO: TE0208-4

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 208 Terry
9. SURFACE ELEVATION	
10. DATE STARTED	5/21/92
11. DATE COMPLETED	5/21/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	3.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	2	1	1 QA	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Black to brown, Silty CLAY, trace battery chips to 1 inch	CL		TE02084 0ABL 0ABLD 0ABT 00CL		Battery chips 1/8" to 1/4" diameter
		Brown Clayey SILT	ML				
		Bottom of Boring at 3 ft					
	5						

HTW DRILLING LOG

HOLE NO TE0208-5

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 1 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 208 Terry
9. SURFACE ELEVATION	
10. DATE STARTED	5/21/92
11. DATE COMPLETED	5/21/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	2.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	1	2	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Dark brown to brown, Silty CLAY, trace battery chips to 1 inch	CL		STE02085 00BL 00BT 00CL		Battery chips 1/8" to 1-1/2" diameter
		Bottom of Boring at 2 ft					
	5						

HTW DRILLING LOG

HOLE NO TE0208-2

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 208 Terry
9. SURFACE ELEVATION	
10. DATE STARTED	5/21/92
11. DATE COMPLETED	5/21/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	1.50
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	2	1	1 QA	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Black Silt FILL, with cinders, trace battery chips	FILL		STE02082		Battery chips 1/16" to 1/2" diameter
		Brown Silty CLAY	CL		ABT ABLQ ABL ØCL		
		Bottom of Boring at 1.5 ft					
	5						

HTW DRILLING LOG

HOLE NO: TE0208-3

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 208 Terry
9. SURFACE ELEVATION	
10. DATE STARTED	5/21/92
11. DATE COMPLETED	5/21/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	2.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	2	0		

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Dark brown to brown, Silty CLAY, trace battery chips in upper 6 inches	CL		STE02083 00BL 00CL		Battery chips 1/8" to 1/2" diameter
		Bottom of Boring at 2 ft					
	5						

HTW DRILLING LOG

HOLE NO TE0203-4

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 1 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Eric Page
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 203 Terry
9. SURFACE ELEVATION	
10. DATE STARTED	5/20/92
11. DATE COMPLETED	5/20/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	1.50
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	3	1	0	%

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Brown SILT, with clay, 25-30% battery chips	ML		STE020340		Battery chips 1/4" to 2" diameter
		Mottled Brown, Silty CLAY	CL		00ABL 00AST 00CL 00OL		
		Bottom of Boring at 1.5 ft					
	5						

HTW DRILLING LOG

HOLE NO: TE0208-1

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 208 Terry
9. SURFACE ELEVATION	
10. DATE STARTED	5/21/92
11. DATE COMPLETED	5/21/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	1.70
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	1	2	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Dark brown, Clayey SILTS to Silty CLAYS Trace battery chips in upper 6 inches	ML/CL		STE02081 00BL 00BT 00CL		Battery chips 1/8" to 1" Diameter
		Bottom of Boring at 1.6 ft					
	5						

HTW DRILLING LOG

HOLE NO: TE0203-2

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Eric Page
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 203 Terry
9. SURFACE ELEVATION	
10. DATE STARTED	5/20/92
11. DATE COMPLETED	5/20/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	1.50
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	3	1	2 QA	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Mark Wallace

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Brown SILT, trace cinders, 20% battery chips	ML		TE02032		Battery chips 1/8" to 1" diameter
		Brown, Silty CLAY No silt	CL		0ABL ABT ABLQ ABTQ CL DL		
		Bottom of Boring at 1.5 ft					
	5						

HTW DRILLING LOG

HOLE NO: TE0203-3

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Eric Page
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 203 Terry
9. SURFACE ELEVATION	
10. DATE STARTED	5/20/92
11. DATE COMPLETED	5/20/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	1.50
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	3	1	1 QC	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Brown SILT, with clay, 40-50% battery chips	ML		STE02033		Battery chips 1/4" to 1-1/2" diameter
		Brown, Silty CLAY, trace battery chips	CL		00BL 00BLD 00BT 00CL 00DL		
		Bottom of boring at 1.5 ft					
	5						

HTW DRILLING LOG

HOLE NO: RS0128-3

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 128 Roosevelt
9. SURFACE ELEVATION	
10. DATE STARTED	5/27/92
11. DATE COMPLETED	5/27/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	2.50
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	3	2	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Gray-brown, Silty FILL, trace clay, tar, brick, cinders, glass	FILL		SRS01283 00CL 00CT 00DL 00DT		No battery chips
		Brown, Silty CLAY with iron stains Trace staining	CL				
		Bottom of Boring at 2.5 ft			00EL		
	5						

HTW DRILLING LOG

HOLE NO: TE0203-1

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Eric Page
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 203 Terry
9. SURFACE ELEVATION	
10. DATE STARTED	5/20/92
11. DATE COMPLETED	5/20/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	1.50
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	3	2	2 QC	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Mark Wallace

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Brown SILT, trace cinders, 20% battery chips	ML		STE02031 0ABL		Battery chips 1/8" to 1" diameter
		Brown, Silty CLAY, trace battery chips to 9 inches	CL		0ABT 0ABLD		
		Dark brown CLAY	CL		00CL 00CT		
		Bottom of Boring at 1.5 ft			00CLD 000L		
	5						

HTW DRILLING LOG

HOLE NO: RS0128-1

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 128 Roosevelt
9. SURFACE ELEVATION	
10. DATE STARTED	5/27/92
11. DATE COMPLETED	5/27/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	2.50
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	3	0	0	%

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Brown, gravelly, Silt FILL, trace sand, gravel, cinders. 4 inch layer of tar	FILL		SRS01281		No battery chips
					0ABL 00CL 00DL		
		Dark brown, Silty CLAY with iron stains	CL				
		Trace staining					
		Bottom of Boring at 3 ft					
	5						

HTW DRILLING LOG

HOLE NO: RS0128-2

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill -128 Roosevelt
9. SURFACE ELEVATION	
10. DATE STARTED	5/27/92
11. DATE COMPLETED	5/27/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	2.50
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	3	1	1 QA	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Brown, Silty FILL, trace brick, cinders, tar, gravel	FILL		SRS01282 00CL 00CLQ 00DL 00DT		No battery chips
		Brown, Silty CLAY with iron stains	CL				
		Trace staining					
		Bottom of Boring at 2.5 ft			00EL		
	5						

HTW DRILLING LOG

HOLE NO: HI0100-1

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 1 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Eric Page
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 100 Hill
9. SURFACE ELEVATION	
10. DATE STARTED	5/20/92
11. DATE COMPLETED	5/20/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	1.50
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	3	1	0	%

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Brown SILT, 30% battery chips	ML		SHI01001		Battery chips end @ 8"
		Brown, silty CLAY	CL		00BT 00BL 00CL 00DL		Battery chips 1/8" to 1-1/2" diameter
		Bottom of Boring at 1.5 ft					
	5						

HTW DRILLING LOG

HOLE NO HI0100-2

1. COMPANY NAME WOODWARD-CLYDE CONSULTANTS	2. DRILLING SUBCONTRACTOR LAYNE-WESTERN
SHEET 1 OF 1 SHEETS	
3. PROJECT NL/Taracorp	4. LOCATION Granite City, IL
5. NAME OF DRILLER Eric Page	6. MANUFACTURER'S DESIGNATION OF DRILL SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3-1/2" ID Hand Auger	8. HOLE LOCATION Remote Fill - 100 Hill
	9. SURFACE ELEVATION
	10. DATE STARTED 5/20/92 / 11. DATE COMPLETED 5/20/92
12. OVERBURDEN THICKNESS N/A	15. DEPTH GROUNDWATER ENCOUNTERED N/A
13. DEPTH DRILLED INTO ROCK N/A	16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED N/A
14. TOTAL DEPTH OF HOLE 1.00	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	2	1	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Brown, Silty CLAY	CL		SHI01002		Battery chips on surface only
		Bottom of Boring at 1 ft			0ABL 0ABT 00CL		
	5						

HTW DRILLING LOG

HOLE NO: HA0205-2

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 205 Harrison
9. SURFACE ELEVATION	
10. DATE STARTED	5/21/92
11. DATE COMPLETED	5/21/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	4.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	3	0	1 QC	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Brown, Silty, Clay FILL	FILL				No battery chips in hole
		Cinders and glass			SHA02052 00DL 00DLD 00EL		
		Dark gray, Clayey SILT with iron stains	ML		00FL		
		Bottom of Boring at 4 ft					
	5						

HTW DRILLING LOG

HOLE NO HA0205-3

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 204 Harrison
9. SURFACE ELEVATION	
10. DATE STARTED	5/21/92
11. DATE COMPLETED	5/21/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	4.25
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	3	2	1QA/1QC	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Brown, Silty Clay FILL	FILL		SHA02053 0ACL		No battery chips in hole
		Trace brown, medium sand with orange-brown cinders			00DL 00DT 00DTD 00EL 00ET 00ELQ		
		Gray, Silty CLAY	CL				
		Bottom of Boring at 4.25 ft					
	5						

HTW DRILLING LOG

HOLE NO: HA0203-4

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 203 Harrison
9. SURFACE ELEVATION	
10. DATE STARTED	5/22/92
11. DATE COMPLETED	5/22/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	28 in. (Perched)
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	4.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	4	1	0	%

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Dark brown, Clay FILL with some sand and silt, traces of brick, chert, gravelly cinders, glass and glass bottles	FILL		SHA02034 00AC 00DL 00DT 00EL		No battery chips Perched water @ 28 inches
		Dark gray, Clayey SILT	ML		00FL		
		Bottom of Boring at 4 ft					
	5						

HTW DRILLING LOG

HOLE NO HA0205-1

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 1 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 205 Harrison
9. SURFACE ELEVATION	
10. DATE STARTED	5/21/92
11. DATE COMPLETED	5/21/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	4.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	2	0	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Dark brown, Silty Clay FILL	FILL		SHA02051		No battery chips in hole
		Some cinder and brick fragments			00DL		
		Abundant cinders					
		Gray, Clayey SILT to Silty CLAY	CL/ML		00EL		
		Bottom of Boring at 4 ft					
	5						

HTW DRILLING LOG

HOLE NO: HA0203-2

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 1 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	Ss Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 203 Harrison
9. SURFACE ELEVATION	
10. DATE STARTED	5/22/92
11. DATE COMPLETED	5/22/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	3.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	2	0	0	%

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Dark brown to gray, Clayey SILT, trace cinders, glass, porcelain @	ML		SHA02032 0ACL		No battery chips
		Gray-brown, Silty CLAY with iron stains	CL		00DL		
		Bottom of Boring at 3 ft					
	5						

HTW DRILLING LOG

HOLE NO: HA0203-3

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 1 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill -203 Harrison
9. SURFACE ELEVATION	
10. DATE STARTED	5/22/92
11. DATE COMPLETED	5/22/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	4.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	3	2	1 QC	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Gray, brown, Silty, Clay FILL	FILL		HA02033		No battery chips
		Cinders, tile, glass and wood fragments below 1 inch			00DL 00DLD 00DT		Perched water @ 30 inches
		Dark gray, Clayey SILT, slight mottling	ML		00EL 00ET 00FL		
		Bottom of Boring at 4 ft					
	5						

MONITORING WELL LOGS AND DATA

MAIN INDUSTRIAL PROPERTY

Table
Well Information of First Groundwater Sampling Event
NL/Taracorp Superfund Site

WELL #	CURRENT TD (FEET)	RISER ELEV. (MSL)	DRILLED TD (FEET)	DIAM. (IN.)	SCREEN INTERVAL (FEET)	SCREEN MATERIAL	WATER LEVEL (FEET)	PURGE VOLUME (GALS.)	WELL VOLUME (GALS.)
101	26.85	421.45	25	2	15–25	PVC	20.55	3.63	0.73
102	16.75	416.58	25	2	15–25	PVC	DRY		
103	BENT RISER	417.17	25	2	15–25	PVC			
104	28.36	422.25	27	2	17–27	PVC	22.46	3.70	0.74
105S	28.8	428.66	26.5	2	21–26	PVC	DRY		
105D	BENT RISER	428.74	41.5	2	30.3–35.3	PVC			
106S	23.47	423.71	22	2	15.79–20.79	PVC	DRY		
106D	37.42	423.79	35	2	29.91–34.91	PVC	24.9	8.24	1.65
107S	23.8	420.78	22	2	17.46–22.46	PVC	19.08	2.38	0.48
107D	37.5	421.65	35	2	30.44–35.44	PVC	22.4	10.28	2.06
108S	23.13	421.71	22	2	15.4–20.4	PVC	DRY		
108D	33	422.71	35	2	27.26–32.26	PVC	23.04	9.76	1.95
109	32.8	416.64	35	2	29–34	PVC	16.72	14.92	2.98
110	34	418.49	35	2	30–35	PVC	21.17	11.29	2.26
103–91	72.7	416.89	70	2	58.71–68.71	SS	18.13	42.33	8.47
104–92	68.4	418.25	68.37	2	58.12–68.12	SS	19.42	39.94	7.99
109–92	69.55	415.71	69.51	2	59.26–69.26	SS	17.67	42.30	8.46
111–92	68	419.40	67.89	2	57.64–67.64	SS	21.4	37.94	7.59

MONITORING WELL LABORATORY DATA
NL/TARACORP SUPERFUND SITE

NL/TARACORP 89MC114V ANALYTICAL REPORT

SAMPLE ID	MONITORING WELL NO.	DEPTH (ft)	PARAMETER	ANALYSIS DATE	RESULT (ppm)	REPORTING DETECTION LIMIT
SMW104920AC00L	104-92	0'-1'	Total Lead	09/10/1992	10800	54.5
SMW1049200H00L	104-92	5'-6'	Total Lead	09/10/1992	3770	60.5
SMW1049200U00L	104-92	10'-11'	Total Lead	09/10/1992	346	6.53
SMW1049200U0LD	104-92	10'-11'	Total Lead	09/10/1992	111	6.79
SMW1049200V00L	104-92	15'-16'	Total Lead	09/10/1992	174	5.49
SMW1049200W00L	104-92	20'-21'	Total Lead	09/10/1992	39.8	6.03
SMW1049200X00L	104-92	25'-26'	Total Lead	09/10/1992	74.5	6.78
SMW108920AC00L	108-92	0'-1'	Total Lead	07/30/1992	30900	110.0
SMW1089200H00L	108-92	5'-6'	Total Lead	07/30/1992	1190	6.6
SMW1089200U00L	108-92	10'-11'	Total Lead	07/30/1992	293	6.9
SMW1089200V00L	108-92	15'-16'	Total Lead	07/30/1992	261	8.0
SMW1089200X00L	108-92	25'-26'	Total Lead	07/30/1992	18.5	6.6
STR001110AC00L	109-92	0'-1'	Total Lead	07/30/1992	798	5.8
STR0011100H00L	109-92	5'-6'	Total Lead	07/30/1992	66.4	6.3
STR0011100U00L	109-92	10'-11'	Total Lead	07/30/1992	14	5.4
STR0011100V00L	109-92	15'-16'	Total Lead	07/30/1992	12.3	5.1
STR0011100W00L	109-92	20'-21'	Total Lead	07/30/1992	ND	6.0
STR0011100X00L	109-92	25'-26'	Total Lead	07/30/1992	ND	6.0
SMW111920AC00L	111-92	0'-1'	Total Lead	07/30/1992	811	6.1
SMW1119200H00L	111-92	5'-6'	Total Lead	07/30/1992	29.1	6.6
SMW1119200U00L	111-92	10'-11'	Total Lead	07/30/1992	ND	5.0
SMW1119200V00L	111-92	15'-16'	Total Lead	07/30/1992	ND	5.2
SMW1119200W00L	111-92	20'-21'	Total Lead	07/30/1992	ND	5.1
SMW1119200X00L	111-92	25'-26'	Total Lead	07/30/1992	ND	5.9

ND = NON-DETECT

HTW DRILLING LOG

HOLE NO: HA0202-4

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 202A Harrison
9. SURFACE ELEVATION	
10. DATE STARTED	5/28/92
11. DATE COMPLETED	5/28/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	2.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	2	0	0	%

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Brown, Clayey, Silt FILL, with cinder/slag gravel	FILL		SHA02024 00BL 00CL		Battery chips at surface only
		Tan, Clayey SILT	ML				
		Bottom of Boring at 2 ft					
	5						

HTW DRILLING LOG

HOLE NO: HA0203-1

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 1 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 203 Harrison
9. SURFACE ELEVATION	
10. DATE STARTED	5/21/92
11. DATE COMPLETED	5/21/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	3.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	2	0	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Dark brown to brown, Silty CLAY with iron stains	CL		SHA02031 0ACL		No battery chips in hole
					00DL		
		Bottom of Boring at 3 ft					
	5						

HTW DRILLING LOG

HOLE NO HA0202-2

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 202A Harrison
9. SURFACE ELEVATION	
10. DATE STARTED	5/28/92
11. DATE COMPLETED	5/28/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	4.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	2	2	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Brown-black, Sandy, Silty FILL, with chips, trace glass, gravel	FILL		SHA02022		Battery chips 1/8" to 1/4" in upper 6 inches
					0ABL 0ABT		
		Cinder fill					
		Gray, Clayey SILT with iron stains	ML				
		Bottom of Boring of 4 ft			00CT 00FL		
	5						

HTW DRILLING LOG

HOLE NO: HA0202-3

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 1 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 202A Harrison
9. SURFACE ELEVATION	
10. DATE STARTED	5/28/92
11. DATE COMPLETED	5/28/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	5.25
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	4	1	3QA/2QC	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Black, Clayey, Silt FILL, with trace chips, abundant wire fragments	FILL		SHA02023		Trace battery chips 1/8" to 1/4" diameter in upper 6 inches
					0ABL		
					0ABLD		
		Tan, clayey, very fine Sand FILL			0ABLD		
					00CL		
		Trace gravel, wood			00EL		
					00ELD		
		Brown, cinder FILL					
					00FT		
					00FTD		
		Gray, Clayey SILT			00FTD		
			ML		00GL		
	5	Bottom of Boring at 5.25 ft					

HTW DRILLING LOG

HOLE NO CA0111-2

1. COMPANY NAME WOODWARD-CLYDE CONSULTANTS	2. DRILLING SUBCONTRACTOR LAYNE-WESTERN
SHEET 1 OF 1 SHEETS	
3. PROJECT NL/Taracorp	4. LOCATION Granite City, IL
5. NAME OF DRILLER Eric Page	6. MANUFACTURER'S DESIGNATION OF DRILL SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3-1/2" ID Hand Auger	8. HOLE LOCATION Remote Fill/Eagle Park - 111 Carver
	9. SURFACE ELEVATION
	10. DATE STARTED 5/19/92 / 11. DATE COMPLETED 5/19/92
12. OVERBURDEN THICKNESS N/A	15. DEPTH GROUNDWATER ENCOUNTERED N/A
13. DEPTH DRILLED INTO ROCK N/A	16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED N/A
14. TOTAL DEPTH OF HOLE 1.00	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	1	0	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Mark Wallace

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Brown, Sandy, Cinder FILL, with gravel, no chips	FILL		SCA0111200		No battery chips
		Brown, sand, mottled CLAY, trace wood fragments			AB00L		
		Bottom of Boring at 1 ft	CL				
	5						

HTW DRILLING LOG

HOLE NO: HA0202-1

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 202A Harrison
9. SURFACE ELEVATION	
10. DATE STARTED	5/28/92
11. DATE COMPLETED	5/28/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	3.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	4	2	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Black, gravelly, Sandy, Silty FILL Chips in 0-6 inches, abundant wire casing fragments	FILL		SHA02021 00BT 00BL 00CL 00CT		Battery chips 1/8" to 2" in upper 6 inches
		Gray, Clayey SILT	ML		00DL 00EL		
		Bottom of Boring at 3 ft					
	5						

HTW DRILLING LOG

HOLE NO: OR0026-4

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill -3108 Colgate
9. SURFACE ELEVATION	
10. DATE STARTED	5/13/92
11. DATE COMPLETED	5/13/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	1.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	0	0	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Brown, Clayey SILT	ML				No battery chips
		Brown Silty CLAY	CL				No samples collected
		Bottom of Boring at 1 ft					
	5						

HTW DRILLING LOG

HOLE NO OR0026-3

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 1 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 3108 Colgate
9. SURFACE ELEVATION	
10. DATE STARTED	5/13/92
11. DATE COMPLETED	5/13/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	1.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	0	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Brown, Clayey SILT, trace cinders	ML				No battery chips found No samples collected
		Bottom of Boring at 1 ft					
	5						

HTW DRILLING LOG

HOLE NO CA0108-2

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Eric Page
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill/Eagle Park - 108 Carver
9. SURFACE ELEVATION	
10. DATE STARTED	5/19/92
11. DATE COMPLETED	5/19/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	2.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	2	0	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Mark Wallace

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Brown-dark brown, Silty CLAY, trace cinders, gravel, trace chips t0 1 inch	CL		SCA0108200ABL SCA0108200CL		Battery chips 1/8" to 1/2"
		Bottom of Boring at 1 ft					
	5						

HTW DRILLING LOG

HOLE NO: CA0111-1

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Eric Page
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill/Eagle Park - 111 Carver
9. SURFACE ELEVATION	
10. DATE STARTED	5/19/92
11. DATE COMPLETED	5/19/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	1.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	1	0	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Mark Wallace

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Brown, Clayey GRAVEL, trace silt, no chips	GC		SCA0111		No battery chips
		Brown, fine SAND	SP		00AB00L		
		Dark brown CLAY	CL				
		Bottom of Boring at 1 ft					
	5						

HTW DRILLING LOG

HOLE NO: OR0015

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	4-1/4" HSA
8. HOLE LOCATION	Remote fill - Missouri Ave.
9. SURFACE ELEVATION	423.52
10. DATE STARTED	6/29/92
11. DATE COMPLETED	6/29/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	4.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	2	0	%

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	David L. Pate

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Battery chips and slag material intermixed with sandy fill material					Samples taken with 2-inch stainless steel split spoon
			FILL	18		34 43	Boring advanced with 4-1/4-inch HSA
					SOR0015	7 7	
		Silty CLAY with iron stain			100K00T		Top 6-inches fill material, possilby falling from above slough
			SC	24	SOR0015	11 11	
					100K00T	13 7	
		Bottom of Boring at 4 ft					
419	5						

HTW DRILLING LOG

HOLE NO CA0108-1

1. COMPANY NAME WOODWARD-CLYDE CONSULTANTS	2. DRILLING SUBCONTRACTOR LAYNE-WESTERN	SHEET 1 OF 1 SHEETS
3. PROJECT NL/Taracorp	4. LOCATION Granite City, IL	
5. NAME OF DRILLER Eric Page	6. MANUFACTURER'S DESIGNATION OF DRILL SS Hand Auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 3-1/2" ID Hand Auger	8. HOLE LOCATION Remote Fill/Eagle Park - 108 Carver	
	9. SURFACE ELEVATION	
	10. DATE STARTED 5/19/92	11. DATE COMPLETED 5/19/92
12. OVERBURDEN THICKNESS N/A	15. DEPTH GROUNDWATER ENCOUNTERED N/A	
13. DEPTH DRILLED INTO ROCK N/A	16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED N/A	
14. TOTAL DEPTH OF HOLE 1.50	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) N/A	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	1	1	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Mark Wallace

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Black, Sandy, Cinder FILL, trace gravel	FILL		SCA0108100AT		Abundant battery chips in upper 6 inches, 1/8" - 1-1/2" diameter
		Dark brown, Silty CLAY, trace cinders, trace gravel Becomes sandy	CL		SCA0108100CL		
		Bottom of Boring at 1.5 ft					
	5						

HTW DRILLING LOG

HOLE NO: OR0013

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	4-1/4" HSA
8. HOLE LOCATION	Remote fill - Missouri Ave
9. SURFACE ELEVATION	424.64
10. DATE STARTED	6/29/92
11. DATE COMPLETED	6/29/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	4.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	0	1	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	David L. Pate

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Battery chips, slag material intermixed with sand and gravel	FILL	18	SOR0013 100K00T	16 8 6 7	Samples taken with 2-inch stainless steel split spoon Boring advanced with a 4-1/4-inch HSA
		Clayey SAND, very fine grain	SC	11		9 8 9 9	
		Bottom of Boring at 4 ft					
420	5						

HTW DRILLING LOG

HOLE NO: OR0014

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	4-1/4" HSA
8. HOLE LOCATION	Remote fill - Missouri Ave.
9. SURFACE ELEVATION	423.03
10. DATE STARTED	6/29/92
11. DATE COMPLETED	6/29/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	4.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	1	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	David L. Pate

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Battery chips Slag material	FILL	18		41 6 7 5	Samples taken with 2-inch stainless steel split spoon
		Sandy CLAY with slag and battery chips	FILL		SOR0014		Boring advanced with 4-1/4-inch HSA
		Sandy Silty CLAY with iron stains	CL	18	100K00T	9 9 11 12	
		Bottom of Boring at 4 ft					
418	5						

HTW DRILLING LOG

HOLE NO: OR09-1

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Hand Auger 3-1/2" ID
8. HOLE LOCATION	Remote fill - Missouri Ave.
9. SURFACE ELEVATION	423.70
10. DATE STARTED	12/10/91
11. DATE COMPLETED	12/10/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	2.60
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	0	1	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	D. L. Pate

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Sandy loam (Topsoil) and battery chips			SOR00091		
		Silty CLayey, fine SAND with battery chips (30%-40%)			-OAB00T		
		Silty Clayey, fine SAND with battery chips					
		Silty Clay Found some battery chips possibly fell in from top sand, 2 or 3 very small chips noted					Battery chips are possibly falling in hole of hand auger
		Bottom of Boring at 2.6 ft					
419	5						

HTW DRILLING LOG

HOLE NO: OR0010-1

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Hand Auger 3-1/2" ID
8. HOLE LOCATION	Remote fill - Missouri Ave.
9. SURFACE ELEVATION	424.40
10. DATE STARTED	12/10/91
11. DATE COMPLETED	12/10/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	2.90
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	1	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	D. L. Pate

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Silty, fine sand with 30% battery chips Silty fine SAND			SOR00100AB 00T		
		Dark, stiff, CLAY with brick fragments Dark, stiff, CLAY with trace of fine sand DArk, stiff, CLAY with grading to light brown CLAY with trace sand Stiff CLAY with trace silt, fine sand					Few battery chips in upper 2-3 inches (falling?) Few battery chips found: possibly fall down in th auger from topsoil
		Bottom of Boring at 2.9 ft					
419	5						

HTW DRILLING LOG

HOLE NO: OR07-1

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Hand Augers 3-1/2"ID
8. HOLE LOCATION	Remote fill - Missouri Ave
9. SURFACE ELEVATION	423.50
10. DATE STARTED	12/10/91
11. DATE COMPLETED	12/10/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	1.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	1	0	%

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	David L. Pate

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Battery chips Slag material	FILL		SOR000710 A800T		Auger hit large fragment of smelter slag
		Refusal hit Bottom of Boring					
419	5						

HTW DRILLING LOG

HOLE NO: OR0008-1

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Hand Augers 3-1/2"ID
8. HOLE LOCATION	Remote fill - Missouri Ave
9. SURFACE ELEVATION	422.97
10. DATE STARTED	12/10/91
11. DATE COMPLETED	12/10/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	2.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	1	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	David L. Pate

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Battery chips	FILL		SOR000810		
		Sandy CLAY with trace Limestone	CL		ABOOT		
		Bottom of Boring at 2 ft					
418	5						

HTW DRILLING LOG

HOLE NO: OR0005

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 1 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Split Spoon
8. HOLE LOCATION	Remote fill - Schaeffer Rd.
9. SURFACE ELEVATION	
10. DATE STARTED	12/10/91
11. DATE COMPLETED	12/10/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	2.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	1	0	%

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	D. L. Pate

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Dark brown, Silty, Clay FILL with battery chips	FILL		S0R0051 -0ABT		Battery chips, 1/8 - 1/2 inches, to depth of 1.5 ft
		Some sand					
		Brown, Sandy CLAY					
		Bottom of Boring at 2 ft	CL				
	5						

HTW DRILLING LOG

HOLE NO: OR0006

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 1 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Split Spoon
8. HOLE LOCATION	Remote fill - Schaeffer Rd.
9. SURFACE ELEVATION	
10. DATE STARTED	12/10/91
11. DATE COMPLETED	12/10/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	2.50
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	1	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	D. L. Pate

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Brown, Clay FILL, with battery chips, some Silt, some Sand	FILL		S0R00061 -0ABT		Battery chips, 1/16 - 3/4 inches, to depth of 1 ft
		Brown, CLAY, trace Sand	CL				
		Bottom of Boring at 2.5 ft					
	5						

HTW DRILLING LOG

HOLE NO: OR0003-1

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 2230 Cleveland
9. SURFACE ELEVATION	
10. DATE STARTED	4/22/92
11. DATE COMPLETED	4/22/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	1.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	0	1	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Dark gray-brown, Gravelly, Sandy FILL, trace battery chips, trace limestone chat	FILL		SOR0003100A		Battery chips to depth of 2 inches
		Mottled brown, Silty CLAY, trace gravel	CL		00T		
		Bottom of Boring at 1 ft					
	5						

HTW DRILLING LOG

HOLE NO: OR0004

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Split Spoon
8. HOLE LOCATION	Remote fill - Schaeffer Rd.
9. SURFACE ELEVATION	
10. DATE STARTED	12/10/91
11. DATE COMPLETED	12/10/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	2.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	1	0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	D. L. Pate

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Silty, Clay FILL with battery chips	FILL		S0R00041 -0ABT		Battery chips, 1/8 - 1/2 inches to depth of 1 ft
		Brown, Sandy CLAY					
		Brown CLAY	CL				
		Bottom of Boring at 2 ft					
	5						

HTW DRILLING LOG

HOLE NO: OR0001-1

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" ID Hand Auger
8. HOLE LOCATION	Remote Fill - 2230 Cleveland
9. SURFACE ELEVATION	
10. DATE STARTED	4/22/92
11. DATE COMPLETED	4/22/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	2.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
	0	0	0	2	1 QC	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Gray-brown, Gravelly, Sand FILL, trace clay, trace battery chips, trace steel slag	FILL		SOR00011		Battery chips in top 3 inches
		Dark brown, Sandy CLAY, trace silt			00A00T		
		Bottom of Boring at 2 ft					
	5						

HTW DRILLING LOG

HOLE NO: OR0002-1

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 1 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Mark Wallace
6. MANUFACTURER'S DESIGNATION OF DRILL	SS Hand Auger
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	3-1/2" Hand Auger
8. HOLE LOCATION	Remote Fill - 2230 Cleveland
9. SURFACE ELEVATION	
10. DATE STARTED	4/22/92
11. DATE COMPLETED	4/22/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	1.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	0	0	0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
	0	0	0	1	1 QA	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Bentonite	Cynthia Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Dark brown-black, Gravelly, Sand FILL, trace fines, battery chips- 60%	FILL		SOR0002100 -A00T		Battery chips 1/4" - 1/2" diameter
		Brown, Silty CLAY with stains	CL		A0TQ		
		Bottom of Boring at 1 ft					
	5						

HTW DRILLING LOG

HOLE NO. MW104-92

PROJECT NL/Taracorp

INSPECTOR C. Pavelka

SHEET 4 OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		SAME: Gray, medium dense, very fine SAND, with trace limonite nodules and wood fibers		24		2 4 6 2	
	50			20		1 2 4 14	
	55	Loose, gray, very fine - fine SAND with 2 inch lens of well graded gravelly coarse Sand		24		2 3 6 14	
	60						
		Medium dense		12		11 5 7 6	

HTW DRILLING LOG

HOLE NO. MW104-92

PROJECT NL/Taracorp

INSPECTOR C. Pavelka

SHEET 5 OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
	65	Becomes loose					
		Loose , gray, medium-coarse, SAND, well graded, trace 1 inch gravel pieces	SP	22		3 3 3 3	
	70						
		Medium dense					
		Bottom of Boring at 72 ft		24		4 5 8 13	
	75						
	80						

WELL DEVELOPMENT

Project: NJ/Taracorp Well No: MW-104-92
Project No: 89MC114V Date: 6-26-92

WELL MEASUREMENTS

Well inside diameter: 0.1667 (2") ft.
Depth of well casing: 68.37 ft.
Initial water level: 18.61 ft. below MP
Measuring point (MP) Top of riser
Fluid well casing volume: 8.12 gal.
Air temperature: 80°-90°
Weather conditions: Sunny

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)	18.61	18.61	18.61	18.61	18.61	18.61	18.61			
Time	915	920	930	940	950	1000	101			
Discharge (Gal.)	0	5	5	4	4	4	4			

WATER QUALITY DATA

pH	7.58	7.0	6.83	6.64	6.73	6.76	6.80		
Conductivity	587	970	960	930	980	970	980		
Temperature (C)	24.8	19.4	18.2	18.6	18.9	19.0	20.9		
Color	ptly. cloudy	cloudy	ptly	cloudy	almost clear	clear	ptly cldy		
Odor									
Turbidity	156	860	308	69	36	24	47		

Total discharge: 235 gallons Casing volumes removed: 28.94
Method of disposal of discharge water: Disposed of onto Taracorp Pile

QUALITY ASSURANCE

Sampling Method: Electronic Submersible pump
Method to measure water level: Electric level indicator
Bailer ropes new or cleaned?
pH meter no: Orion Calibrated: 6-26-92
Conductivity meter no: Horiba U-10 Calibrated: 6-26-92
Comments: Stopped to surge @ 1525

Collected by: C. Pavelka

WELL DEVELOPMENT

Project: NL/Taracorp Well No: MW104-92
Project No: 89MC114V Date: 6/26/92

WELL MEASUREMENTS

Well inside diameter: 0.1667 ft.
Depth of well casing: 68.37 ft.
Initial water level: 18.61 ft. below MP
Measuring point (MP) Top of Riser
Fluid well casing volume: 8.12 gal.
Air temperature: 80°- 90°
Weather conditions: Sunny

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)	18.61									
Time	1040	1045	1050	1100	1110	1120	1130	1140	1150	1200
Discharge (Gal.)	0	5	5	5	5	5	5	5	5	5

WATER QUALITY DATA

pH	7.06	6.79	6.78	6.61	6.61	6.62	6.61	6.64	6.65	6.76
Conductivity	670	860	980	970	990	970	940	930	940	990
Temperature (C)	24.3	19.5	18.7	18.4	19.0	20.7	19.3	19.1	18.9	19.7
Color	yel/cldy	Brwn/cldy	milky	prtly cldy	clr.	clear	clr.	clr.	clr.	clr.
Odor										
Turbidity	301	870	110	80	35	28	26	18	27	23

Total discharge: 500 gals. Casing volumes removed: 61.58
Method of disposal of discharge water: Dump on Taracorp pile

QUALITY ASSURANCE

Sampling Method: Electric Submersible Pump
Method to measure water level: Electric level indicator
Bailer ropes new or cleaned?
pH meter no: Calibrated: 6/26/92
Conductivity meter no: Calibrated: 6/26/92
Comments:

Collected by: C. Pavelka

WELL DEVELOPMENT

Project: NL/Taracorp Well No: MW104-92
Project No: 89MC114V Date: 6/26/92

WELL MEASUREMENTS

Well inside diameter: 0.1667 ft.
Depth of well casing: 68.37 ft.
Initial water level: 18.61 ft. below MP
Measuring point (MP) Top of Riser
Fluid well casing volume: 8.12 gal.
Air temperature: 80°- 90°
Weather conditions: Sunny

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)	18.61			17.6						17.6
Time	1220			1250	1300	1310	1320	1330	1340	1350
Discharge (Gal.)	5			5	5	5	5	5	5	5

WATER QUALITY DATA

pH	6.48	surge		7.00	6.76	6.75	6.71	6.68	6.52	6.56
Conductivity	990	15 min.		940	1040	1040	1040	1010	1020	980
Temperature (C)	19.4			30.0	21.1	20.0	19.1	21.6	20.4	18.3
Color	clear			cloudy	ptly.	cldy	clear	ptly. cldy	clear	clear
Odor										
Turbidity	21			415						

Total discharge: Casing volumes removed:
Method of disposal of discharge water:

QUALITY ASSURANCE

Sampling Method:
Method to measure water level:
Bailer ropes new or cleaned?
pH meter no: Calibrated: 6/26/92
Conductivity meter no: Calibrated: 6/26/92
Comments:

Collected by: C. Pavelka

WELL DEVELOPMENT

Project: NL/Taracorp Well No: MW104-92
Project No: 89MC114V Date: 6/26/92

WELL MEASUREMENTS

Well inside diameter: 0.1667 ft.
Depth of well casing: 68.37 ft.
Initial water level: 18.61 ft. below MP
Measuring point (MP) Top of Riser
Fluid well casing volume: 8.12 gal.
Air temperature: 80°- 90°
Weather conditions: Sunny

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)	18.61				19.1					
Time	1400	1410	1420	1430	1435					
Discharge (Gal.)	5	5	5	5	5					

WATER QUALITY DATA

pH	6.67	6.72	6.68	6.77	6.82					
Conductivity	990	990	1000	1010	1020					
Temperature (C)	18.5	18.7	18.8	19.5	19.0					
Color	vry. clear	vry. clear	vry. clear	vry. clear	vry. clear					
Odor										
Turbidity	4.0	1.0	1.0	1.0	2.0					

Total discharge: 525 gals. Casing volumes removed: 64.66
Method of disposal of discharge water: _____

QUALITY ASSURANCE

Sampling Method: Electric Submersible Pump
Method to measure water level: Electric water level indicator
Bailer ropes new or cleaned? _____
pH meter no: _____ Calibrated: 6/26/92
Conductivity meter no: _____ Calibrated: 6/26/92
Comments: _____

Collected by: C. Pavelka

WELL DEVELOPMENT

Project: NL/Taracorp Well No: MW104-92
Project No: 89MC114V Date: 6/26/92

WELL MEASUREMENTS

Well inside diameter: 0.1667 ft.
Depth of well casing: 68.37 ft.
Initial water level: 18.61 ft. below MP
Measuring point (MP) Top of Riser
Fluid well casing volume: 8.12 gal.
Air temperature: 80°- 90°
Weather conditions: Sunny

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)	19.1									
Time	1455	1505	1512	1520	1527	1534	1542	1548	1605	1615
Discharge (Bailers)		20	40	60	80	100	120	140	160	180

WATER QUALITY DATA

pH	6.85	6.80	6.71	6.57	6.70	6.67	6.75	6.71	6.66	6.81
Conductivity	876	992	1020	1030	1030	1060	1070	1070	1030	1030
Temperature (C)	23.0	20.5	20.2	19.4	19.3	20.4	20.8	20.7	18.9	19.2
Color	yel.ptly. cldy		dirty	brn	gray					vry cldy
Odor										
Turbidity	200	200		>999		>999		>999	850	685

Total discharge: Casing volumes removed:
Method of disposal of discharge water:

QUALITY ASSURANCE

Sampling Method: Electric Submersible Pump
Method to measure water level: Electronic water level indicator
Bailer ropes new or cleaned?
pH meter no: Calibrated: 6/26/92
Conductivity meter no: Calibrated: 6/26/92
Comments:

Collected by: C. Pavelka

WELL DEVELOPMENT

Project: NJ/Taracorp Well No: 103-91
Project No: 89MC114V Date: 12/09/91

WELL MEASUREMENTS

Well inside diameter: 0.1667 (2") ft.
Depth of well casing: 72.7 ft.
Initial water level: 17.15 ft. below MP
Measuring point (MP) Top of riser cap
Fluid well casing volume: 9.06 gal.
Air temperature: 50°
Weather conditions: Clear - partly cloudy

SAMPLING MEASUREMENTS

DISCHARGE

	Surge well							Surge well		
Water (ft.BMP)	17.15	17.3	17.9	17.8	17.9	17.9		16.9	17.3	17.8
Time	820	905	930	940	950	1000	1010	1020	1035	1040
Discharge (Gal.)	0	0	8	8	8	8	8	0	9	9

WATER QUALITY DATA

pH	6.3	6.0	6.3	6.2	6.0	6.0	6.0	6.2	6.3	6.3
Conductivity	700	790	900	900		890	880	800	800	800
Temperature (C)	14.0	14.5	14.5	14.0	14.5	14.5	14.0	15.0	14.0	14.5
Color	Semi Clr	Cldy Brn Gry	Vry Cldy Gry	Semi Clr	Vry	Clr		Cldy	Semi Clr Cldy	Cldy Lt Gry
Odor										
Turbidity	67	143	999	47	11	6	5	106	140	209

Total discharge: 365 gallon Casing volumes removed: 40.3 Method of disposal of discharge water: Placed on Trust-454 slag pile

QUALITY ASSURANCE

Sampling Method: Electric Submersible pump and bailer
Method to measure water level: Water meter
Bailer ropes new or cleaned? New
pH meter no: Calibrated: 12-09-91
Conductivity meter no: Calibrated: 12-09-91
Comments:

Collected by: Cynthia Pavelka

WELL DEVELOPMENT

Project: NL/Taracorp Well No: MW104-92
Project No: 89MC114V Date: 6/26/92

WELL MEASUREMENTS

Well inside diameter: 0.1667 ft.
Depth of well casing: 68.37 ft.
Initial water level: 18.61 ft. below MP
Measuring point (MP) Top of Riser
Fluid well casing volume: 8.12 gal.
Air temperature: 80°- 90°
Weather conditions: Sunny

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)	19.4									
Time	825	835	845	855	905	915	922	930	940	
Discharge (Bailers)	0	20	40	60	80	100	120	140	160	

WATER QUALITY DATA

pH	6.74	6.70	6.76	6.79	6.80	6.80	6.62	6.72	6.74	
Conductivity	1050	1070	1020	1030	1030	1000	1000	1020	1010	
Temperature (C)	20.4	19.4	18.8	18.9	18.3	18.4	18.5	18.4	18.1	
Color	yel.prtly cldy	almost	clear	clear	almst clr	clear				
Odor										
Turbidity	495	375	300	250	190	185	180			

Total discharge: 40 gals. Casing volumes removed: 4.93
Method of disposal of discharge water: Dumped on Taracorp pile

QUALITY ASSURANCE

Sampling Method: Electrionic Submersible Pump
Method to measure water level: Electronic water level indicator
Bailer ropes new or cleaned?
pH meter no: Calibrated: 6/26/92
Conductivity meter no: Calibrated: 6/26/92
Comments:

Collected by: C. Pavelka

MONITORING WELL INSTALLATION REPORT

Well No. MW-104-92

Project NL/Taracorp Superfund Site

Location NW property line, Trust 454

Project No 89MC114V

Installed By Layne-Western

Date 6/18-6/19/92 Time

Method of Installation 6 1/4" ID HSA

LOG OF BORING AND WELL

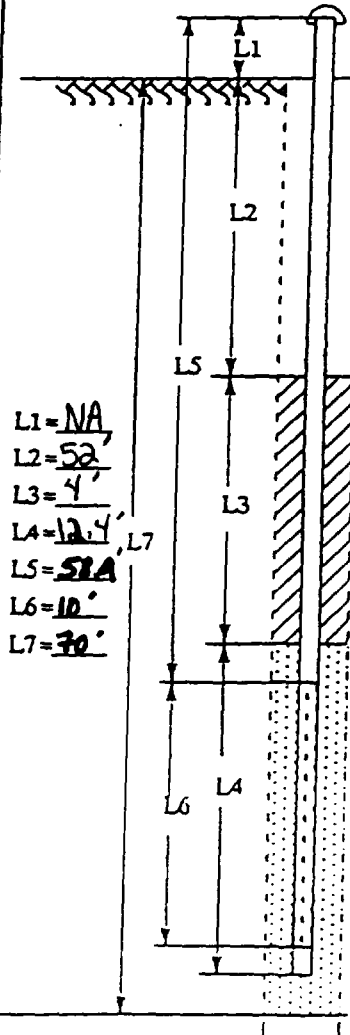
BORING		
Depth In Ft.	Description	Symbol

WELL

Type of Well: Monitoring Well

Ground Elev.

Top of Riser Elev. 418.25



L1 = NA
L2 = 52'
L3 = 4'
L4 = 12.4'
L5 = 52A
L6 = 10'
L7 = 70'

Riser Pipe I.D., in. 2

Type of Pipe: 304 Stainless Steel

Backfill Type Around Riser: Bentonite / Cement Grout

Top of Seal Elevation 366.25

Type of Seal Material: Bentonite Slurry

Top of Filter Elevation 362.25

Type of Filter Material: Colorado 20/40 Silica Sand

Size of Opening, in. 0.010

Diameter of Well Tip, in. 2

Bottom of Screen Elevation 350.10

Bottom of Riser Elevation 349.85

Btm of Boring Elev. 348.25

Diameter of Boring, in. 10

Remarks: Flush-mount protective casing installed
Protective casing type → Water Meter Access Cover w/ 5-sided bolt latch

Inspected By: Cynthia Pavelka
WOODWARD-CLYDE CONSULTANTS

FIGURE NO 2

HTW DRILLING LOG

HOLE NO. MW104-92

PROJECT: NL/Taracorp

INSPECTOR: C. Pavelka

SHEET 2 OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		SAME: Very loose, medium SAND, well graded	SP		00V00L		
		Firm, dark gray, Silty CLAY with trace iron stain		24	MW10492	1 2 3 5	
			CL		00V00D 00V0LQ		
		Medium dense, gray, very fine-fine Silty SAND, well sorted with trace iron stain					
	15						
			SM	18	MW10492 00V00L	4 7 5 7	
							Water at time of drilling 19 ft
	20	Medium dense, gray-brown, very fine-fine Silty SAND, well sorted	SM		MW10492 00W00L 00W0LQ	4 9 12 12	Slightly saturated
		Firm, gray, very fine, Sandy, Clayey, SILT					
	25						
			ML	24	MW10492 00X00L 00X0LQ	1 2 4 7	

HTW DRILLING LOG

HOLE NO. MW104-92

PROJECT NL/Taracorp

INSPECTOR C. Pavelka

SHEET 3 OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Medium dense, gray, very fine, Silty SAND, well sorted	SM				
	30	Medium dense, gray, fine - fine, Silty SAND, well sorted					
				24		2 4 7 15	
		Medium dense, very fine, SAND with trace limonite nodules and wood fibers					
	35						
			SP	20		3 10 7 6	
	40						
		Well sorted					
				24		3 6 12 36	
	45						

MONITORING WELL INSTALLATION REPORT

Well No. MW-103-91

Project NL/Taracorp Superfund Site

Location Granite City IL

Project No _____ Installed By _____ Date 11/25-26/91 Time _____

Method of Installation 4¼" HSA driven by CME-75 truck mounted rig

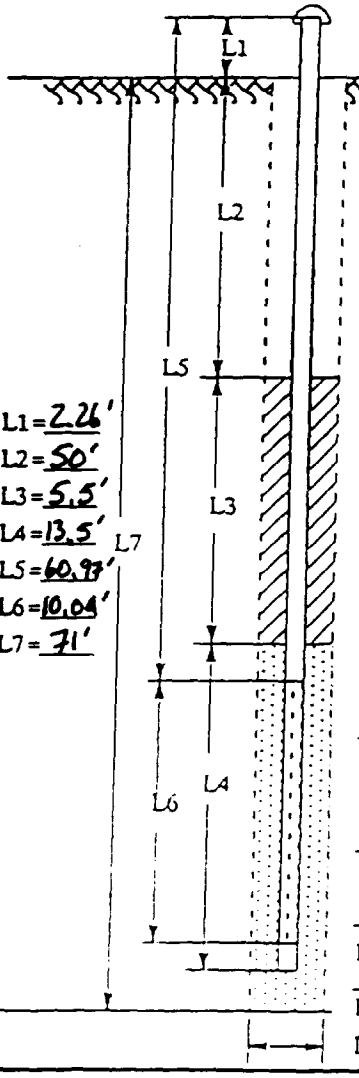
LOG OF BORING AND WELL

BORING		
Depth In Ft.	Description	Symbol

WELL

Type of Well Monitoring Well

Ground Elev. 414.49 Top of Riser Elev. 416.75



L1 = 2.26'
L2 = 50'
L3 = 5.5'
L4 = 13.5'
L5 = 60.97'
L6 = 10.04'
L7 = 71'

Riser Pipe I.D., in. 2

Type of Pipe 304 Stainless Steel

Backfill Type Around Riser Cement-bentonite grout

Top of Seal Elevation 364.49

Type of Seal Material Bentonite Slurry

Top of Filter Elevation 358.99

Type of Filter Material Colorado Silica Sand 16-30

Size of Opening, in. 0.010

Diameter of Well Tip, in. 2

Bottom of Screen Elevation 345.74

Bottom of Riser Elevation 345.49

Btm of Boring Elev. 343.49

Diameter of Boring, in. 8

Remarks _____

Inspected By _____

WOODWARD-CLYDE CONSULTANTS

FIGURE NO 2

HTW DRILLING LOG

HOLE NO MW104-92

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 5 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	6-1/4" HSA 2" OD Split Spoon
8. HOLE LOCATION	NW Property line of Trust 454
9. SURFACE ELEVATION	
10. DATE STARTED	6/18/92
11. DATE COMPLETED	6/19/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	19.00
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	
14. TOTAL DEPTH OF HOLE	72.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
			0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
						%

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Grout	C. Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Loose, black, Sand, cinder slag FILL with trace battery chips		12	MW10492 OAC00L	10 6 4 6	
			FILL				
	5						Perched water @ 5 ft
		Saturated		2	MW10492 OOH00L	3 4 8 6	
		Very loose, brown-gray, medium SAND, well graded					

WELL DEVELOPMENT

Project: NJ/Taracorp Well No: 103-91
Project No: 89MC114V Date: 12/09/91

WELL MEASUREMENTS

Well inside diameter: 0.1667 (2") ft.
Depth of well casing: 72.7 ft.
Initial water level: 17.15 ft. below MP
Measuring point (MP) Top of riser cap
Fluid well casing volume: 9.06 gal.
Air temperature: 50°
Weather conditions: Clear - partly cloudy

SAMPLING MEASUREMENTS

DISCHARGE

		Surge well						Surge well		
Water (ft.BMP)	17.15	17.3	17.9	17.8	17.9	17.9		16.9	17.3	17.8
Time	820	905	930	940	950	1000	1010	1020	1035	1040
Discharge (Gal.)	0	0	8	8	8	8	8	0	9	9

WATER QUALITY DATA

pH	6.3	6.0	6.3	6.2	6.0	6.0	6.0	6.2	6.3	6.3
Conductivity	700	790	900	900		890	880	800	800	800
Temperature (C)	14.0	14.5	14.5	14.0	14.5	14.5	14.0	15.0	14.0	14.5
Color	Semi Clr	Cldy Blue Gry	Vry Cldy Gry	Semi Clr	Vry	Clr		Cldy	Semi Clr Cldy	Cldy Lt Gry
Odor										
Turbidity	67	143	999	47	11	6	5	106	140	209

Total discharge: 365 gallon Casing volumes removed: 40.3 Method of disposal of discharge water: Placed on Trust-454 slag pile

QUALITY ASSURANCE

Sampling Method: Electric Submersible pump and bailer
Method to measure water level: Water meter
Bailer ropes new or cleaned? New
pH meter no: Calibrated: 12-09-91
Conductivity meter no: Calibrated: 12-09-91
Comments:

Collected by: Cynthia Pavelka

WELL DEVELOPMENT

Project: NJ/Taracorp Well No: 103-91
Project No: 89MC114V Date: 12/09/91

WELL MEASUREMENTS

Well inside diameter: 0.1667 (2") ft.
Depth of well casing: 7.7 ft.
Initial water level: 17.15 ft. below MP
Measuring point (MP) Top of riser cap
Fluid well casing volume: 9.06 gal.
Air temperature: 50°
Weather conditions: Clear - partly cloudy

SAMPLING MEASUREMENTS

DISCHARGE

	Surge well						Bail by hand			
Water (ft.BMP)	17.8	17.8	17.8	17.8	17.8	17.35				
Time	1050	1100	1110	1120	1130	1140	1230			
Discharge (Gal.)	9	9	9	9	9	0	45 gal			

WATER QUALITY DATA

pH	6.2	6.2	6.4	6.4	6.4					
Conductivity	900	900	900	900	900					
Temperature (C)	15.0	15.0	15.0	15.3	15.3					
Color	Semi Clear	Clear	Very Clear	Very Clear	Very Clear					
Odor										
Turbidity	78	8	5	2	2					

Total discharge: 495 gallon Casing volumes removed: 54.6
Method of disposal of discharge water: Placed on Trust-454 slag pile

QUALITY ASSURANCE

Sampling Method: Electric Submersible pump and bailer
Method to measure water level: Water meter
Bailer ropes new or cleaned? New
pH meter no: Calibrated: 12-09-91
Conductivity meter no: Calibrated: 12-09-91
Comments: Well development complete. Developed well a total of 8 hours. Bailer sample still contained clay to silt fines. Submersible pump samples were very very clear and turbidity = 2 NTU's. Total discharge:1710 gallons

Collected by: Cynthia Pavelka

WELL DEVELOPMENT

Project: NJ/Taracorp Well No: 103-91
Project No: 89MC114V Date: 12/05/91

WELL MEASUREMENTS

Well inside diameter: 0.1667 (2") ft.
Depth of well casing: 72.6 ft.
Initial water level: 17.31 ft. below MP
Measuring point (MP) Top of riser
Fluid well casing volume: 8.87 gal.
Air temperature: 50°
Weather conditions: Clear - Windy

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)	17.31						17.31			
Time		1530	1538	1550	1605	1615				
Discharge (Gal.)		2.5	2.5	2.5	2.5	2.5				

Surged plastic pipe up and down in well over screen interval —Pump from bottom of well

WATER QUALITY DATA

pH		6.4	6.4	6.4	6.4	6.4				
Conductivity		950	950	950	950	950				
Temperature (C)		15.0	15.0	15.0	15.0	14.5				
Color		Dk Gry Slty	Lt Gry Cldy	Cldy	Semi Clr	Clear				
Odor										
Turbidity		>999	73	75	13	16				

Total discharge: 112.5 gallons Casing volumes removed: 12.68
Method of disposal of discharge water: Run-off onto Trust-454 slag pile

QUALITY ASSURANCE

Sampling Method: Centrifugal lift pump
Method to measure water level: Weighted tape
Bailer ropes new or cleaned?
pH meter no: Calibrated: 12-06-91
Conductivity meter no: Calibrated: 12-06-91
Comments:

Collected by: Jorge Garcia

WELL DEVELOPMENT

Project: NJ/Taracorp Well No: 103-91
Project No: 89MC114V Date: 12/06/91

WELL MEASUREMENTS

Well inside diameter: 0.1667 (2") ft.
Depth of well casing: 72.60 ft.
Initial water level: 17.1 ft. below MP
Measuring point (MP) Top of riser
Fluid well casing volume: 9.06 gal.
Air temperature: 50°
Weather conditions: Clear - partly cloudy, dry

SAMPLING MEASUREMENTS

DISCHARGE

Start Pump

Water (ft.BMP)	17.4		17.4	17.4	17.6	17.2	17.7			
Time	1530	1625	1630	1635	1640	1650	1700			
Discharge (Gal.)	0	4	4	4	7	7	7			

WATER QUALITY DATA

pH meter was knocked;after calibrations were high 1.5 units

pH	6.5	6.0	6.3	6.5	6.5	8.2	8.0			
Conductivity	750	800	850	850	850	850	900			
Temperature (C)	16.5	14.5	14.5	14.5	14.5	14.5	15.0			
Color	Cloudy	Gray		Sldy Cldy	Clr & Cldy	Sldy Cldy	Clear			
Odor										
Turbidity	127	>999	425	79	35	99	23			

Total discharge: 220.5 gallons Casing volumes removed: 24.38 Method of disposal of discharge water: Run-off onto Trust-454 slag pile

QUALITY ASSURANCE

Sampling Method: Centrifugal lift pump
Method to measure water level: Weighted tape
Bailer ropes new or cleaned?
pH meter no: Calibrated: 12-06-91
Conductivity meter no: Calibrated: 12-06-91
Comments:

Collected by: Cynthia Pavelka

WELL DEVELOPMENT

Project: NJ/Taracorp Well No: 103-91
Project No: 89MC114V Date: 12/05/91

WELL MEASUREMENTS

Well inside diameter: 0.1667 (2") ft.
Depth of well casing: 71.69 ft.
Initial water level: 17.31 ft. below MP
Measuring point (MP) Top of riser
Fluid well casing volume: 8.87 gal.
Air temperature: 50°
Weather conditions: Clear - Windy

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)	17.31									
Time		1205	1218	1232	1244	1256	1308	1312	1316	1325
Discharge (Gal.)		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5

WATER QUALITY DATA

pH		6.88	6.70	6.90	6.70	6.20	6.25	6.25	6.25	6.25
Conductivity		900	950	980	900	950	920	930	920	920
Temperature (C)		15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Color	Dr	Gry Slty	Gry Cldy	Clr	Semi Clr	Clr	Semi Clr	Clr		
Odor										
Turbidity		>999	10	6	13	4	10	10	10	10

Total discharge: 212.5 gallons Casing volumes removed: 23.96
Method of disposal of discharge water: Run-off onto Trust-454 slag pile

QUALITY ASSURANCE

Sampling Method: Centrifugal lift pump
Method to measure water level: Weighted tape
Bailer ropes new or cleaned?
pH meter no: Calibrated: 12-05-91
Conductivity meter no: Calibrated: 12-05-91
Comments:

Collected by: Jorge Garcia

WELL DEVELOPMENT

Project: NJ/Taracorp Well No: 103-91
Project No: 89MC114V Date: 12/05/91

WELL MEASUREMENTS

Well inside diameter: 0.1667 (2") ft.
Depth of well casing: 71.69 ft.
Initial water level: 17.31 ft. below MP
Measuring point (MP) Top of riser
Fluid well casing volume: 8.87 gal.
Air temperature: 50°
Weather conditions: Clear - Windy

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)	17.31							17.31		
Time		1427	1434	1438	1445	1455	1502			
Discharge (Gal.)		2.5	2.5	2.5	2.5	2.5	2.5			

WATER QUALITY DATA

pH		6.24	6.30	6.30	6.30	6.30	6.30			
Conductivity		920	930	920	930	930	920			
Temperature (C)		15.0	15.5	16.0	15.0	16.0	16.0			
Color	Dk	Gry Slty	Cloudy		Semi	Cloudy				
Odor										
Turbidity		340	154	78	69	78	68			

Total discharge: 105 gallons Casing volumes removed: 11.84
Method of disposal of discharge water: Run-off onto Trust-454 slag pile

QUALITY ASSURANCE

Sampling Method: Centrifugal lift pump
Method to measure water level: Weighted tape
Bailer ropes new or cleaned?
pH meter no: Calibrated: 12-05-91
Conductivity meter no: Calibrated: 12-05-91
Comments:

Collected by: Jorge Garcia

HTW DRILLING LOG

HOLE NO. MW103-91

PROJECT NL/Taracorp

INSPECTOR E. Page

SHEET 3 OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
						2 5 6 7	
359	55	Gray, fine SAND with gravel	SP	17		2 3 3 6	
		Gray fine SAND					
354	60		SP	18		5 7 9 9	
		Gray, coarse SAND					
		Gray, fine SAND					
349	65		SP	24		6 12 12 16	
		Gray, coarse, gravelly SAND					
		Gray, coarse gravelly SAND					
344	70	Bottom of Boring	SP	24		7 8 12 15	
339	75						
334	80						

WELL DEVELOPMENT

Project: NJ/Taracorp Well No: 103-91
Project No: 89MC114V Date: 12/05/91

WELL MEASUREMENTS

Well inside diameter: 0.1667 (2") ft.
Depth of well casing: 71.69 ft.
Initial water level: 17.31 ft. below MP
Measuring point (MP) Top of riser
Fluid well casing volume: 8.87 gal.
Air temperature: 50°
Weather conditions: Clear - Windy

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)	17.31							17.31		
Time	1027	1035	1045	1100	1108	1119	1136	1140		
Discharge (Gal.)	2.5	2.5	2.5	2.5	2.5	2.5	2.5			

WATER QUALITY DATA

pH	6.6	6.70	6.70	6.70	6.85	6.65	6.68			
Conductivity	820	890	890	890	900	1000	990			
Temperature (C)	11.9	13.0	13.0	13.0	13.0	16.0	13.0			
Color	Dk Gry Slty	Lt Gry Cldy	Semi	Clear	Near. Clr	Clear				
Odor										
Turbidity	>999	157	22	68	10	10	10			

Total discharge: 200 gallons Casing volumes removed: 22.55
Method of disposal of discharge water: Run-off onto Trust-454 slag pile

QUALITY ASSURANCE

Sampling Method: Centrifugal lift pump
Method to measure water level: Weighted tape
Bailer ropes new or cleaned? _____
pH meter no: _____ Calibrated: 12-05-91
Conductivity meter no: _____ Calibrated: 12-05-91
Comments: _____

Collected by: Jorge Garcia

HTW DRILLING LOG

HOLE NO: MW103-91

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 3 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	4-1/4"HSA, 2" OD SS
8. HOLE LOCATION	State Street
9. SURFACE ELEVATION	414.49
10. DATE STARTED	11/25/91
11. DATE COMPLETED	11/26/91
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	13.00
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	70.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
	1		0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
					0	%

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
		X	Grout	E. Page

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Stiff, light brown CLAY	CL			3 5 6 8	
		Stiff, light brown Silty CLAY		21			
	5						
		Loose, moist, light brown, fine SAND					
404	10		SP	24		5 5 4 4	
399	15	Brown, medium SAND, some fine sand	SP	20		1 1 1 1	

HTW DRILLING LOG

HOLE NO. MW103-91

PROJECT: NL/Taracorp

INSPECTOR: E. Page

SHEET 2 OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
394	20	Olive-brown, fine SAND	SP	17		3 4 7 8	
389	25	Olive-gray, very fine SAND	SP	24		2 5 9 12	
384	30	Olive-gray, very fine SAND olive-gray coarse gravelly SAND	GP	8		1 2 2 4	
379	35	Gray, coarse SAND, some gravel Gray, fine SAND		11		1 2 4 15	
374	40	Gray, fine SAND with 2 inch lens of gray coarse SAND	SP SP	17		1 3 7 8	
369	45	Gray, fine SAND Gray Sandy GRAVEL Gray, fine SAND	GP SP	24		3 6 17 26	
364	50	Gray, fine SAND with lens of coarse SAND	SP	20			

HTW DRILLING LOG

HOLE NO: MW108-92

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET	1 OF 2 SHEETS
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	6-1/4" HSA, 2" Split Spoon
8. HOLE LOCATION	NE side of Trust 454, N of water tower
9. SURFACE ELEVATION	
10. DATE STARTED	6/12/92
11. DATE COMPLETED	6/16/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	18.00
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	
14. TOTAL DEPTH OF HOLE	25.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
			0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
			6			

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Grout	C. Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Very dense, black, Sandy FILL with battery chips, slag material			SM10892 0AC00L	7=7"	
			FILL				
	5						
		With slag gravel					
		Soft, dark gray, Silty CLAY	CL	12	SMW10892 00H00L	1 4 5 2	

HTW DRILLING LOG

HOLE NO. MW108-92

PROJECT NL/Taracorp

INSPECTOR C. Pavelka

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Soft, olive-gray, Silty CLAY with iron stain		22	MW10892 00V00L	1 1 2 4	
		Medium dense, gray-brown, well sorted, well rounded SAND					
	15		SP	24	SMW10892 00V00L	3 5 8 11	
	20	Medium dense, gray-brown, well sorted, well rounded, fine SAND	SP	12	SMW10892 00W00L	3 10 15 18	Oil sheen in water
	25	Bottom of Boring at 25 ft		24	SMW10892 00X00L	3 6 8 9	Oil sheen in drill cuttings

HTW DRILLING LOG

HOLE NO: MW109-92

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 1 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	6-1/4 ID HSA, 2" OD Split Spoon
8. HOLE LOCATION	S. W. corner of Trust 454 property, Railroad ROW
9. SURFACE ELEVATION	
10. DATE STARTED	6/8/92
11. DATE COMPLETED	6/11/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	19.20
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	17.7
14. TOTAL DEPTH OF HOLE	70.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
			0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY %
			6		0	

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Grout	C. Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Black, Sandy FILL material with iron pellets and slag		5	STR00111-ACL		
			FILL				
	5	Firm, dark brown-gray mottled, Silty CLAY with possible fill material		6	STR00111-HL	2 3 4 4	
		Loose, very fine, light gray, Silty SAND	SM				

HTW DRILLING LOG

HOLE NO. MW109-92

PROJECT NL/Taracorp

INSPECTOR C. Pavelka

SHEET 2 OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Brown, very fine - fine Silty SAND	SP	12	STR00111 00V00L	2 4 6 4	
	15	Loose, brown, fine, medium SAND	SP		STR00111 00VL	3 4 3 5	
	20						
		Medium dense, brown, fine, medium, sub-rounded SAND with clay	SP		STR00111 00W00L	2 5 11 11	
	25						
		Becoming very fine			STR00111 00X00L		

HTW DRILLING LOG

HOLE NO. MW109-92

PROJECT NL/Taracorp

INSPECTOR C. Pavelka

SHEET 3 OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		SAME: Medium dense, brown, fine to medium, sub-rounded SAND with some clay					
			SP				
	30						
	35	Fine to coarse, well graded		18		2 5 6 8	
	40						
	45		SP				

HTW DRILLING LOG

HOLE NO. MW109-92

PROJECT: NL/Taracorp

INSPECTOR: C. Pavelka

SHEET 4 OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		SAME: Medium dense, brown fine to coarse, sub-rounded SAND, with some clay					
	50						
	55						
		Brown-black, fine-medium SAND with peat and sub-rounded gravel, trace wood chips 1/2 - 1 inch diameter					
	60	Gray, medium subrounded to rounded SAND				3 5 11 15	

HTW DRILLING LOG

HOLE NO
MW111-92

1. COMPANY NAME	WOODWARD-CLYDE CONSULTANTS
2. DRILLING SUBCONTRACTOR	LAYNE-WESTERN
SHEET 1 OF 5 SHEETS	
3. PROJECT	NL/Taracorp
4. LOCATION	Granite City, IL
5. NAME OF DRILLER	Sonny Durham
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	6-1/4" HSA, 2" OD Split Spoon
8. HOLE LOCATION	1628 Delmar
9. SURFACE ELEVATION	
10. DATE STARTED	6/16/92
11. DATE COMPLETED	6/17/92
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	24.00
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND TIME AFTER DRILLING COMPLETED	22.7 18 hrs
14. TOTAL DEPTH OF HOLE	70.00
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
			0

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	TOTAL LEAD	TCLP LEAD	OTHER-SPECIFY	21. CORE RECOVERY
						%

22. DISPOSITION OF HOLE	BACKFILLED	WELL	OTHER-SPECIFY	23. SIGNATURE OF INSPECTOR
	X		Grout	C. Pavelka

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	RECOVERY e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Loose, dark brown, Clayey, Silt FILL with cinders	FILL	17		4 3 5 6	
		Brown, Silty CLAY			MW11192 0AC00L		
	5						
		Soft to firm, tan-brown, Silty CLAY with iron stains and organic debris	CL		MW11192 00H00L	3 2 2 4	

HTW DRILLING LOG

HOLE NO. MW111-92

PROJECT NL/Taracorp

INSPECTOR C. Pavelka

SHEET 2 OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		Medium dense, tan-brown, well rounded, well sorted Silty , fine SAND	SM	24	MW11192 00U00L	4 8 8 10	
	15	Medium dense, brown, fine SAND, well sorted, subrounded, trace organic debris	SP	22	MW11192 00V00L	5 8 9 10	
	20	Medium dense, light brown, fine SAND, subrounded, moist, trace limonite nodules	SP		MW11192 00W00L	9 13 12 10	
	25	Trace orange, cherty, SAND, trace gravel			MW11192 00X00L	5 9 12 9	

WELL DEVELOPMENT

Project: NL/Taracorp Well No: MW109-92
Project No: 89MC114V Date: 6/25/92

WELL MEASUREMENTS

Well inside diameter: 0.1667 ft.
Depth of well casing: 68.8 ft.
Initial water level: 17.6 ft. below MP
Measuring point (MP) Top of Riser
Fluid well casing volume: 8.36 gal.
Air temperature: 80's
Weather conditions: Sunny

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)										
Time	1550	1600	1610	1620	1630	1635	1640	1645		
Bailers	20	40	60	80	100	120	140	160		

WATER QUALITY DATA

pH	6.86	6.82	6.80	6.81	6.82	6.6	6.50	6.76		
Conductivity	1000	980	1020	1010	970	960	940	970		
Temperature (C)	20.1	20.1	19.7	20.9	19.6	19.9	19.5	19.4		
Color	slight cloudy	partly	cloudy	grayish, v.cloudy						
Odor										
Turbidity	45	75	726	912	953	984	940	970		

Total discharge: 40 gals. Casing volumes removed: 4.78
Method of disposal of discharge water: Dump on Taracorp Pile

QUALITY ASSURANCE

Sampling Method: Bailer
Method to measure water level: Electric Level Indicator
Bailer ropes new or cleaned? New
pH meter no: Orion Calibrated: 6/25/92
Conductivity meter no: Horiba U-10 Calibrated: 6/25/92
Comments:

Collected by: D. L. Pate

MONITORING WELL INSTALLATION REPORT

Well No. MW-109-92

Project NL/Taracorp Superfund Site

Location SW corner, Tract 454

Project No 89MC114V

Installed By Layne-Western

Date 6/8-6/10/92

Time

Method of Installation 6 1/4" HSA

LOG OF BORING AND WELL

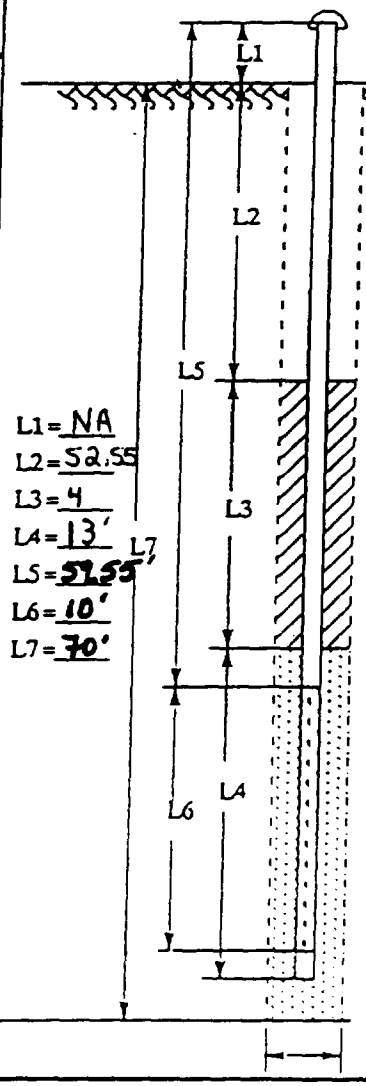
BORING		
Depth In Ft.	Description	Symbol

WELL

Type of Well: Monitoring Well

Ground Elev.

Top of Riser Elev. 415.71



L1 = NA
L2 = 52.55
L3 = 4
L4 = 13'
L5 = 57.55'
L6 = 10'
L7 = 70'

Riser Pipe I.D., in. 2

Type of Pipe: 304 Stainless Steel

Backfill Type Around Riser: Bentonite / Cement Grout

Top of Seal Elevation 363.16

Type of Seal Material: Bentonite Slurry

Top of Filter Elevation 359.16

Type of Filter Material: Colorado 20/40 Silica Sand

Size of Opening, in. 0.010

Diameter of Well Tip, in. 2

Bottom of Screen Elevation 346.41

Bottom of Riser Elevation 346.16

Bttm of Boring Elev. 345.71

Diameter of Boring, in. 10

Remarks: Flush-mount protective casing installed.
Protective casing type - Water Meter Access Cover with 5-sided bolt latch

Inspected By: Cynthia Pavelka

WOODWARD-CLYDE CONSULTANTS

FIGURE NO 2

WELL DEVELOPMENT

Project: NL/Taracorp Well No: MW109-92
Project No: 89MC114V Date: 6/25/92

WELL MEASUREMENTS

Well inside diameter: 0.1667 ft.
Depth of well casing: 68.8 ft.
Initial water level: 17.6 ft. below MP
Measuring point (MP) Top of Riser
Fluid well casing volume: 8.36 gal.
Air temperature: 80's
Weather conditions: Sunny

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)										
Time	1334	1340	1345	1350	1355	1400	1410	1420	1430	1440
Bailers	5	5	5	5	5	5	5	5	5	5

WATER QUALITY DATA

pH	6.42	6.59	6.65	6.61	6.69	6.72	6.94	6.63	6.88	6.70
Conductivity	1000	1010	970	1060	1080	1030	1030	1050	1100	1000
Temperature (C)	19.7	19.8	20.2	20.2	19.3	19.7	19.8	19.9	20.7	20.1
Color	partly	cloudy					clear	clear	clear	clear
Odor										
Turbidity	96	46	29	29	46	30	40	31	23	5

Total discharge: Casing volumes removed:
Method of disposal of discharge water: Dump on Taracorp Pile

QUALITY ASSURANCE

Sampling Method: Bailer
Method to measure water level: Electric Level Indicator
Bailer ropes new or cleaned? New
pH meter no: Orion Calibrated: 6/25/92
Conductivity meter no: Horiba U-10 Calibrated: 6/25/92
Comments:

Collected by: D. L. Pate

WELL DEVELOPMENT

Project: NL/Taracorp Well No: MW109-92
Project No: 89MC114V Date: 6/25/92

WELL MEASUREMENTS

Well inside diameter: 0.1667 ft.
Depth of well casing: 68.8 ft.
Initial water level: 17.6 ft. below MP
Measuring point (MP) Top of Riser
Fluid well casing volume: 8.36 gal.
Air temperature: 80's
Weather conditions: Sunny

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)										
Time	1450	1500	1510	1520	1530	1535				
Discharge (gal.)	5	5	5	5	5	5				

WATER QUALITY DATA

pH	6.75	6.73	6.86	6.69	6.69	6.82				
Conductivity	1000	1030	1000	1030	1030	1040				
Temperature (C)	19.9	19.7	19.7	19.7	19.5	19.7				
Color	clear	clear	clear	clear	clear	clear				
Odor										
Turbidity	2	1	0	1	0	2				

Total discharge: 605 gals. Casing volumes removed: 72.37
Method of disposal of discharge water: Dump on Taracorp Pile

QUALITY ASSURANCE

Sampling Method: Submersible Pump
Method to measure water level: Electric Level Indicator
Bailer ropes new or cleaned? New
pH meter no: Orion Calibrated: 6/25/92
Conductivity meter no: Horiba U-10 Calibrated: 6/25/92
Comments:

Collected by: D. L. Pate

WELL DEVELOPMENT

Project: NL/Taracorp Well No: MW109-92
Project No: 89MC114V Date: 6/24/92

WELL MEASUREMENTS

Well inside diameter: 0.1667 ft.
Depth of well casing: 68.8 ft.
Initial water level: 17.6 ft. below MP
Measuring point (MP) Top of Riser
Fluid well casing volume: 8.36 gal.
Air temperature: 80's
Weather conditions: Sunny

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)										
Time	1540									
Bailers	1	15	31							

WATER QUALITY DATA

pH	6.80	6.61	6.75							
Conductivity	1210	1140	1160							
Temperature (C)	21.3	22.6	22.5							
Color	Dis-	colored								
Odor										
Turbidity	500	170	45							

Total discharge: 7.75 gals. Casing volumes removed: 0.93
Method of disposal of discharge water: Dump on Taracorp Pile

QUALITY ASSURANCE

Sampling Method: Bailer
Method to measure water level: Electric Level Indicator
Bailer ropes new or cleaned? New
pH meter no: Orion Calibrated: 6/24/92
Conductivity meter no: Horiba U-10 Calibrated: 6/24/92
Comments:

Collected by: D. L. Pate

WELL DEVELOPMENT

Project: NL/Taracorp Well No: MW109-92
Project No: 89MC114V Date: 6/25/92

WELL MEASUREMENTS

Well inside diameter: 0.1667 ft.
Depth of well casing: 69.51 ft.
Initial water level: 17.6 ft. below MP
Measuring point (MP) Top of Riser
Fluid well casing volume: 8.36 gal.
Air temperature: 80's
Weather conditions: Sunny

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)	17.6									
Time	800							930	940	945
Bailers	1	15	35	55	75	95	115	135	155	180

WATER QUALITY DATA

pH	6.94	6.99	6.98	6.85	7.05	6.85	6.83	6.81	6.90	6.88
Conductivity	1170	1140	1090	1100	1100	1070	1030	1070	1070	1070
Temperature (C)	25.4	25.8	25.5	26.1	27.7	27.0	20.3	19.9	21.3	20.9
Color	yellow-	ish	cloudy							
Odor										
Turbidity	140	115	540	853	122	654	709	710	607	534

Total discharge: 45 gals. Casing volumes removed: 5.38
Method of disposal of discharge water: Dump on Taracorp Pile

QUALITY ASSURANCE

Sampling Method: Bailer
Method to measure water level: Electric Level Indicator
Bailer ropes new or cleaned? New
pH meter no: Orion Calibrated: 6/25/92
Conductivity meter no: Horiba U-10 Calibrated: 6/25/92
Comments:

Collected by: D. L. Pate

WELL DEVELOPMENT

Project: NL/Taracorp Well No: MW109-92
Project No: 89MC114V Date: 6/24/92

WELL MEASUREMENTS

Well inside diameter: 0.1667 ft.
Depth of well casing: 68.8 ft.
Initial water level: 17.6 ft. below MP
Measuring point (MP) Top of Riser
Fluid well casing volume: 8.36 gal.
Air temperature: 80's
Weather conditions: Sunny

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)										
Time	1417									
Discharge (Gal.)	200									

WATER QUALITY DATA

pH	6.75									
Conductivity	1180									
Temperature (C)	22.0									
Color	Milky	Gray	Tan							
Odor										
Turbidity	999									

Total discharge: 50 gals. Casing volumes removed: 5.98
Method of disposal of discharge water: Dump on Taracorp Pile

QUALITY ASSURANCE

Sampling Method: Bailer
Method to measure water level: Electric Level Indicator
Bailer ropes new or cleaned? New
pH meter no: Orion Calibrated: 6/24/92
Conductivity meter no: Horiba U-10 Calibrated: 6/24/92
Comments:

Collected by: D. L. Pate

WELL DEVELOPMENT

Project: NL/Taracorp Well No: MW109-92
Project No: 89MC114V Date: 6/24/92

WELL MEASUREMENTS

Well inside diameter: 0.1667 ft.
Depth of well casing: 68.8 ft.
Initial water level: 17.6 ft. below MP
Measuring point (MP) Top of Riser
Fluid well casing volume: 8.36 gal.
Air temperature: 80's
Weather conditions: Sunny

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)										
Time		1453	1459	1504	1509	1515	1520	1525	1530	1535
Discharge (Gal.)		5	5	5	5	5	5	5	5	5

WATER QUALITY DATA

pH		6.66	6.70	6.65	6.76	6.65	6.64	6.66	6.65	6.66
Conductivity		1170	1160	1160	1150	1170	1170	1180	1190	1190
Temperature (C)		24.1	22.6	22.6	23.2	22.3	22.2	22.4	20.4	20.4
Color		milky	clear-tan	slight	discolored					
Odor										
Turbidity		635	130	43	60	90	65	25	30	50

Total discharge: 210 gals. Casing volumes removed: 25.12
Method of disposal of discharge water: Dump on Taracorp Pile

QUALITY ASSURANCE

Sampling Method: Submersible Pump
Method to measure water level: Electronic Level Indicator
Bailer ropes new or cleaned?
pH meter no: Orion Calibrated: 6/24/92
Conductivity meter no: Horiba U-10 Calibrated: 6/24/92
Comments:

Collected by: D. L. Pate

WELL DEVELOPMENT

Project: NL/Taracorp Well No: MW109-92
Project No: 89MC114V Date: 6/24/92

WELL MEASUREMENTS

Well inside diameter: 0.1667 ft.
Depth of well casing: 68.8 ft.
Initial water level: 17.6 ft. below MP
Measuring point (MP) Top of Riser
Fluid well casing volume: 8.36 gal.
Air temperature: 80's
Weather conditions: Sunny

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)	17.8									
Time	1125	1150	1202	1215	1226	1240	1250	1255		
Discharge (Gal.)	5	5	5	5	5	5	5	5		

WATER QUALITY DATA

pH	6.62	6.66	6.56	6.66	6.82	6.64	6.75	6.75		
Conductivity	1180	1120	1140	1170	1170	1190	1150	1170		
Temperature (C)	22.3	23.1	24.0	22.1	22.5	22.5	22.5	22.5		
Color					Clear	Clear	Clear	Clear		
Odor										
Turbidity	450	25	35	5	2	15	3	–		

Total discharge: 450 gals. Casing volumes removed: 53.83
Method of disposal of discharge water: Dump on Taracorp pile

QUALITY ASSURANCE

Sampling Method: Submersible Pump
Method to measure water level: Electric level indicator
Bailer ropes new or cleaned?
pH meter no: Orion Calibrated: 6/24/92
Conductivity meter no: Horiba U-10 Calibrated: 6/24/92
Comments:

Collected by: D. L. Pate

WELL DEVELOPMENT

Project: NL/Taracorp Well No: MW109-92
Project No: 89MC114V Date: 6/24/92

WELL MEASUREMENTS

Well inside diameter: 0.1667 ft.
Depth of well casing: 68.8 ft.
Initial water level: 17.6 ft. below MP
Measuring point (MP) Top of Riser
Fluid well casing volume: 8.36 gal.
Air temperature: 80's
Weather conditions: Sunny

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)										
Time	1310	1316	1324	1332	1338	1345	1350	1357	1405	1411
Discharge (Gal.)	1	20	40	60	80	100	120	140	160	180

WATER QUALITY DATA

pH	6.75	6.75	6.75	6.77	6.84	6.80	6.78	6.79	6.60	6.63
Conductivity	910	1160	1180	1170	1140	1180	1130	1170	1180	1180
Temperature (C)	23.6	22.5	22.4	21.9	23.1	21.4	23.1	21.6	21.7	21.3
Color	Brown	Clear	Milky Tan			Milky	Gray	Tan		
Odor										
Turbidity	850	40	980	999	999	999	999	999	999	999

Total discharge: Casing volumes removed:
Method of disposal of discharge water:

QUALITY ASSURANCE

Sampling Method: Submersible Pump
Method to measure water level: Electric level indicator
Bailer ropes new or cleaned?
pH meter no: Orion Calibrated: 6/24/92
Conductivity meter no: Horiba U-10 Calibrated: 6/24/92
Comments:

Collected by: D. L. Pate

WELL DEVELOPMENT

Project: NL/Taracorp Well No: MW109-92
Project No: 89MC114V Date: 6/24/92

WELL MEASUREMENTS

Well inside diameter: 0.1667 ft.
Depth of well casing: 68.8 ft.
Initial water level: 17.6 ft. below MP
Measuring point (MP) Top of Riser
Fluid well casing volume: 8.36 gal.
Air temperature: 80's
Weather conditions: Sunny

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)	17.6									
Time	831	844	850	903	915	930	945			
Discharge (Gal.)	5	5	5	5	5	5	5			

WATER QUALITY DATA

pH	6.78	6.56	6.74	6.80	6.70	6.76	6.76			
Conductivity	1170	1200	1180	1190	1150	1180	1170			
Temperature (C)	21.6	20.7	21.0	21.1	21.5	21.6	21.9			
Color										
Odor										
Turbidity	999	14	5	2	2	2	4			

Total discharge: 370 gals. Casing volumes removed: 44.26
Method of disposal of discharge water: Dump on Taracorp pile

QUALITY ASSURANCE

Sampling Method: Electric Submersible Pump
Method to measure water level: Electric level indicator
Bailer ropes new or cleaned?
pH meter no: Orion Calibrated: 6/24/92
Conductivity meter no: Horiba U-10 Calibrated: 6/24/92
Comments: Stopped to surge @ 945

Collected by: D. L. Pate

WELL DEVELOPMENT

Project: NL/Taracorp Well No: MW109-92
Project No: 89MC114V Date: 6/24/92

WELL MEASUREMENTS

Well inside diameter: 0.1667 ft.
Depth of well casing: 68.8 ft.
Initial water level: 17.6 ft. below MP
Measuring point (MP) Top of Riser
Fluid well casing volume: 8.36 gal.
Air temperature: 80's
Weather conditions: Sunny

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)						17.6				
Time	1011	1013	1017	1030	1045	1057				
Discharge (Gal.)	5	5	5	5	5	5				

WATER QUALITY DATA

pH	6.78	6.66	6.60	6.70	6.80	6.74				
Conductivity	974	1150	1160	1150	1170	1170				
Temperature (C)	27.0	22.8	22.6	22.3	22.4	22.2				
Color	Brown	Tan	Milky	Clear	Clear	Clear				
Odor										
Turbidity	291	370	75	25	8	5				

Total discharge: 230 gals. Casing volumes removed: 27.51
Method of disposal of discharge water: Dump on Taracorp pile

QUALITY ASSURANCE

Sampling Method: Submersible Pump
Method to measure water level: Electric level indicator
Bailer ropes new or cleaned?
pH meter no: Orion Calibrated: 6/24/92
Conductivity meter no: Horiba U-10 Calibrated: 6/24/92
Comments: Stopped to surge @ 1057

Collected by: D. L. Pate

HTW DRILLING LOG

HOLE NO. MW109-92

PROJECT NL/Taracorp

INSPECTOR C. Pavelka

SHEET 5 OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		SAME: Medium dense, gray, sub-rounded SAND	SP				
	65					4 11 12 20	
				18			
						9 15 19 34	
		Becoming dense					
	70	Bottom of Boring at 70 ft					
	75						
	80						

WELL DEVELOPMENT

Project: NJ/Taracorp Well No: MW-109-92
Project No: 89MC114V Date: 6-23-92

WELL MEASUREMENTS

Well inside diameter: 0.1667 (2") ft.
Depth of well casing: 69.51 ft.
Initial water level: 19.8 ft. below MP
Measuring point (MP) Top of riser
Fluid well casing volume: 8.44 gal.
Air temperature: 80°
Weather conditions: Sunny - later storm

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)	17.8				17.65					
Time	1430	1450	1450	1500	1510	1520	1525			
Discharge (Gal.)	5	5	5	5	5	5	5			

WATER QUALITY DATA

pH	7.15	6.42	6.45	6.48	6.42	6.14	6.37			
Conductivity	624	1120	1160	1160	1170	1160	1120			
Temperature (C)	28.7	23.0	22.9	22.9	22.7	22.6	22.6			
Color	clear	clear	clear	clear	clear	clear	clear			
Odor										
Turbidity	1	5	2	—	—	—	—			

Total discharge: 275 gallons Casing volumes removed: 32.58
Method of disposal of discharge water: Disposed of onto Taracorp Pile

QUALITY ASSURANCE

Sampling Method: Electronic Submersible pump
Method to measure water level: Electric level indicator
Bailer ropes new or cleaned?
pH meter no: Orion Calibrated: 6-23-92 DLP
Conductivity meter no: Horiba U-10 Calibrated: 6-23-92 DLP
Comments: Stopped to surge @ 1525

Collected by: D. L. Pate

HTW DRILLING LOG

HOLE NO. MW111-92

PROJECT NL/Taracorp

INSPECTOR C. Pavelka

SHEET 3 OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
	30						
		Becoming Silty, gray Clay lens		24		2 2 3 4	
	35						
		Black, Sand lens with woodchips, clay lens		24		3 5 9 13	
	40	Trace gravel					
				24		5 14 22 31	
		Very fine, SAND					
		Loose, gray, very fine - fine, Silty SAND, well sorted with limonite nodules	SM				
	45						

HTW DRILLING LOG

HOLE NO. MW111-92

PROJECT NL/Taracorp

INSPECTOR C. Pavelka

SHEET 4 OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
		SAME: Loose, gray, very fine - fine Silty SAND, well sorted		20		2 3 7 13	
	50			24		3 4 10 15	
	55		SM			5 6 4 3	
	60	Becoming medium dense		12		3 6 9 15	

HTW DRILLING LOG

HOLE NO. MW111-92

PROJECT NL/Taracorp

INSPECTOR C. Pavelka

SHEET 5 OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE/ CORE BOX # e	ANALYT. SAMPLE # f	BLOW COUNTS g	REMARKS h
	65	SAME: Medium dense, gray, very fine - fine, Silty SAND, well sorted					
				2		4 6 9 13	
	70	Becoming dense Bottom of Boring at 70 ft				8 20 13 10	
	75						
	80						

WELL DEVELOPMENT

Project: NJ/Taracorp PDFI Well No: MW-111-92
Project No: 89MC114V Date: 6-22-92

WELL MEASUREMENTS

Well inside diameter: 0.167 (2") ft.
Depth of well casing: 68.1 ft.
Initial water level: 21.3 ft. below MP
Measuring point (MP) Top of casing
Fluid well casing volume: 7.6 gal.
Air temperature: 70°
Weather conditions: Sunny - Breezy

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)	21.30	could	not	get	water	level	indi-	cator	past	15ft
Time	1055	1245	1300	1307	1314	1330	1340	1350	1357	
Discharge (Gal.)	0	4.0	3.5	3.5	3.5	3.5	3.5	3.5	0	

WATER QUALITY DATA

pH	6.98	6.60	6.60	6.71	6.65	6.73	6.72	6.73	stop	
Conductivity	0.674	1.21	1.25	1.25	1.24	1.22	1.25	1.24	stop	
Temperature (C)	20.5	20.6	21.1	20.3	20.5	21.5	20.8	20.4	stop	
Color	clear	brown	clear	clear	clear	clear	clear	clear	stop	
Odor	none	none	none	none	none	none	none	none	stop	
Turbidity	84	560	260	110	60	75	77	18	stop	

Total discharge: 200 gallons Casing volumes removed: 26
Method of disposal of discharge water: Disposed of onto Taracorp Pile

QUALITY ASSURANCE

Sampling Method: Discharge hose
Method to measure water level: electric water level indicator
Bailer ropes new or cleaned? new
pH meter no: Horiba U-10 Calibrated: 6-22-92 DLP
Conductivity meter no: Horiba U-10 Calibrated: 6-22-92 DLP
Comments: Stopped to surge @ 1357

Collected by: D. L. Pate

HYDROMETER TEST

4/81

Project No. 89MC114V Project Engineer _____ Date Set up 1/8/92

Sample No. STR0007100TG

Initial Visual Classification SP: Light-brown medium to fine sand with a trace of silt

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____ Soil passing Sieve No. 10
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☐ Overnight ☐ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content ☐ Natural ☐ Air-Dried	
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = _____ x (1+ _____)

W_{wet} = 132.7 (gm)

After Test-Actual Ws	
Container No.	P-50
Wgt Container + Dispersant + Dry Soil + _____ (gm)	663.57
Wgt Container (gm)	546.25
Wgt Dry Soil + Dispersant + + _____ (gm)	117.32
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	113.32

Soaking Beaker No. D-4 Graduate No. 10 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/9/92	09:56	0	—	—	—	—	—
		1/2	22.0	7.3	3.9	0.0736	4.8
		1	"	5.9	"	0.0526	2.8
		2	"	5.3	"	0.0374	2.0
		5	"	5.2	3.6	0.0228	2.3
		9	"	5.1	"	0.0162	2.1
		15		5.0	"	0.0132	2.0
		32	"	4.9	3.5	0.0091	2.0
		60	"	4.8	"	0.0066	1.8
		122	21.9	4.7	"	0.0046	1.7
		240	21.7	4.5	3.4	0.0033	1.5
		482	21.8	4.5	3.1	0.0023	2.0
1/10/92	[illegible]	335	21.2	4.4	3.3	0.0014	1.5

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes formed
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations:

Average temperature used in calculating test, °C = 21.333	☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average	Specific Gravity, G_s = 2.62 ☐ Tested ☑ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 14.8 (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 0.01323 $\sqrt{\frac{Zr}{t}}$

Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 = (113.32) x 100 = 113.32 (gm)

(1) R = (Reading - 1) 1000

Remarks: _____

Set-up by EJ Run by EJ Taken down by EJ Sieved by _____ Calculated by [signature]

[illegible] 1/22/92

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/10/95

Sample Number STh000 b1CD 1G

Initial Visual Classification _____

Shape of Grains	Gravel Portion: ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded
	Sand Portion: (coarse & medium) ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded

Specimen Tested	☐ Jar Sample _____ Sieves - whole sample used _____ Sieves - partial sample used & obtained by: method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing	☐ Bag or _____ Sample _____ Sieves - whole sample used _____ Sieves - partial sample by method ____ _____ Sieves - partial sample by method ____

Sample Preparation	
	☐ Natural state ☐ Air-dried ☐ Oven-dried — Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr — Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wod/1 + (wod) = Wod/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN

	Total Test Specimen	Partial Test Specimen		Soil Retained (after washing)
Sieve Range	ALL	+10	-10	-10 +200
Container Number		157	P-15	735
Wgt Container + Dry Soil (gm)		199.42		165.44
Wgt Container (gm)		178.15		133.08
Wgt Dry Soil, W_s (gm)	65.42	21.27		32.36
Wgt Dry Soil From Hydrometer Test (gm)		44.15		

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Total % Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

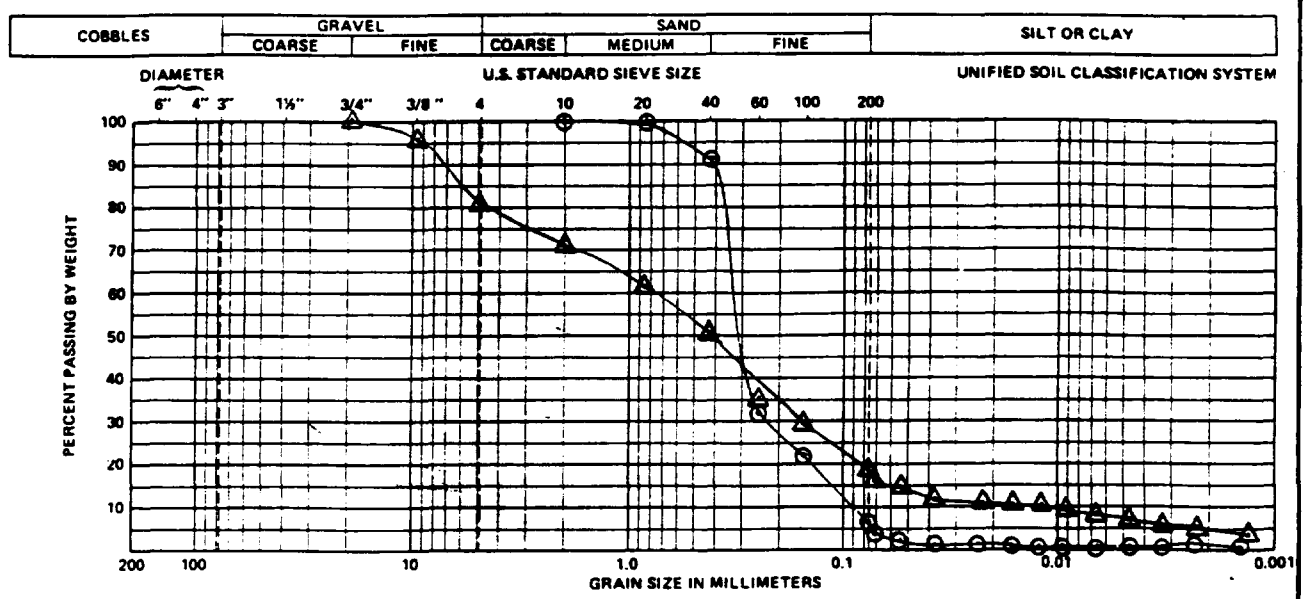
Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total % Finer N'
3/4"	0		100 %
3/8"	2.28		96.5
4	13.02		80.1
10	19.49		70.2
20	4.67		62.9
40	12.49		50.4
60	21.45		36.1
100	25.53		29.6
200	32.32		18.8
Pan	32.62		

Maximum particle size if greater than 3" _____

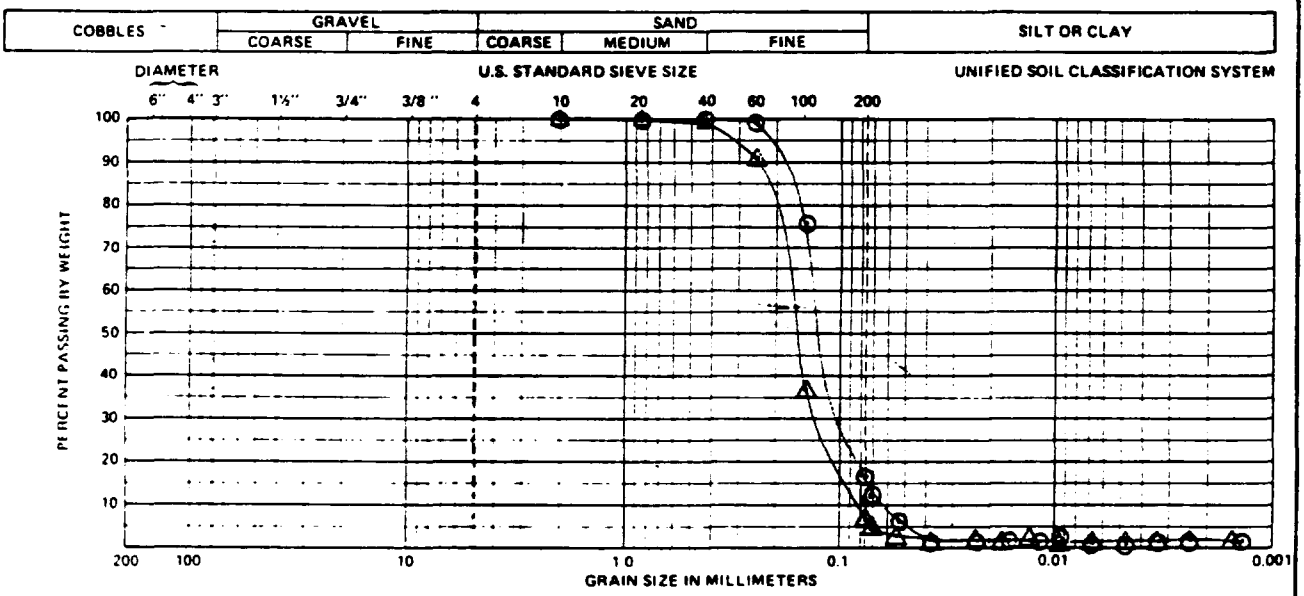
Remarks _____ - gravel and [illegible] composition [illegible] of [illegible] fragments.

Set-up by [illegible] Washed by [illegible] Sieved by [illegible] Calculated by DJ Reviewed by [illegible]

PARTICLE-SIZE DISTRIBUTION



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w_L (%)	w_P (%)
STR0007	100TG		⊙	SP-SM, lt. brown f. SAND, trace m. Sand & Silt; mica noted	18.6		
STR0006	100JG		△	SM, black c-f SAND, some f. gravel & Silt; mica noted; Note gravel & Sand-sized particles are predom. binder frag	19.5		



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w_L (%)	w_P (%)
STR0006	100TG		⊙	SM, yellow-brown f. SAND, some Silt	6.6		
STR0010	100MG		△	SP-SM, brown f. SAND, trace Silt & m. Sand; mica noted	9.4		

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/10/92

Sample Number STR0007100TG

Initial Visual Classification _____

Shape of Grains				
Gravel Portion:	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded
Sand Portion: (coarse ≈ medium)	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded

Specimen Tested	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:	_____ Sieves - partial sample by method ____
	method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing	_____ Sieves - partial sample by method ____

Sample Preparation		
	☐ Natural state ☐ Air-dried ☐ Oven-dried	Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr	Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes	

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or (1) _____ soil (gm) (2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wad/1 + (wad) = Wad/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range		-10	-10 + 200
Container Number		P-50	729
Wgt Container + Dry Soil (gm)			239.00
Wgt Container (gm)			133.18
Wgt Dry Soil, W_s (gm)			105.82
Wgt Dry Soil From Hydrometer Test (gm)		113.32	

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N°
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total % Finer N°
3/8"			
4			
10	0		100%
20	0.09		99.9
40	8.06		92.9
60	76.04		32.9
100	87.31		23.0
200	105.04		7.3
Pan	105.84		

Maximum particle size if greater than 3" _____

Remarks Micro noted

Set-up by EJ Washed by EJ Sieved by EJ Calculated by [illegible] Reviewed by [illegible]

LIQUID AND PLASTIC LIMITS

L-101 (10/87)

Project No. 89MC114V Project Engineer _____ Date of Test 12-14-91

Sample No. TA0083 1 00N 00G

Initial Visual Classification CH-CL

Sample Preparation	☒ Natural State ☐ Air dried ☐ Oven dried	Mixed and Cured for: ☐ No ☒ Yes ☒ Overnight ☐ Other _____	Passed through No. 40 Sieve ☐ No ☒ Yes ☐ Other _____

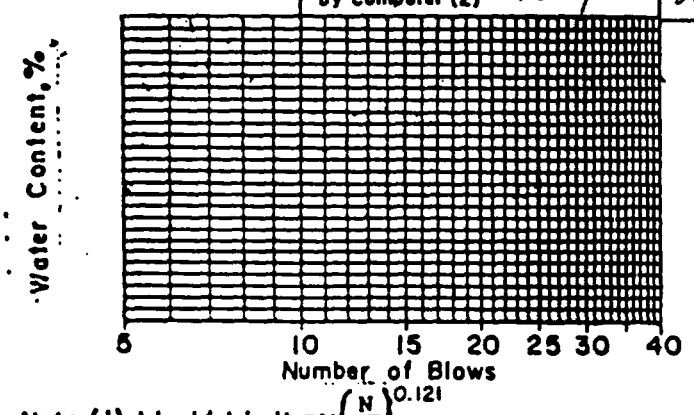
	NATURAL WATER CONTENT		PLASTIC LIMIT		
DETERMINATION NO.	1	2	1	2	3
CONTAINER NO.	LB-25		147	78	
Wgt. CONTAINER + WET SOIL (gm)	76.87		27.92	31.10	
Wgt. CONTAINER + DRY SOIL (gm)	63.87		25.68	28.18	
Wgt. CONTAINER (gm)	32.99		17.21	17.09	
WATER CONTENT (%)	42.10		26.45	26.33	
			Average Plastic Limit (%)		26.39 %

LIQUID LIMIT Grooving Tool Used: ☐ Casagrande; ☐ ASTM; Apparatus No. ___

DETERMINATION NO.	1	2	3	4
CONTAINER NO.	S100	95	97	
Wgt. CONTAINER + WET SOIL (gm)	25.82	36.85	36.73	
Wgt. CONTAINER + DRY SOIL (gm)	21.35	28.34	28.58	
Wgt. Container (gm)	15.36	16.94	16.93	
WATER CONTENT, W (%)	74.6	74.6	70.0	
NO. OF BLOWS, N	31	25	16	
LIQUID LIMIT FROM A.S.T.M NOMOGRAPH (1)	76.6	74.6	66.3	
		Average Liquid Limit by ASTM (%)		~~725~~ 76

FLOW CURVE

Liquid Limit by Computer (2) = 73.7 % REG. COEFF. 0.856



Summary	
Nat. Water Content w_n (%)	42.1
Liquid Limit, w_L (%)	76
Plastic Limit, w_P (%)	26
Plasticity Index, I_P (%)	~~50~~ 49
Liquidity Index, I_L $= \frac{W_n - W_p}{W_L - W_p}$	0.317
Plasticity Chart % Points ± A-Line Classification	CH

Note: (1) Liquid Limit $= w\left(\frac{N}{25}\right)^{0.121}$

(2) Using Least Squares Fitting Method

Tested By PT Computed By DY Reviewed By [signature]

Remarks _____

✓ [illegible] 1/27/92

GEOTECHICAL TESTING RESULTS

GRAIN SIZE ANALYSIS

LIQUID AND PLASTIC LIMITS

L-101 (10/87)

Project No. 89MC114V Project Engineer _____ Date of Test 12-14-91

Sample No. BV0001 1 00L 00G

Initial Visual Classification CH-CL

Sample Preparation	☒ Natural State ☐ Air dried ☐ Oven dried	Mixed and Cured for: ☐ No ☒ Yes ☒ Overnight ☐ Other _____	Passed through No. 40 Sieve ☐ No ☒ Yes ☐ Other _____

NATURAL WATER CONTENT

DETERMINATION NO.	1	2
CONTAINER NO.	LA122	
Wgt. CONTAINER + WET SOIL (gm)	85.10	
Wgt. CONTAINER + DRY SOIL (gm)	70.36	
Wgt. CONTAINER (gm)	34.55	
WATER CONTENT (%)	41.6	

PLASTIC LIMIT

1	2	3
305	5102	
33.99	32.21	
31.54	28.90	
20.35	15.34	
21.89	24.41	
Average Plastic Limit (%)		23.15 %

LIQUID LIMIT

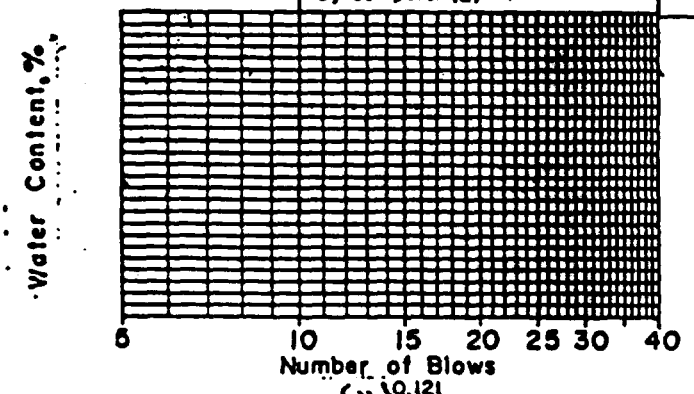
Grooving Tool Used: ☐ Casagrande; ☐ ASTM; Apparatus No. ____

DETERMINATION NO.	1	2	3	4
CONTAINER NO.	304	5108	96	
Wgt. CONTAINER + WET SOIL (gm)	35.53	35.34	31.83	
Wgt. CONTAINER + DRY SOIL (gm)	29.02	26.65	25.32	
Wgt. Container (gm)	20.13	15.34	16.97	
WATER CONTENT, W (%)	73.2	76.8	78.0	
NO. OF BLOWS, N	34	28	20	
LIQUID LIMIT FROM A.S.T.M NOMOGRAPH (1)	76.0	77.9	75.9	
		Average Liquid Limit by ASTM (%)		76.6

REG. COEFF.

Liquid Limit by Computer (2) 76.6 % 0.813

FLOW CURVE



Summary	
Nat. Water Content w_n (%)	41.2
Liquid Limit, w_L (%)	77
Plastic Limit, w_P (%)	23
Plasticity Index, I_P (%)	~~54~~ 53
Liquidity Index, I_L $= \frac{W_n - W_P}{W_L - W_P}$	0.337
Plasticity Chart Classification % Points ± A-Line	CH

Remarks error

Note: (1) Liquid Limit $= w\left(\frac{N}{25}\right)^{0.121}$

(2) Using Least Squares Fitting Method

Tested By PT Computed By DT Reviewed By [illegible]

Remarks _____

[illegible] 1/24/92

LIQUID AND PLASTIC LIMITS

L-101 (10/87)

Project No. 89MC114V Project Engineer _____ Date of Test 12-14-91

Sample No. TA 0002 1 00N 00G

Initial Visual Classification CH-CL

Sample Preparation	☒ Natural State ☐ Air dried ☐ Oven dried	Mixed and Cured for: ☐ No ☒ Yes ☒ Overnight ☐ Other _____	Passed through No. 40 Sieve ☐ No ☒ Yes ☐ Other _____

	NATURAL WATER CONTENT		PLASTIC LIMIT		
DETERMINATION NO.	1	2	1	2	3
CONTAINER NO.	LA27		207	S114	
Wgt. CONTAINER + WET SOIL (gm)	89.46		29.69	27.06	
Wgt. CONTAINER + DRY SOIL (gm)	71.94		27.32	24.79	
Wgt. CONTAINER (gm)	34.05		17.00	15.28	
WATER CONTENT (%)	46.24		22.97	23.87	
			Average Plastic Limit (%)		23.42 %

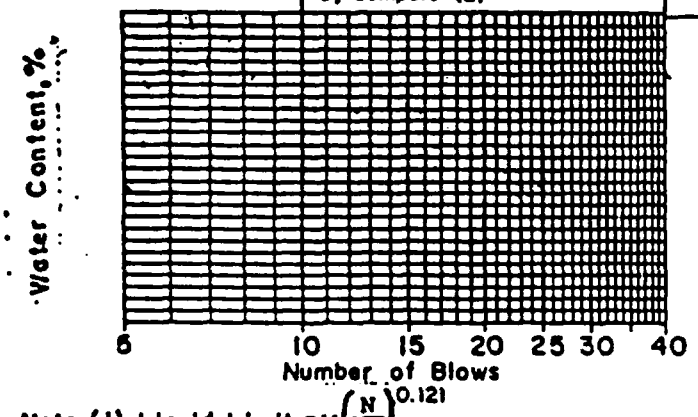
LIQUID LIMIT Grooving Tool Used: ☒ Casagrande; ☐ ASTM; Apparatus No. D

DETERMINATION NO.	1	2	3	4
CONTAINER NO.	S120	246	236	
Wgt. CONTAINER + WET SOIL (gm)	30.75	35.34	41.29	
Wgt. CONTAINER + DRY SOIL (gm)	24.02	28.01	31.50	
Wgt. Container (gm)	15.23	18.67	18.74	
WATER CONTENT, W (%)	76.6	78.5	76.7	
NO. OF BLOWS, N	27	22	15	
LIQUID LIMIT FROM A.S.T.M NOMOGRAPH (1)	77.3	77.3	72.1	
		Average Liquid Limit by ASTM (%)		~~75.6~~ 77.3

FLOW CURVE

Liquid Limit by Computer (2) = 77.3 %

REG. COEFF. 0.010



Summary	
Nat. Water Content w_n (%)	46.2
Liquid Limit, w_L (%)	77
Plastic Limit, w_P (%)	23
Plasticity Index, I_P (%)	54
Liquidity Index, I_L $= \frac{W_n - W_p}{W_L - W_p}$	0.430
Plasticity Chart Classification % Points ± A-Line +12.3	CH

Note: (1) Liquid Limit $= w\left(\frac{N}{25}\right)^{0.121}$

(2) Using Least Squares Fitting Method

Tested By [signature] Computed By [signature] Reviewed By [signature]

Remarks _____

[signature] 1/28/92

LIQUID AND PLASTIC LIMITS

(10/87)

Project No. 89MC114V Project Engineer _____ Date of Test 12-14-91

Sample No. TR0002, 1 00K 00G

Initial Visual Classification SP SAND

Sample Preparation	☑ Natural State ☐ Air dried ☐ Oven dried	Mixed and Cured for: ☐ No ☑ Yes ☑ Overnight ☐ Other _____	Passed through No. 40 Sieve ☐ No ☑ Yes ☐ Other _____

NATURAL WATER CONTENT

DETERMINATION NO.	1	2
CONTAINER NO.	LA130	
Wgt. CONTAINER + WET SOIL (gm)	91.91	
Wgt. CONTAINER + DRY SOIL (gm)	82.54	
Wgt. CONTAINER (gm)	34.29	
WATER CONTENT (%)	19.42	

PLASTIC LIMIT

1	2	3
Average Plastic Limit (%)		%

NON PLASTIC

LIQUID LIMIT

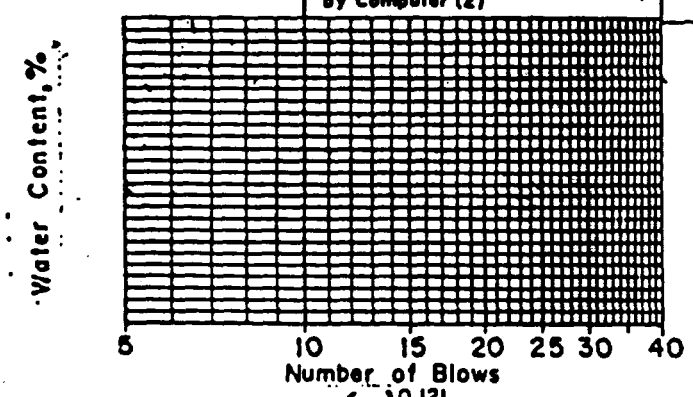
Grooving Tool Used: ☐ Casagrande; ☐ ASTM; Apparatus No. ____

DETERMINATION NO.	1	2	3	4
CONTAINER NO.				
Wgt. CONTAINER + WET SOIL (gm)				
Wgt. CONTAINER + DRY SOIL (gm)				
Wgt. Container (gm)				
WATER CONTENT, W (%)				
NO. OF BLOWS, N				
LIQUID LIMIT FROM A.S.T.M NOMOGRAPH (1)				
		Average Liquid Limit by ASTM (%)		

REG. COEFF.

FLOW CURVE

Liquid Limit by Computer (2) %



Summary	
Nat. Water Content w_n (%)	
Liquid Limit, w_L (%)	
Plastic Limit, w_P (%)	
Plasticity Index, I_P (%)	
Liquidity Index, $I_L = \frac{w_n - w_P}{w_L - w_P}$	
Plasticity Chart Classification	% Points ± A-Line

Note: (1) Liquid Limit $= w\left(\frac{N}{25}\right)^{0.121}$

(2) Using Least Squares Fitting Method

Tested By PT Computed By _____ Reviewed By _____

Remarks _____

Final 1/2/92

LIQUID AND PLASTIC LIMITS

L-101 (10/87)

Project No. 89MC114V Project Engineer _____ Date of Test 12-14-91
Sample No. R00001 / 1 00M 006
Initial Visual Classification CH-CL

Sample Preparation	☒ Natural State ☐ Air dried ☐ Oven dried	Mixed and Cured for: ☐ No ☒ Yes ☒ Overnight ☐ Other _____	Passed through No. 40 Sieve ☐ No ☒ Yes ☐ Other _____

NATURAL WATER CONTENT

DETERMINATION NO.	1	2
CONTAINER NO.	M-7	
Wgt. CONTAINER + WET SOIL (gm)	112.04	
Wgt. CONTAINER + DRY SOIL (gm)	93.43	
Wgt. CONTAINER (gm)	38.19	
WATER CONTENT (%)	33.69	

PLASTIC LIMIT

1	2	3
212	136	
32.28	28.42	
29.45	26.29	
17.17	16.76	
23.05	22.35	
Average Plastic Limit (%)		22.70 %

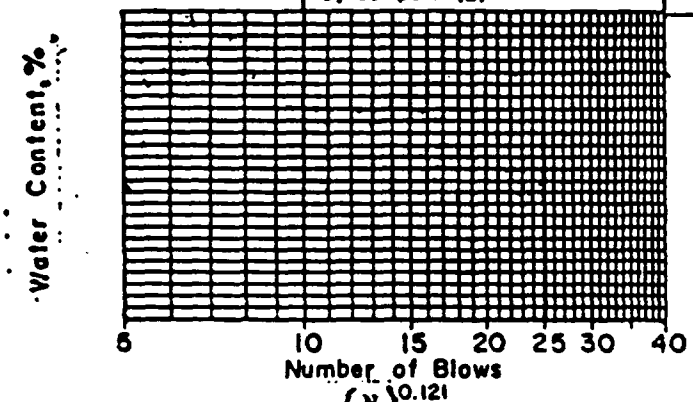
LIQUID LIMIT

Grooving Tool Used: ☐ Casagrande; ☐ ASTM; Apparatus No. ____

DETERMINATION NO.	1	2	3	4
CONTAINER NO.	5115	218	5118	
Wgt. CONTAINER + WET SOIL (gm)	26.68	32.93	35.45	
Wgt. CONTAINER + DRY SOIL (gm)	21.87	26.73	27.06	
Wgt. Container (gm)	15.22	18.22	15.25	
WATER CONTENT, W (%)	72.3	72.9	71.0	
NO. OF BLOWS, N	34	29	18	
LIQUID LIMIT FROM A.S.T.M NOMOGRAPH (1)	75.1	74.2	68.3	
Average Liquid Limit by ASTM (%)				~~72.5~~ 74.7

FLOW CURVE

Liquid Limit by Computer (2)	72.0 %	REG. COEFF. 0.746



Summary	
Nat. Water Content w_n (%)	33.7
Liquid Limit, w_L (%)	75
Plastic Limit, w_P (%)	23
Plasticity Index, I_P (%)	52
Liquidity Index, $I_L = \frac{w_n - w_P}{w_L - w_P}$	0.21
Plasticity Chart Classification	% Points ± A-Line 12.0 CH

Note: (1) Liquid Limit $= w\left(\frac{N}{25}\right)^{0.121}$
(2) Using Least Squares Fitting Method

Tested By PT Computed By DJ Reviewed By [illegible]

Remarks _____

[illegible] 1/27/92

LIQUID AND PLASTIC LIMITS

L-101 (10/87)

Project No. 89MC114V Project Engineer _____ Date of Test 12-14-91

Sample No. TR0004 1 00L 00G

Initial Visual Classification CH-CL

Sample Preparation	☑ Natural State ☐ Air dried ☐ Oven dried	Mixed and Cured for: ☐ No ☑ Yes ☑ Overnight ☐ Other _____	Passed through No. 40 Sieve ☐ No ☑ Yes ☐ Other _____

	NATURAL WATER CONTENT		PLASTIC LIMIT		
DETERMINATION NO.	1	2	1	2	3
CONTAINER NO.	LA 128		S119	S113	
Wgt. CONTAINER + WET SOIL (gm)	99.86		26.29	27.56	
Wgt. CONTAINER + DRY SOIL (gm)	82.00		24.13	25.04	
Wgt. CONTAINER (gm)	33.92		15.35	15.38	
WATER CONTENT (%)	37.15		24.60	26.09	
			Average Plastic Limit (%)		25.34 %

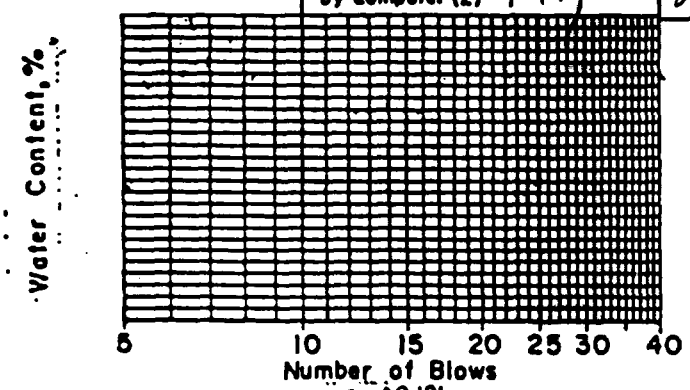
LIQUID LIMIT Grooving Tool Used: ☑ Casagrande; ☐ ASTM; Apparatus No. D

DETERMINATION NO.	1	2	3	4
CONTAINER NO.	110	138	213	
Wgt. CONTAINER + WET SOIL (gm)	31.63	33.57	34.45	
Wgt. CONTAINER + DRY SOIL (gm)	26.65	26.58	26.79	
Wgt. Container (gm)	19.76	17.32	17.04	
WATER CONTENT, W (%)	72.3	75.5	78.6	
NO. OF BLOWS, N	31	25	17	
LIQUID LIMIT FROM A.S.T.M NOMOGRAPH (1)	74.2	75.5	75.0	
		Average Liquid Limit by ASTM (%)		74.9

FLOW CURVE

Liquid Limit by Computer (2) = 74.9 %

REG. COEFF. 0.970



Summary	
Nat. Water Content w_n (%)	37.1
Liquid Limit, w_L (%)	75
Plastic Limit, w_P (%)	25
Plasticity Index, I_P (%)	50
Liquidity Index, $I_L = \frac{W_n - W_p}{W_L - W_p}$	0.242
Plasticity Chart % Points ± A-Line Classification	+9.85 CH

Note: (1) Liquid Limit $= w\left(\frac{N}{25}\right)^{0.121}$

(2) Using Least Squares Fitting Method

Tested By PT Computed By [signature] Reviewed By [signature]

Remarks _____

1/22/92

LIQUID AND PLASTIC LIMITS

L-101 (10/87)

Project No. 89MC114V Project Engineer _____ Date of Test 12-14-91

Sample No. TR00051 00M 00G

Initial Visual Classification CH-CL

Sample Preparation	☑ Natural State ☐ Air dried ☐ Oven dried	Mixed and Cured for: ☐ No ☑ Yes ☑ Overnight ☐ Other _____	Passed through No. 40 Sieve ☐ No ☑ Yes ☐ Other _____

NATURAL WATER CONTENT

DETERMINATION NO.	1	2
CONTAINER NO.	LA204	
Wgt. CONTAINER + WET SOIL (gm)	64.06	
Wgt. CONTAINER + DRY SOIL (gm)	55.83	
Wgt. CONTAINER (gm)	33.17	
WATER CONTENT (%)	36.32	

PLASTIC LIMIT

1	2	3
148	145	
28.96	27.90	
26.20	25.56	
16.08	16.77	
27.27	26.62	
Average Plastic Limit (%)		26.95 %

LIQUID LIMIT

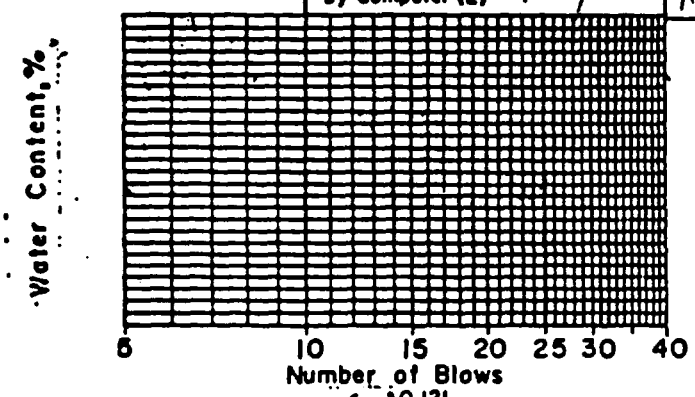
Grooving Tool Used: ☑ Casagrande; ☐ ASTM; Apparatus No. D

DETERMINATION NO.	1	2	3	4
CONTAINER NO.	211	240	83	
Wgt. CONTAINER + WET SOIL (gm)	29.87	32.50	34.32	
Wgt. CONTAINER + DRY SOIL (gm)	24.27	26.37	26.43	
Wgt. Container (gm)	16.92	18.61	16.91	
WATER CONTENT, W (%)	76.2	79.0	82.9	
NO. OF BLOWS, N	34	24	15	
LIQUID LIMIT FROM A.S.T.M NOMOGRAPH (1)	79.1	78.6	77.9	
Average Liquid Limit by ASTM (%)				78.5

REG. COEFF.

FLOW CURVE

Liquid Limit by Computer (2) 78.7 % 1.000



Summary	
Nat. Water Content w_n (%)	36.3
Liquid Limit, w_L (%)	79
Plastic Limit, w_P (%)	27
Plasticity Index, I_P (%)	52
Liquidity Index, I_L $= \frac{W_n - W_P}{W_L - W_P}$	0.179
Plasticity Chart % Points ± A-Line Classification	CH

Note: (1) Liquid Limit $= w\left(\frac{N}{25}\right)^{0.121}$

(2) Using Least Squares Fitting Method

Tested By PT Computed By DT Reviewed By _____

Remarks _____

1/27/92

LIQUID AND PLASTIC LIMITS

L-101
(10/87)

Project No. 89MC114V Project Engineer _____ Date of Test 12-14-91
Sample No. TR0003 1 00L 00G
Initial Visual Classification CH-CL Brown very plastic CLAY

Sample Preparation	☑ Natural State ☐ Air dried ☐ Oven dried	Mixed and Cured for: ☐ No ☑ Yes ☑ Overnight ☐ Other _____	Passed through No. 40 Sieve ☐ No ☑ Yes ☐ Other _____

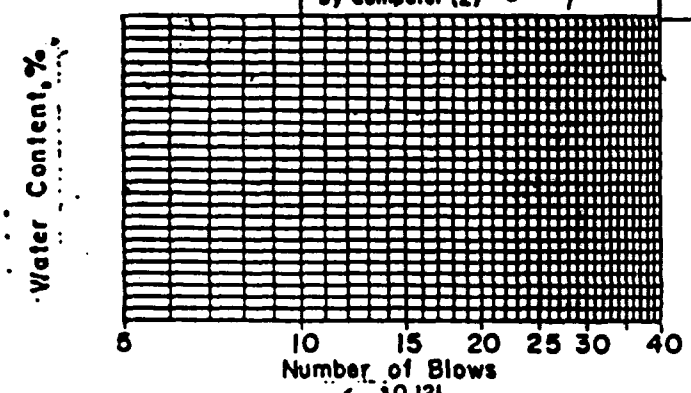
DETERMINATION NO.	NATURAL WATER CONTENT 1	2	PLASTIC LIMIT 1	2	3
CONTAINER NO.	LA210		95	145	
Wgt. CONTAINER + WET SOIL (gm)	85.59		34.34	34.13	
Wgt. CONTAINER + DRY SOIL (gm)	70.98		30.50	30.15	
Wgt. CONTAINER (gm)	33.01		16.94	16.77	
WATER CONTENT (%)	38.48		28.32	29.75	
			Average Plastic Limit (%)		29.03 %

LIQUID LIMIT Grooving Tool Used: ☑ Casagrande; ☐ ASTM; Apparatus No. D

DETERMINATION NO.	1	2	3	4
CONTAINER NO.	246	78	97	
Wgt. CONTAINER + WET SOIL (gm)	33.59	32.87	32.49	
Wgt. CONTAINER + DRY SOIL (gm)	26.74	25.41	25.02	
Wgt. Container (gm)	18.67	17.09	16.93	
WATER CONTENT, W (%)	84.9	89.7	92.3	
NO. OF BLOWS, N	34	24	16	
LIQUID LIMIT FROM A.S.T.M NOMOGRAPH (1)	88.1	89.2	87.5	
		Average Liquid Limit by ASTM (%)		88.3

FLOW CURVE

Liquid Limit by Computer (2) 88.4 % REG. COEFF. 0.958



Summary	
Nat. Water Content w_n (%)	38.5
Liquid Limit, w_L (%)	88
Plastic Limit, w_P (%)	29
Plasticity Index, I_P (%)	59
Liquidity Index, $I_L = \frac{W_n - W_p}{W_L - W_p}$	0.161
Plasticity Chart % Points ± A-Line Classification	C.H
	-9.36

Note: (1) Liquid Limit $= w\left(\frac{N}{25}\right)^{0.121}$
(2) Using Least Squares Fitting Method

Tested By PT Computed By DJ Reviewed By [signature]

Remarks _____

[signature] 1/28/92

LIQUID AND PLASTIC LIMITS

L-101 (10/87)

Project No. 89MC114V Project Engineer _____ Date of Test 12-14-91

Sample No. TR0002 1 00M 00G

Initial Visual Classification CH-CL BROWN very plastic CLAY

Sample Preparation	☒ Natural State ☐ Air dried ☐ Oven dried	Mixed and Cured for: ☐ No ☒ Yes ☒ Overnight ☐ Other _____	Passed through No. 40 Sieve ☐ No ☒ Yes ☐ Other _____

NATURAL WATER CONTENT

DETERMINATION NO.	1	2
CONTAINER NO.	LA 201	
Wgt. CONTAINER + WET SOIL (gm)	77.62	
Wgt. CONTAINER + DRY SOIL (gm)	65.21	
Wgt. CONTAINER (gm)	33.03	
WATER CONTENT (%)	38.56	

PLASTIC LIMIT

1	2	3
147	5120	
32.91	28.56	
29.44	25.58	
17.21	15.23	
28.37	28.79	
Average Plastic Limit (%)		28.58 %

LIQUID LIMIT

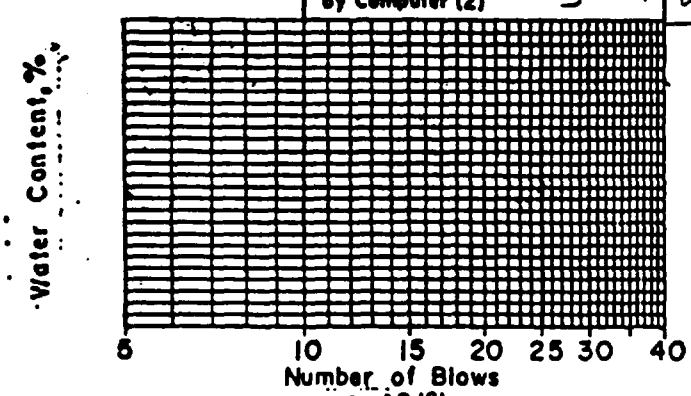
Grooving Tool Used: ☒ Casagrande; ☐ ASTM; Apparatus No. D

DETERMINATION NO.	1	2	3	4
CONTAINER NO.	5100	5108	207	
Wgt. CONTAINER + WET SOIL (gm)	26.98	32.73	35.61	
Wgt. CONTAINER + DRY SOIL (gm)	21.61	24.56	26.58	
Wgt. Container (gm)	15.36	15.34	17.00	
WATER CONTENT, W (%)	85.9	88.6	94.3	
NO. OF BLOWS, N	29	21	15	
LIQUID LIMIT FROM A.S.T.M NOMOGRAPH (1)	87.5	86.8	88.6	
Average Liquid Limit by ASTM (%)				87.6

REG. COEFF.

Liquid Limit by Computer (2) 87.3 % 0.964

FLOW CURVE



Summary	
Nat. Water Content w_n (%)	38.6
Liquid Limit, w_L (%)	87
Plastic Limit, w_P (%)	29
Plasticity Index, I_P (%)	~~58~~ 59
Liquidity Index, I_L $= \frac{w_n - w_P}{w_L - w_P}$	0.166
Plasticity Chart % Points ± A-Line Classification	CH

Note: (1) Liquid Limit $= w\left(\frac{N}{25}\right)^{0.121}$

(2) Using Least Squares Fitting Method

Tested By PT Computed By DT Reviewed By _____

Remarks _____

✓ WJC 1/27/92

LIQUID AND PLASTIC LIMITS

L-101
(10/87)

Project No. 89MC114V Project Engineer _____ Date of Test 01-05-92
Sample No. TR0010100KG
Initial Visual Classification DARK BROWN very plastic CLAY
CL

Sample Preparation	☑ Natural State ☐ Air dried ☐ Oven dried	Mixed and Cured for: ☐ No ☑ Yes ☑ Overnight ☐ Other _____	Passed through No. 40 Sieve ☐ No ☑ Yes ☐ Other _____

NATURAL WATER CONTENT

DETERMINATION NO.	1	2
CONTAINER NO.	L-62	
Wgt. CONTAINER + WET SOIL (gm)	110.07	
Wgt. CONTAINER + DRY SOIL (gm)	99.53	
Wgt. CONTAINER (gm)	62.29	
WATER CONTENT (%)	28.30	

PLASTIC LIMIT

1	2	3
109	149	
35.63	28.11	
32.80	26.11	
19.76	16.92	
21.70	21.76	
Average Plastic Limit (%)		21.73 %

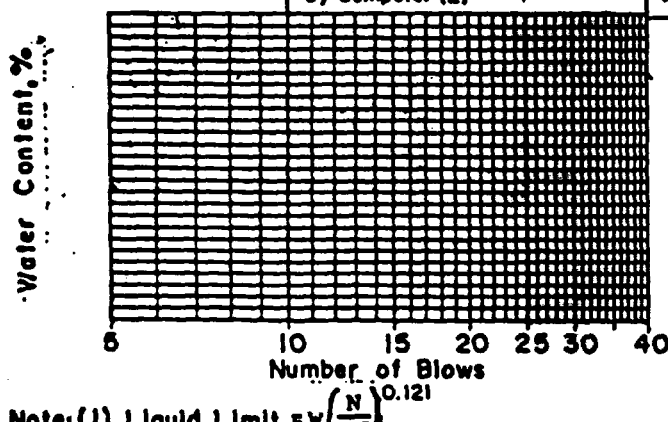
LIQUID LIMIT Grooving Tool Used: ☑ Casagrande; ☐ ASTM; Apparatus No E

DETERMINATION NO.	1	2	3	4
CONTAINER NO.	206	78	135	
Wgt. CONTAINER + WET SOIL (gm)	34.22	37.51	33.06	
Wgt. CONTAINER + DRY SOIL (gm)	28.70	30.05	27.05	
Wgt. Container (gm)	17.06	17.09	16.92	
WATER CONTENT, w (%)	55.4	57.6	59.3	
NO. OF BLOWS, N	32	26	17	
LIQUID LIMIT FROM A.S.T.M NOMOGRAPH (1)	57.1	57.8	56.6	
		Average Liquid Limit by ASTM (%)		57.2

REG. COEFF.

FLOW CURVE

Liquid Limit by Computer (2) 57.2 % 0.939



Summary	
Nat. Water Content w_n (%)	28.3
Liquid Limit, w_L (%)	57
Plastic Limit, w_P (%)	22
Plasticity Index, I_P (%)	35
Liquidity Index, $I_L = \frac{w_n - w_P}{w_L - w_P}$	0.180
Plasticity Chart % Points ± A-Line Classification ±7.88	CH

Note: (1) Liquid Limit $= w\left(\frac{N}{25}\right)^{0.121}$
(2) Using Least Squares Fitting Method

Tested By PT Computed By D Reviewed By D

Remarks _____

V. Lex 1/27/92

LIQUID AND PLASTIC LIMITS

L-101

(10/87)

Project No. 89MC114V Project Engineer _____ Date of Test 12-14-91

Sample No. TR0001 1 00L 00G

Initial Visual Classification CH-CL DARK BROWN plastic CLAY

Sample Preparation	☒ Natural State ☐ Air dried ☐ Oven dried	Mixed and Cured for: ☐ No ☒ Yes ☒ Overnight ☐ Other _____	Passed through No. 40 Sieve ☐ No ☒ Yes ☐ Other _____

NATURAL WATER CONTENT

DETERMINATION NO.	1	2
CONTAINER NO.	LB-20	
Wgt. CONTAINER + WET SOIL (gm)	71.79	
Wgt. CONTAINER + DRY SOIL (gm)	62.24	
Wgt. CONTAINER (gm)	33.17	
WATER CONTENT (%)	32.85	

PLASTIC LIMIT

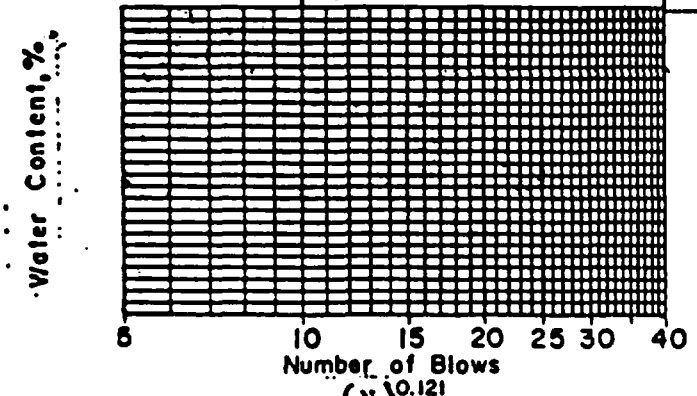
1	2	3
305	96	
35.54	29.23	
32.36	26.67	
20.35	16.97	
26.48	26.39	
Average Plastic Limit (%)		26.43 %

LIQUID LIMIT Grooving Tool Used: ☒ Casagrande; ☐ ASTM; Apparatus No. D

DETERMINATION NO.	1	2	3	4
CONTAINER NO.	236	304	S114	
Wgt. CONTAINER + WET SOIL (gm)	35.04	35.41	34.60	
Wgt. CONTAINER + DRY SOIL (gm)	28.26	28.96	26.20	
Wgt. Container (gm)	18.74	20.13	15.28	
WATER CONTENT, W (%)	71.2	73.0	76.9	
NO. OF BLOWS, N	33	26	17	
LIQUID LIMIT FROM A.S.T.M NOMOGRAPH (1)	73.7	73.4	73.4	
		Average Liquid Limit by ASTM (%)		73.5

FLOW CURVE

Liquid Limit by Computer (2) = 73.5 % REG. COEFF. 0.998



Summary	
Nat. Water Content w_n (%)	32.9
Liquid Limit, w_L (%)	74
Plastic Limit, w_P (%)	26
Plasticity Index, I_P (%)	~~48~~ 47
Liquidity Index, I_L = $\frac{W_n - W_p}{W_L - W_p}$	0.144
Plasticity Chart % Points ± A-Line Classification	CH

Rounding error

Note: (1) Liquid Limit $= w\left(\frac{N}{25}\right)^{0.121}$

(2) Using Least Squares Fitting Method

Tested By PT Computed By PT Reviewed By [signature]

Remarks _____

✓ ER 1/22/92

LIQUID AND PLASTIC LIMITS

L-101
(10/87)

Project No. 89MC114V Project Engineer _____ Date of Test 01-05-92
Sample No. TR 0007 / 00 KG
Initial Visual Classification Black very plastic Clay
CL

Sample Preparation	☑ Natural State ☐ Air dried ☐ Oven dried	Mixed and Cured for: ☐ No ☑ Yes ☑ Overnight ☐ Other _____	Passed through No. 40 Sieve ☐ No ☑ Yes ☐ Other _____

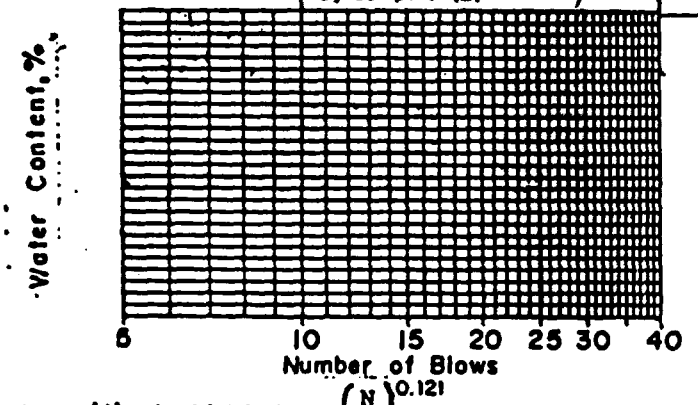
	NATURAL WATER CONTENT		PLASTIC LIMIT		
DETERMINATION NO.	1	2	1	2	3
CONTAINER NO.		L-58	83	99	228
Wgt. CONTAINER + WET SOIL (gm)		97.14	32.05	31.40	29.38
Wgt. CONTAINER + DRY SOIL (gm)		87.03	28.57	27.90	26.78
Wgt. CONTAINER (gm)		61.52	16.91	16.63	18.41
WATER CONTENT (%)		39.63	29.85	31.06	31.06
		5?	Average Plastic Limit (%)		30.66 %

LIQUID LIMIT Grooving Tool Used: ☑ Casagrande; ☐ ASTM; Apparatus No. E

DETERMINATION NO.	1	2	3	4
CONTAINER NO.	S103	S111	S117	
Wgt. CONTAINER + WET SOIL (gm)	32.01	29.44	32.08	
Wgt. CONTAINER + DRY SOIL (gm)	24.59	23.07	24.35	
Wgt. Container (gm)	15.34	15.35	15.30	
WATER CONTENT, W (%)	80.2	82.5	85.4	
NO. OF BLOWS, N	33	25	19	
LIQUID LIMIT FROM A.S.T.M NOMOGRAPH (1)	83.0	82.5	82.6	
		Average Liquid Limit by ASTM (%)		82.7

FLOW CURVE

Liquid Limit by Computer (2) = 82.7 % REG. COEFF. 0.995



Summary	
Nat. Water Content w_n (%)	39.6
Liquid Limit, w_L (%)	83
Plastic Limit, w_P (%)	31
Plasticity Index, I_P (%)	52
Liquidity Index, $I_L = \frac{W_n - W_p}{W_L - W_p}$	0.165
Plasticity Chart Classification % Points ± A-Line +6.01	CH

Note: (1) Liquid Limit $= w\left(\frac{N}{25}\right)^{0.121}$
(2) Using Least Squares Fitting Method

Tested By PT Computed By DT Reviewed By CH

Remarks _____

✓ WEK 1/27/92

LIQUID AND PLASTIC LIMITS

L-101
(10/87)

Project No. 89MC114V Project Engineer _____ Date of Test 01-05-92
Sample No. TR0006 100MG
Initial Visual Classification Black/GRAY very plastic organic sandy Clay

Sample Preparation	☑ Natural State ☐ Air dried ☐ Oven dried	Mixed and Cured for: ☐ No ☑ Yes ☑ Overnight ☐ Other _____	Passed through No. 40 Sieve ☐ No ☑ Yes ☐ Other _____

NATURAL WATER CONTENT

DETERMINATION NO.	1	2
CONTAINER NO.	L-53	
Wgt. CONTAINER + WET SOIL (gm)	113.29	
Wgt. CONTAINER + DRY SOIL (gm)	98.64	
Wgt. CONTAINER (gm)	61.55	
WATER CONTENT (%)	39.50	

PLASTIC LIMIT

1	2	3
907	89	
29.45	27.64	
26.86	25.49	
17.00	16.93	
26.27	25.12	
Average Plastic Limit (%)		25.69 %

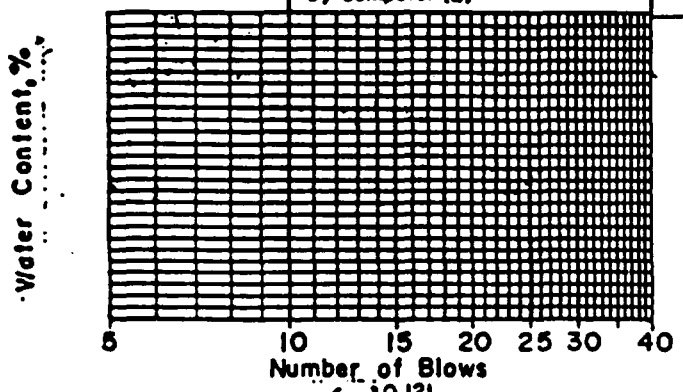
LIQUID LIMIT Grooving Tool Used: ☐ Casagrande; ☐ ASTM; Apparatus No. E

DETERMINATION NO.	1	2	3	4
CONTAINER NO.	5113	138	240	
Wgt. CONTAINER + WET SOIL (gm)	29.95	31.32	39.76	
Wgt. CONTAINER + DRY SOIL (gm)	23.92	25.41	30.74	
Wgt. Container (gm)	15.38	17.32	18.61	
WATER CONTENT, W (%)	70.6	73.1	74.4	
NO. OF BLOWS, N	34	28	22	
LIQUID LIMIT FROM A.S.T.M NOMOGRAPH (1)	73.3	74.1	73.2	
Average Liquid Limit by ASTM (%)				73.5

REG. COEFF.

FLOW CURVE

Liquid Limit by Computer (2) 73.5 % 0.546



Summary	
Nat. Water Content w_n (%)	39.5
Liquid Limit, w_L (%)	74
Plastic Limit, w_P (%)	26
Plasticity Index, I_P (%)	48
Liquidity Index, I_L $= \frac{w_n - w_P}{w_L - w_P}$	0.281
Plasticity Chart % Points ± A-Line 8.5 Classification	CH-OH

Note: (1) Liquid Limit $= w\left(\frac{N}{25}\right)^{0.121}$
(2) Using Least Squares Fitting Method

Tested By PJ Computed By _____ Reviewed By _____

Remarks _____

✓ 1/27/92

LIQUID AND PLASTIC LIMITS

L-101
(10/87)

Project No. 89MC114V Project Engineer _____ Date of Test 01-05-92
Sample No. TR 0009 100 KG
Initial Visual Classification Dry/Black plastic CLAY, tr. some f. sand

Sample Preparation	☑ Natural State ☐ Air dried ☐ Oven dried	Mixed and Cured for: ☐ No ☑ Yes ☑ Overnight ☐ Other _____	Passed through No. 40 Sieve ☐ No ☑ Yes ☐ Other _____

NATURAL WATER CONTENT

DETERMINATION NO.	1	2
CONTAINER NO.		S122
Wgt. CONTAINER + WET SOIL (gm)		43.54
Wgt. CONTAINER + DRY SOIL (gm)		35.81
Wgt. CONTAINER (gm)		15.22
WATER CONTENT (%)		37.54

PLASTIC LIMIT

1	2	3
127	75	
28.55	31.51	
26.23	28.39	
17.24	16.41	
25.81	26.04	
Average Plastic Limit (%)		25.92 %

LIQUID LIMIT

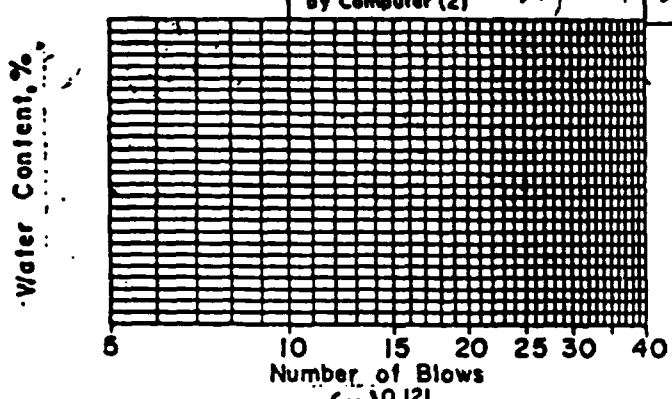
Grooving Tool Used: ☑ Casagrande; ☐ ASTM; Apparatus No. E

DETERMINATION NO.	1	2	3	4
CONTAINER NO.	231	246	236	
Wgt. CONTAINER + WET SOIL (gm)	33.09	36.20	39.37	
Wgt. CONTAINER + DRY SOIL (gm)	26.97	28.66	30.32	
Wgt. Container (gm)	18.74	18.67	18.74	
WATER CONTENT, w (%)	74.4	75.5	78.2	
NO. OF BLOWS, N	34	28	22	
LIQUID LIMIT FROM A.S.T.M NOMOGRAPH (1)	77.2	76.5	77.0	
Average Liquid Limit by ASTM (%)				76.7

REG. COEFF.

Liquid Limit by Computer (2) 76.9 % 0.971

FLOW CURVE



Summary	
Nat. Water Content w_n (%)	37.5
Liquid Limit, w_L (%)	77
Plastic Limit, w_P (%)	26
Plasticity Index, I_P (%)	51
Liquidity Index, I_L $= \frac{w_n - w_P}{w_L - w_P}$	0.225
Plasticity Chart Classification	CH

Note: (1) Liquid Limit $= w\left(\frac{N}{25}\right)^{0.121}$
(2) Using Least Squares Fitting Method

Tested By PT Computed By _____ Reviewed By _____
Remarks _____

✓ 11/22/92

LIQUID AND PLASTIC LIMITS

L-101
(10/87)

Project No. 89MC114V Project Engineer _____ Date of Test 01-05-92
Sample No. TR0008100LG
Initial Visual Classification Black organic plastic Clay CL

Sample Preparation	☑ Natural State ☐ Air dried ☐ Oven dried	Mixed and Cured for: ☐ No ☐ Yes ☑ Overnight ☐ Other _____	Passed through No. 40 Sieve ☐ No ☑ Yes ☐ Other _____

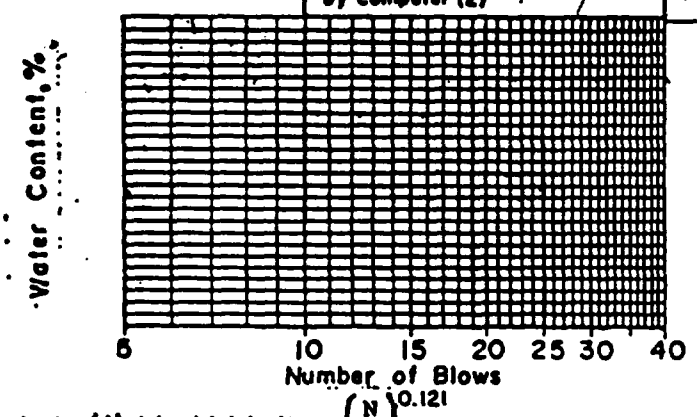
	NATURAL WATER CONTENT		PLASTIC LIMIT		
DETERMINATION NO.	1	2	1	2	3
CONTAINER NO.	J-12		211	96	
Wgt. CONTAINER + WET SOIL (gm)	97.72		31.97	28.56	
Wgt. CONTAINER + DRY SOIL (gm)	86.22		28.58	25.90	
Wgt. CONTAINER (gm)	57.08		16.92	16.97	
WATER CONTENT (%)	39.46		29.07	29.79	
			Average Plastic Limit (%)		29.43 %

LIQUID LIMIT Grooving Tool Used: ☑ Casagrande; ☐ ASTM; Apparatus No. E

DETERMINATION NO.	1	2	3	4
CONTAINER NO.	145	S118	95	
Wgt. CONTAINER + WET SOIL (gm)	30.69	30.81	34.08	
Wgt. CONTAINER + DRY SOIL (gm)	24.73	24.06	26.62	
Wgt. Container (gm)	16.77	15.25	16.94	
WATER CONTENT, W (%)	74.9	76.6	77.1	
NO. OF BLOWS, N	30	23	18	
LIQUID LIMIT FROM A.S.T.M NOMOGRAPH (1)	76.5	75.8	74.1	
		Average Liquid Limit by ASTM (%)		75.5

FLOW CURVE

Liquid Limit by Computer (2) 75.9 % REG. COEFF. 0.909



Summary	
Nat. Water Content w_n (%)	39.5
Liquid Limit, w_L (%)	76
Plastic Limit, w_P (%)	29
Plasticity Index, I_P (%)	~~47~~ 46
Liquidity Index, I_L $= \frac{w_n - w_p}{w_L - w_p}$	0.223
Plasticity Chart % Points ± A-Line Classification	+6.12

Note: (1) Liquid Limit $= w\left(\frac{N}{25}\right)^{0.121}$
(2) Using Least Squares Fitting Method

Tested By PT Computed By DJ Reviewed By [illegible]
Remarks _____

[illegible] 1/27/92

WATER CONTENT

Project No.: 89MC114V Project Eng.: KH Set-up by: PT Weighed by: _____ Calculated by: PT Date Set-up: 12/16/ Reviewed by: _____

Sample ID	BV0001100J00G	BV0001100K00G	BV0001100L00G	BV0001100M00G	BV0001100N00G	BV0001100T00G
Unified Soil Classif. Group Symbol (visual)	GP-SP'	CL-CH		CL	SM-ML	SP
Container No.	LC-2	107	See PI	135	75	LB11
Wgt. Container + Wet Soil (gm)	141.13	58.56		49.53	57.55	115.12
Wgt. Container + Dry Soil (gm)	125.29	49.53		39.57	47.74	107.06
Wgt. Container	33.43	19.79		16.92	16.91	33.01
Water Content (%)	17.24	30.36		43.97	31.82	10.88
Oven temp. of other than 110°C						

Sample ID	BV0002100J00G	BV0002100K00G	BV0002100L00G	BV0002100M00G	BV0002100N00G	BV0002100T00G
Unified Soil Classif. Group Symbol (visual)	GP-SP	SC-SP	SP	SP	SP-SO	SP
Container No.	LA 106	LA211	LA-40	LB-2	LA7	LA 219
Wgt. Container + Wet Soil (gm)	164.92	111.93	142.06	164.07	109.05	135.78
Wgt. Container + Dry Soil (gm)	153.50	101.92	131.54	153.88	96.74	127.64
Wgt. Container	40.12	32.96	33.80	34.18	31.28	33.17
Water Content (%)	10.07	14.52	10.76	8.51	18.81	8.62
Oven temp. of other than 110°C						

Sample ID	TA0001100J00G	TA0001100K00G	TA0001100L00G	TA0001100M00G	TA0001100N00G	TA0001100T00G
Unified Soil Classif. Group Symbol (visual)	SP	SM-ML	SM	SM	SM	SM
Container No.	M-7	LA 207	LB25	LB20	J-2	L-62
Wgt. Container + Wet Soil (gm)	124.55	116.53	119.67	119.15	138.55	166.20
Wgt. Container + Dry Soil (gm)	111.74	102.71	108.65	110.52	131.62	158.03
Wgt. Container	38.19	32.87	32.99	33.19	57.84	62.29
Water Content (%)	17.42	19.79	14.57	11.16	9.39	8.53
Oven temp. of other than 110°C						

GEOTECHICAL TESTING RESULTS

LIQUID AND PLASTIC LIMITS

WATER CONTENT

Project No.: 89MC114V Project Eng.: KH Set-up by: PT Weighed by: _____ Calculated by: DJ Date Set-up: 12-16-91 Reviewed by: [illegible]

Sample ID	TR0005100J00G	TR0005100K00G	TR0005100L00G	TR0005100M00G	TR0005100N00G	TR0005100T00G
Unified Soil Classif. Group Symbol (visual)	SP	SP	CH-CL		CH-MH	SP
Container No.	LB4	LB-18	LB14	See PI	LB-34	LA22
Wgt. Container + Wet Soil (gm)	90.77	55.63	69.09		63.88	93.19
Wgt. Container + Dry Soil (gm)	82.10	52.23	58.23		56.19	83.85
Wgt. Container	32.90	32.79	32.72		32.87	33.73
Water Content (%)	17.62	17.49	42.57		32.98	18.64
Oven temp. of other than 110°C						

Sample ID	TR0002100J00G	TR0002100K00G	TR0002100L00G	TR0002100M00G	TR0002100N00G	TR0002100T00G
Unified Soil Classif. Group Symbol (visual)	SP		CH-CL		ML	SP
Container No.	LC-4	See PI	LA121	See PI	LB15	LB27
Wgt. Container + Wet Soil (gm)	81.07		69.31		89.96	77.19
Wgt. Container + Dry Soil (gm)	76.05		60.64		76.53	72.38
Wgt. Container	33.53		34.28		33.02	32.95
Water Content (%)	11.81		32.89		30.87	12.20
Oven temp. of other than 110°C						

Sample ID	TR0001100J00G	TR0001100K00G	TR0001100L00G	TR0001100M00G	TR0001100N00G	TR0001100T00G
Unified Soil Classif. Group Symbol (visual)	GP-SP	CL-ML		CH-CL	CH-CL	SP
Container No.	LB-31	LA 209	See PI	LC-6	M-5	LA 203
Wgt. Container + Wet Soil (gm)	137.27	74.20		76.01	76.05	122.55
Wgt. Container + Dry Soil (gm)	130.34	63.13		65.73	66.08	114.10
Wgt. Container	32.67	32.94		33.67	38.29	32.92
Water Content (%)	7.16	36.67		32.06	35.88	10.41
Oven temp. of other than 110°C						

WATER CONTENT

Project No.: 89MC114V Project Eng.: KH Set-up by: PT Weighed by: _____ Calculated by: DT Reviewed by: [illegible] Date Set-up: 12/17/9

Sample ID	TA0002100J00G	TA0002100K00G	TA0002100L00G	TA0002100M00G	TA0002100N00G	TA0002100T00G
Unified Soil Classif. Group Symbol (visual)	SP	SP	ML-MH	SM		SM
Container No.	J12	L-67	LA40	LA133	See PI	L64
Wgt. Container + Wet Soil (gm)	171.78	198.43	110.88	113.55		188.76
Wgt. Container + Dry Soil (gm)	160.64	177.89	94.34	95.25		173.60
Wgt. Container	57.08	61.89	33.80	34.16		62.06
Water Content (%)	10.76	17.71	27.32	29.96		13.59
Oven temp. of other than 110°C						

Sample ID	TA0003100J00G	TA0003100K00G	TA0003100L00G	TA0003100M00G	TA0003100N00G	TA0003100T00G
Unified Soil Classif. Group Symbol (visual)	SP	SP	MH-ML	SM		CL
Container No.	LB7	L-56	LA7	LB11	See PI	LC-2
Wgt. Container + Wet Soil (gm)	115.11	200.00	97.83	104.69		73.62
Wgt. Container + Dry Soil (gm)	99.72	168.92	83.63	87.84		62.19
Wgt. Container	33.03	61.52	31.28	33.01		33.43
Water Content (%)	23.08	28.94	27.13	30.73		39.74
Oven temp. of other than 110°C						

Sample ID						
Unified Soil Classif. Group Symbol (visual)						
Container No.						
Wgt. Container + Wet Soil (gm)						
Wgt. Container + Dry Soil (gm)						
Wgt. Container						
Water Content (%)						
Oven temp. of other than 110°C						

WATER CONTENT

Project No.: 89MC114V Project Eng.: KH Set-up by: PT Weighed by: _____ Calculated by: [illegible] Date Set-up: 01-05-9[illegible] Reviewed by: [illegible]

Sample ID	TR0006100JG	TR0006100KG	TR0006100LG	TR0006100MG	TR0006100NG	TR0006100TG
Unified Soil Classif. Group Symbol (visual)	GP-SP	GP-SP	GM-SM	See PI	CL	SM
Container No.	LA106	LA120	LB-24		LA-207	LB-7
Wgt. Container + Wet Soil (gm)	114.96	158.94	153.33		82.67	97.35
Wgt. Container + Dry Soil (gm)	102.75	138.91	128.38		68.18	93.39
Wgt. Container	40.12	34.69	33.48		32.87	33.03
Water Content (%)	19.50	19.22	26.29		41.04	6.56
Oven temp. of other than 110°C						

Sample ID	TR0010100JG	TR0010100KG	TR0010100LG	TR0010100MG	TR0010100NG	TR0010100TG
Unified Soil Classif. Group Symbol (visual)	SM-MH	See PI	MH	SP	SP	SP
Container No.	LA130		LB-22	LB-11	LB16	LA210
Wgt. Container + Wet Soil (gm)	117.14		93.77	113.65	118.13	119.26
Wgt. Container + Dry Soil (gm)	107.19		79.23	106.71	113.77	105.41
Wgt. Container	34.29		34.04	33.01	33.13	33.01
Water Content (%)	13.65		32.18	9.42	5.41	19.13
Oven temp. of other than 110°C						

Sample ID						
Unified Soil Classif. Group Symbol (visual)						
Container No.						
Wgt. Container + Wet Soil (gm)						
Wgt. Container + Dry Soil (gm)						
Wgt. Container						
Water Content (%)						
Oven temp. of other than 110°C						

WATER CONTENT

Project No.: 89MC114V Project Eng.: KH Set-up by: PT Weighed by: _____ Calculated by: DJ Date Set-up: 12/16/9_ Reviewed by: [illegible]

Sample ID	TR0003100J00G	TR0003100K00G	TR0003100L00G	TR0003100M00G	TR0003100N00G	TR0003100T00G
Unified Soil Classif. Group Symbol (visual)	GP-GO	CL-OL		CL-ML	SP	SP
Container No.	J12	L-58	See PI	L64	L-67	LB-7
Wgt. Container + Wet Soil (gm)	125.20	109.94		101.33	120.35	108.10
Wgt. Container + Dry Soil (gm)	113.77	97.40		91.02	115.93	97.70
Wgt. Container	57.08	61.52		62.06	61.89	33.03
Water Content (%)	20.16	34.95		35.60	8.18	16.08
Oven temp. of other than 110°C						

Sample ID	TR0004100J00G	TR0004100K00G	TR0004100L00G	TR0004100M00G	TR0004100N00G	TR0004100T00G
Unified Soil Classif. Group Symbol (visual)	SM	CL-ML		SP	SP	SM-SP
Container No.	S106	127	See PI	146	S111	129
Wgt. Container + Wet Soil (gm)	55.61	45.44		65.20	63.31	68.20
Wgt. Container + Dry Soil (gm)	46.55	38.57		55.59	60.52	57.48
Wgt. Container	15.28	17.24		16.81	15.35	16.83
Water Content (%)	28.97	32.21		24.78	6.18	26.37
Oven temp. of other than 110°C						

Sample ID	R0001100J00G	R0001100K00G	R0001100L00G	R0001100M00G	R0001100N00G	R0001100T00G
Unified Soil Classif. Group Symbol (visual)	GP-SP	CL-ML	CL		SM	SP
Container No.	LA220	149	214	See PI	228	LA133
Wgt. Container + Wet Soil (gm)	197.82	50.42	43.74		72.88	185.63
Wgt. Container + Dry Soil (gm)	179.35	40.25	35.91		60.98	162.91
Wgt. Container	33.05	16.92	16.90		18.41	34.16
Water Content (%)	12.62	43.59	41.19		27.95	17.65
Oven temp. of other than 110°C						

GEOTECHICAL TESTING RESULTS

MOISTURE ANALYSIS

WATER CONTENT

Project No.: 89MC114V Project Eng.: KH Set-up by: PT Weighed by: _____ Calculated by: [illegible] Reviewed by: [illegible] Date Set-up: 01-05-9

Sample ID	TR0009100JG	TR0009100KG	TR0009100LG	TR0009100MG	TR0009100NG	TR0009100TG
Unified Soil Classif. Group Symbol (visual)	CL	See PI	SC-CL	SM	SM	SM
Container No.	LA121		LA101	LA29	M-5	LA137
Wgt. Container + Wet Soil (gm)	96.19		117.12	108.89	97.63	113.64
Wgt. Container + Dry Soil (gm)	83.87		104.56	106.29	94.68	95.95
Wgt. Container	34.28		39.36	33.96	38.29	34.17
Water Content (%)	24.84		19.26	3.59	5.23	28.63
Oven temp. of other than 110°C						

Sample ID	TR0008100JG	TR0008100KG	TR0008100LG	TR0008100MG	TR0008100NG	TR0008100TG
Unified Soil Classif. Group Symbol (visual)	GP-SP	MH	See PI	CH-MH	SM-MH	SP
Container No.	LB-20	M-7		LA 211	LA34	LB-2
Wgt. Container + Wet Soil (gm)	162.72	87.32		88.99	97.80	121.56
Wgt. Container + Dry Soil (gm)	149.55	74.58		73.11	83.39	112.21
Wgt. Container	33.17	38.19		32.96	33.70	34.18
Water Content (%)	11.32	35.01		39.55	29.00	11.98
Oven temp. of other than 110°C						

Sample ID	TR0007100JG	TR0007100KG	TR0007100LG	TR0007100MG	TR0007100NG	TR0007100TG
Unified Soil Classif. Group Symbol (visual)	SP-GP	See PI	CL	CL	SM-MH	SP-SM
Container No.	LA 139		LA122	LB-4	LA116	LB18
Wgt. Container + Wet Soil (gm)	119.44		98.74	99.35	120.29	133.08
Wgt. Container + Dry Soil (gm)	110.98		80.57	82.23	99.02	117.35
Wgt. Container	34.39		34.55	32.90	34.36	32.79
Water Content (%)	11.05		39.48	34.71	32.90	18.60
Oven temp. of other than 110°C						

To: Dave Pate

From: Wendy Reinbolt

Office: St. Louis

Date: January 27, 1992

Subject: Data Validation

The data validation has been completed for the geotechnical sample data for NL\TARACORP (Granite City). All of the water content, liquid limit, and plastic limit data has been 100 % validated. The hydrometer analyses were validated using approximately 30 % of the data.

The only things found were a few rounding errors in the plastic index data. All of the errors were within 1 point of the correct answer.

WER:wer

Memorandum **Woodward-Clyde Consultants**

To: Wendy Reinbolt

From: Tom Mottin

Office: St. Louis

Date: 9-16-92

Subject: Lab Test's Validation Findings

At your request I performed validation checks on the NL/Taracorp laboratory test. These laboratory test were for hydrometer and particle-size analyses. The relative samples for these test were MW-103-92; 69.0 - 71.0 ft, MW-104-92; 65.0 -67.0 ft, MW-109-92; 65.0 - 67.0 ft, and MW-111-92; 60.0 -67.0 ft. No errors were found related to the particle-size analyses. However, an error in calculating % Finer (N') was noted in the hydrometer tests for all the samples. The error is the use % Passing Sieve No. 200 in the equation for Ws (Total dry sample weight) instead of the % Passing Sieve No. 10 as indicated and as needed. I notified Paul Dutko at the Clifton lab and he indicated he would send revised values for % Finer (N'). I anticipate that he will send revised Particle-Size Distribution curves along with the revised % Finer values. If he does not, I will contact him again and request these curves.

LABORATORY TESTING ASSIGNMENT AND DATA SUMMARY

DATE	TIME	SAMPLE ID NUMBER				WATER CONTENT	LIQUID LIMIT	PLASTIC LIMIT	PLAS. IND.	USCS SYMBOL	GRADATION (PERCENT PASSING)									
		LOCATION	BORING NO.	DEPTH (FT)	SAMPLE TYPE	%	%	%	%		SIEVE NO 3/4"	3/8"	4	10	20	40	60	100	200	HYDROMETER 2 um
11/21/91	12:40	BV0001	1	00J	00G	17.2														
11/21/91	12:48	BV0001	1	00K	00G	30.4														
11/21/91	12:52	BV0001	1	00L	00G	41.2	77	23	54	CH										
11/21/91	13:00	BV0001	1	00M	00G	44.0				CH									100.0	72
11/21/91	13:05	BV0001	1	00N	00G	31.8				SC					100.0	99.8	99.7	91.3	44.0	20
11/21/91	13:14	BV0001	1	00T	00G	10.9				SP-SM					100.0	99.9	99.5	75.1	9.8	1
11/21/91	14:05	BV0002	1	00J	00G	10.1														
11/21/91	14:12	BV0002	1	00K	00G	14.5														
11/21/91	14:20	BV0002	1	00L	00G	10.8														
11/21/91	14:30	BV0002	1	00M	00G	8.5														
11/21/91	14:45	BV0002	1	00N	00G	18.8														
11/21/91	15:08	BV0002	1	00T	00G	8.6				SP-SM				100.0	99.8	99.1	96.9	69.4	10.6	1
11/22/91	10:15	TA0001	1	00J	00G	17.4														
11/22/91	10:22	TA0001	1	00K	00G	19.8				CH				100.0	99.9	99.8	99.7	93.4	71.3	26
11/22/91	10:28	TA0001	1	00L	00G	14.6				SM					100.0	99.8	96.5	36.5	14.3	7
11/22/91	10:34	TA0001	1	00M	00G	11.2				SP-SM				100.0	99.8	99.8	98.6	38.8	8.1	4
11/22/91	10:38	TA0001	1	00N	00G	9.4				SM				100.0	99.9	99.8	97.0	60.9	28.3	5
11/22/91	10:47	TA0001	1	00T	00G	8.5				SM					100.0	99.8	96.4	32.3	6.2	1
11/22/91	12:40	TA0002	1	00J	00G	10.8														
11/22/91	12:45	TA0002	1	00K	00G	17.7														
11/22/91	12:55	TA0002	1	00L	00G	27.3				CL	100.0	98.3	97.5	96.4	95.6	89.5	80.5	74.7	66.1	19
11/22/91	13:03	TA0002	1	00M	00G	30.0				ML					100.0	99.7	99.1	97.6	81.1	10
11/22/91	13:07	TA0002	1	00N	00G	46.2	77	23	54	CH										
11/22/91	13:15	TA0002	1	00T	00G	13.6				SM					100.0	99.9	99.7	87.4	14.2	4
11/22/91	14:08	TA0003	1	00J	00G	23.1														
11/22/91	14:15	TA0003	1	00K	00G	28.9														
11/22/91	14:18	TA0003	1	00L	00G	27.1				ML		100.0	99.7	99.3	98.7	98.2	97.7	96.4	77.2	12
11/22/91	14:25	TA0003	1	00M	00G	30.7				ML					100.0	99.8	99.5	99.1	72.0	11
11/22/91	14:30	TA0003	1	00N	00G	42.1	76	26	50	CH										
11/22/91	14:40	TA0003	1	00T	00G	39.7				CH				100.0	99.9	99.7	99.5	98.9	93.9	51

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1/27/92

Project No.: 89MC114V File: INDEXSU1.XLS

TABLE _____

LABORATORY TESTING ASSIGNMENT AND DATA SUMMARY

BORING NO.	SAMPLE NO.	DEPTH (ft)	IDENTIFICATION TESTS: WATER CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PLAS. IND.	USCS SYMBOL	SIEVE MINUS NO. 200 (%)	HYDROMETER % MINUS 2 um (%)	SPECIFIC GRAVITY -#4 MATL	TOTAL UNIT WEIGHT (pcf)	PERMEABILTY @ 20C (cm/sec)	STRENGTH: PEAK STRESS (psf)	AXIAL STRAIN @ PEAK STRESS (%)	CONSOL. Method
MW-103-D		69-71					SW-SM	9.0	1.0						
MW-104-92		65-67					SP-SM	11.5	1.0						
MW-109-92		65-67					SW-SM	10.3	1.0						
MW-111-92		60-67					SP-SM	6.5	1.0						

Prepared by: PMD Reviewed by: Date: 9/17/92 Page 1 of 1

SEP 17 '92 14:33 P.2

LABORATORY TESTING ASSIGNMENT AND DATA SUMMARY

DATE	TIME	SAMPLE ID NUMBER				WATER CONTENT	LIQUID LIMIT	PLASTIC LIMIT	PLAS. IND.	USCS SYMBOL	GRADATION (PERCENT PASSING)									
		LOCATION	BORING NO.	DEPTH (FT)	SAMPLE TYPE	%	%	%	%		SIEVE NO 3/4"	3/8"	4	10	20	40	60	100	200	HYDROMETER 2 um
11/18/91	8:50	TR0009	1	00J	00G	24.8														
11/18/91	8:54	TR0009	1	00K	00G	37.5	77	26	51	CH										
11/18/91	8:59	TR0009	1	00L	00G	19.3														
11/18/91	9:05	TR0009	1	00M	00G	3.6				SP-SM					100.0	99.9	98.8	40.6	6.4	2
11/18/91	9:10	TR0009	1	00N	00G	5.2				SP-SM				100.0	99.9	99.7	97.8	53.4	7.2	2
11/18/91	9:25	TR0009	1	00T	00G	28.6				SM					100.0	99.5	97.1	61.4	12.3	4
11/18/91	10:37	TR0008	1	00J	00G	11.3														
11/18/91	10:45	TR0008	1	00K	00G	35.0														
11/18/91	11:00	TR0008	1	00L	00G	39.5	76	29	47	CH										
11/18/91	11:10	TR0008	1	00M	00G	39.6														
11/18/91	11:20	TR0008	1	00N	00G	29.0				ML					100.0	99.6	97.2	92.8	77.0	12
11/18/91	11:30	TR0008	1	00T	00G	12.0				SP				100.0	98.7	63.5	27.3	14.0	3.6	1
11/18/91	13:50	TR0007	1	00J	00G	11.1														
11/18/91	14:15	TR0007	1	00K	00G	39.6	83	31	52	CH										
11/18/91	14:20	TR0007	1	00L	00G	39.5														
11/18/91	14:25	TR0007	1	00M	00G	34.7														
11/18/91	14:35	TR0007	1	00N	00G	32.9				CH				100.0	99.9	99.6	99.6	99.4	74.3	44
11/18/91	14:50	TR0007	1	00T	00G	18.6				SP-SM				100.0	99.9	92.9	32.9	23.0	7.3	2
11/18/91	16:20	TR0006	1	00J	00G	19.5				SM	100.0	96.5	80.1	70.2	62.9	50.4	36.1	29.6	18.8	5
11/18/91	16:30	TR0006	1	00K	00G	19.2														
11/18/91	16:40	TR0006	1	00L	00G	26.3														
11/18/91	16:45	TR0006	1	00M	00G	39.5	74	26	48	CH										
11/18/91	16:55	TR0006	1	00N	00G	41.0														
11/18/91	17:05	TR0006	1	00T	00G	6.6				SM				100.0	99.9	99.8	99.8	75.5	16.3	2
11/15/91	13:40	TR0010	1	00J	00G	13.7														
11/15/91	13:50	TR0010	1	00K	00G	28.3	57	22	35	CH										
11/15/91	13:55	TR0010	1	00L	00G	32.2														
11/15/91	14:05	TR0010	1	00M	00G	9.4				SP-SM				100.0	99.9	98.9	90.8	35.7	5.7	2
11/15/91	14:15	TR0010	1	00N	00G	5.4														
11/15/91	14:25	TR0010	1	00T	00G	19.1				SP-SM				100.0	99.4	85.7	49.7	38.9	8.8	2
11/19/91	11:15	TR0005	1	00J	00G	17.6														
11/19/91	11:20	TR0005	1	00K	00G	17.5				SM	100.0	81.2	69.4	57.1	45.7	36.3	30.3	24.6	18.9	3
11/19/91	11:30	TR0005	1	00L	00G	42.6														

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✓ WER 1/27/92

LABORATORY TESTING ASSIGNMENT AND DATA SUMMARY

DATE	TIME	SAMPLE ID NUMBER				WATER CONTENT	LIQUID LIMIT	PLASTIC LIMIT	PLAS. IND.	USCS SYMBOL	GRADATION (PERCENT PASSING)									
		LOCATION	BORING NO.	DEPTH (FT)	SAMPLE TYPE	%	%	%	%		SIEVE NO									HYDRO-METER 2 um
											3/4"	3/8"	4	10	20	40	60	100	200	
11/19/91	11:35	TR0005	1	00M	00G	36.3	79	27	52	CH										
11/19/91	11:44	TR0005	1	00N	00G	33.0														
11/19/91	11:55	TR0005	1	00T	00G	18.6				SM				100.0	99.9	98.4	84.8	53.1	18.0	2
11/19/91	14:10	TR0002	1	00J	00G	11.8														
11/19/91	14:18	TR0002	1	00K	00G	19.4		NP												
11/19/91	14:25	TR0002	1	00L	00G	32.9														
11/19/91	14:35	TR0002	1	00M	00G	38.6	87	29	58	CH										
11/19/91	15:07	TR0002	1	00N	00G	30.9				CH-ML				100.0	99.9	99.8	99.7	99.5	84.0	13
11/19/91	15:15	TR0002	1	00T	00G	12.2				SP-SM				100.0	99.8	82.3	52.0	33.7	6.1	1
11/20/91	8:45	TR0001	1	00J	00G	7.1														
11/20/91	8:57	TR0001	1	00K	00G	36.7														
11/20/91	9:02	TR0001	1	00L	00G	32.9	74	26	48	CH										
11/20/91	9:10	TR0001	1	00M	00G	32.1														
11/20/91	9:17	TR0001	1	00N	00G	35.9				CH				100.0	99.9	99.9	99.9	99.9	99.9	46
11/20/91	9:27	TR0001	1	00T	00G	10.4				SM					100.0	99.7	99.4	97.2	31.1	4
11/20/91	10:30	TR0003	1	00J	00G	20.2														
11/20/91	10:37	TR0003	1	00K	00G	35.0														
11/20/91	10:47	TR0003	1	00L	00G	38.5	88	29	59	CH										
11/20/91	10:55	TR0003	1	00M	00G	35.6														
11/20/91	11:05	TR0003	1	00N	00G	8.2														
11/20/91	11:15	TR0003	1	00T	00G	16.1														
11/20/91	13:10	TR0004	1	00J	00G	29.0														
11/20/91	13:20	TR0004	1	00K	00G	32.2														
11/20/91	13:25	TR0004	1	00L	00G	37.2	75	25	50	CH										
11/20/91	13:35	TR0004	1	00M	00G	24.8				SM					100.0	99.3	93.1	59.2	45.2	6
11/20/91	13:40	TR0004	1	00N	00G	6.2				SP-SM					100.0	99.9	99.4	48.8	9.8	1
11/20/91	13:50	TR0004	1	00T	00G	26.4				SM				100.0	99.8	96.4	89.2	64.4	20.1	3
11/20/91	15:21	R00001	1	00J	00G	12.6														
11/20/91	15:30	R00001	1	00K	00G	43.6														
11/20/91	15:35	R00001	1	00L	00G	41.2														
11/20/91	15:42	R00001	1	00M	00G	33.7	75	23	52	CH										
11/20/91	15:48	R00001	1	00N	00G	28.0				SM					100.0	99.9	99.8	98.5	48.8	9
11/20/91	15:55	R00001	1	00T	00G	17.7				SP				100.0	99.8	80.1	28.1	13.5	4.2	1

FILE: INDX114V.XLS PROJECT NO.: 89M^114V PREPARED BY : CMT REVIEWED BY : _____ DATE: 1/21/92 PAGE 2 OF 3

✓ 1/27/92

White & Pink Copies:
Ill. Dept. of Public Health
Yellow Copy: Well Contractor
Golden Copy: Well Owner

Monitor **Well Construction Report**

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored X Hole Diam. 10 in. Depth 70 ft
      Buried Slab: Yes___ No X
   b. Driven___ Drive Pipe Diam.___in. Depth___ft
   c. Drilled X Finished in Drift ✓ In Rock___
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Bentonite	57	Surface

2. Well furnishes water for human consumption? Yes___ No X
3. Date well drilled 6-19-92
4. Permanent pump installed? Yes ___ Date_____ No X
   Manufacturer_____ Type_____
   Location_____
   Capacity _____gpm. Depth of setting_____ft.
5. Well top sealed? Yes ✓ No___ Type Concrete
6. Pitless adapter installed? Yes___ No X
   Manufacturer_____ Model No._____
   How attached to casing?_____
7. Well disinfected? Yes___ No X
8. Pump and equipment disinfected Yes___ No___ N/A

IMPORTANT NOTICE

This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller [illegible] License No. 012-007277
10. Well Site Address [illegible]
11. Property Owner [illegible] Well No. MW-12
12. Permit No. MW-111-92 Date Issued_____
13. Location: [illegible] County [illegible]
    Sec. 24
    Twp. 3N
    Rge. 11W

Show location in section plat

14. Water from _____ at depth_____ft to_____ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
2"	SCH 55, S.H.S	60	[illegible]

16. Screen: Diam. 2 in, Length 10' in, Slot Size 10
17. Size hole below casing 10 in. 18. Ground Elev. 414.4 ft msl.
19. Static level ±20 ft below casing top which is ___ft. above ground level. Pumping level ___ft, pumping gpm for ___ hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
Brown Silty Clay	0	12
Brown Mid-Fine Sand	12	70

Continue on separate sheet if necessary.

Signed [illegible] Date [illegible]

White & Pink Copies: (1) Dept. of Public Health
Yellow Copy: Well Contractor
Golden Copy: Well Owner

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS OF WELL COMPLETION AND SENT TO:
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

Monitor Well, Tamcorp Superfund Site
Engineer - Woodward Clyde - St Louis

1. Type of Well
   a. Bored X Hole Diam. 8 in. Depth 71 ft
      Buried Slab: Yes ___ No X
   b. Driven ___ Drive Pipe Diam. ___ in. Depth ___ ft.
   c. Drilled ___ Finished in Drift ___ In Rock ___
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Cement Bentonite	57'	Surface

2. Well furnishes water for human consumption? Yes ___ No X
3. Date well drilled 11-25-91
4. Permanent pump installed? Yes ___ Date ___ No X
   Manufacturer ___ Type ___
   Location ___
   Capacity ___ gpm. Depth of setting ___ ft.
5. Well top sealed? Yes X No ___ Type Locking Seal
6. Pitless adapter installed? Yes ___ No X
   Manufacturer ___ Model No. ___
   How attached to casing? ___
7. Well disinfected? Yes ___ No X
8. Pump and equipment disinfected: Yes ___ No X

IMPORTANT NOTICE

This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE

Do Not Use Felt Pen

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller [illegible] License No. 92-00727
10. Well Site Address [illegible]
11. Property Owner [illegible] Well No. 103-91
12. Permit No. [illegible] Date Issued N/A
13. Location: County [illegible]
    Sec. 24
    Twp. 3 N
    Rge. 10 W

Show location in section plat

14. Water from ___ at depth 26 ft. to ___ ft.

15. Casing and Liner Pipe

Diam. (in)	Kind and Weight	From (ft)	To (ft)
2"	SS Sch 5	60'	Surface

16. Screen: Diam. 2 in. Length 10' Slot Size 10
17. Size hole below casing 8 in. 18. Ground Elev. ___ ft. msl
19. Static level ___ ft. below casing top which is ___ ft. above ground level. Pumping level N/A ft. pumping ___ gpm for ___ hours.

20. Earth Materials Passed Through

	Depth of Top	Depth of Bottom
Black Silty Clay	0	6
Brown Sand	6	39
Gray Silty Fine Sand	39	41
Dark Gray Fine Sand	41	71

Continue on separate sheet if necessary.

Signed [illegible] Date 1-10-92

White & Pink Copies:
Ill. Dept. of Public Health
Yellow Copy: Well Contractor
Golden Copy: Well Owner

Monitor

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

Tamarack Sup. Fund Site
Engineer - Wilbur Clyde Consultants

1. Type of Well
   a. Bored ✓ Hole Diam. 10 in. Depth 70 ft
   Buried Slab: Yes___ No ✓
   b. Driven___ Drive Pipe Diam.___in. Depth___ft
   c. Drilled ✓ Finished in Drift ✓ In Rock___
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Bentonite	57	0

2. Well furnishes water for human consumption? Yes___ No ✓
3. Date well drilled 6-17-92
4. Permanent pump installed? Yes ___ Date___ No ✓
   Manufacturer___ Type___
   Location___
   Capacity ___gpm. Depth of setting___ft.
5. Well top sealed? Yes ✓ No___ Type Cement
6. Pitless adapter installed? Yes___ No ✓
   Manufacturer___ Model No.___
   How attached to casing?___
7. Well disinfected? Yes___ No ✓
8. Pump and equipment disinfected Yes___ No ✓

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PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller D. Meyer Drilling License No. 012-00727
10. Well Site Address NW [illegible]
11. Property Owner [illegible] Well No. [illegible]
12. Permit No. [illegible] Date Issued___
13. Location: County [illegible]
    Sec. 24
    Twp. 3N
    Rge. 10W

Show location in section plat

14. Water from ___ at depth___ft to___ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
2	Sch 40 PVC	60	0

16. Screen: Diam. 2 in, Length 10' in, Slot Size 10
17. Size hole below casing 10 in. 18. Ground Elev. [illegible] ft msl.
19. Static level 20 ft below casing top which is ___ft. above ground level. Pumping level ___ft, pumping gpm for ___ hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
Gray/Black Silt (Fill)	0	12
Brown [illegible] Sand	12	70

Continue on separate sheet if necessary.

Signed [illegible] Date [illegible]

White & Pink Copies:
Ill. Dept. of Public Health
Yellow Copy: Well Contractor
Golden Copy: Well Owner

Monitor

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS
OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

TARACorp Superfund Site
Engineer - Woodward Clyde Consultants

1. Type of Well
   a. Bored ✓ Hole Diam. 10 in. Depth 70 ft
   Buried Slab: Yes___ No ✓
   b. Driven___ Drive Pipe Diam.___in. Depth___ft
   c. Drilled ✓ Finished in Drift ✓ In Rock___
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Bentonite-Cement	57	0

2. Well furnishes water for human consumption? Yes___ No ✓
3. Date well drilled 6-11-92
4. Permanent pump installed? Yes ___ Date_____ No ✓
   Manufacturer_____ Type_____
   Location_____
   Capacity _____gpm. Depth of setting_____ft.
5. Well top sealed? Yes ✓ No___ Type Concrete
6. Pitless adapter installed? Yes___ No ✓
   Manufacturer_____ Model No._____
   How attached to casing?_____
7. Well disinfected? Yes___ No ✓
8. Pump and equipment disinfected Yes___ No ✓

IMPORTANT NOTICE

This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller D. Meyer Company, Inc. License No. 912-0727
10. Well Site Address SW Corner T1N, R4E
11. Property Owner TARACorp Superfund Site Well No. 109-92
12. Permit No. MW-109-92 Date Issued NA
13. Location: County Madison
    Sec. 24
    Twp. 3N
    Rge. 10W

Show location in section plat

14. Water from _____ at depth_____ft to_____ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
2	SCH 80 PVC	60	0

16. Screen: Diam. 2 in, Length 10 ft, Slot Size 10
17. Size hole below casing____in. 18. Ground Elev. 415.7 ft msl.
19. Static level 22 ft below casing top which is ___ft. above ground level. Pumping level ___ft, pumping gpm for ___ hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
Brown Silty Sand	0	12
Brown Med-Fine Sand	12	70

Continue on separate sheet if necessary.

Signed D. C. Meyer Date 8-11-92

WELL DEVELOPMENT

Project: NJ/Taracorp PDFI Well No: MW-111-92
Project No: 89MC114V Date: 6-22-92

WELL MEASUREMENTS

Well inside diameter: 0.167 (2") ft.
Depth of well casing: 68.1 ft.
Initial water level: 21.3 ft. below MP
Measuring point (MP) Top of casing
Fluid well casing volume: 7.6 gal.
Air temperature: 70°
Weather conditions: Sunny - Breezy

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)	21.30									21.20
Time	11:00	11:10	11:20	11:25	12:00	12:15	12:30	12:45	1300	1320
Discharge (Bailers)	1	20	40	61	62	81	115	135	175	205

WATER QUALITY DATA

pH	6.92	7.00	6.91	6.92	6.94	6.96	6.86	6.84	6.96	7.07
Conductivity	1.25	1.21	1.25	1.25	1.23	1.26	1.24	1.22	1.20	1.26
Temperature (C)	21.1	22.6	20.4	20.4	23.0	22.0	21.7	22.0	22.6	22.3
Color	discird	milky	brwn	brwn	brwn	brwn	milky	milky	clear	clear
Odor	none	none	none	none	none	none	none	none	none	none
Turbidity	92	8	475	550	190	130	45	25	4	2

Total discharge: 53 gallons Casing volumes removed: 7
Method of disposal of discharge water: Disposed of onto Taracorp Pile

QUALITY ASSURANCE

Sampling Method: Discharge hose
Method to measure water level: electric water level indicator
Bailer ropes new or cleaned? new
pH meter no: Horiba U-10 Calibrated: 6-23-92 DLP
Conductivity meter no: Horiba U-10 Calibrated: 6-23-92 DLP
Comments: One bailer holds about 0.26 gallons

Collected by: D. L. Pate

MONITORING WELL INSTALLATION REPORT

Well No. MW-111-92

Project NL/Taracorp Superfund Site

Location 1628 Delmar, Granite City, I.

Project No 89MCIIAV

Installed By Layne-Western

Date 6/11-6/19/92 Time

Method of Installation 6 1/4" HSA

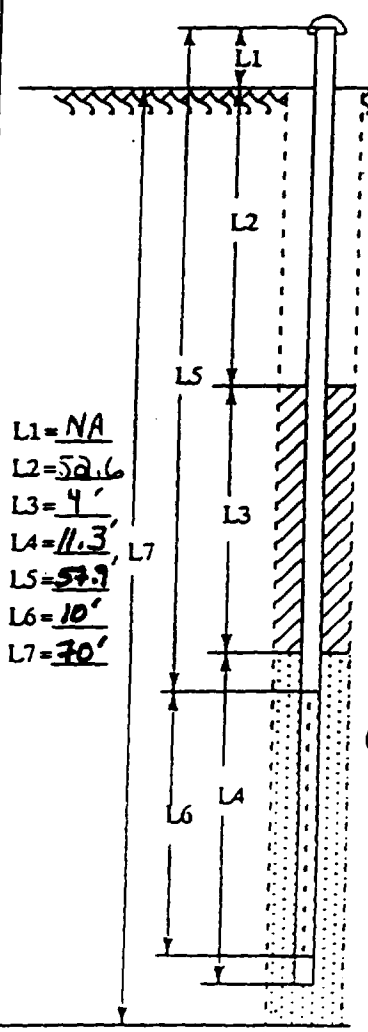
LOG OF BORING AND WELL

BORING		
Depth In Ft.	Description	Symbol

WELL

Type of Well: Monitoring Well

Ground Elev. _____ Top of Riser Elev. 419.40



L1 = NA
L2 = 52.6
L3 = 4'
L4 = 11.3'
L5 = 57.9
L6 = 10'
L7 = 70'

Riser Pipe I.D., in. 2

Type of Pipe: 304 Stainless Steel

Backfill Type Around Riser: Bentonite / Cement Grout

Top of Seal Elevation 366.8

Type of Seal Material: Bentonite Slurry

Top of Filter Elevation 362.8

Type of Filter Material: Colorado 20/40 Silica Sand

Size of Opening, in. 0.01

Diameter of Well Tip, in. 2

Bottom of Screen Elevation 351.75

Bottom of Riser Elevation 351.5

Btm of Boring Elev. 349.4

Diameter of Boring, in. 10

Remarks: Flush-mount protective casing installed. Water Meter Access Cover w/5-sided bolt latch

Protective casing type —

Inspected By: Cynthia Powell

WOODWARD-CLYDE CONSULTANTS

FIGURE NO 2

WELL DEVELOPMENT

Project: NJ/Taracorp PDFI Well No: MW-111-92
Project No: 89MC114V Date: 6-22-92

WELL MEASUREMENTS

Well inside diameter: 0.167 (2") ft.
Depth of well casing: 68.1 ft.
Initial water level: 21.3 ft. below MP
Measuring point (MP) Top of casing
Fluid well casing volume: 7.6 gal.
Air temperature: 70°
Weather conditions: Sunny - Breezy

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)	21.30	surging	21.45	21.45	21.45	21.45	21.45	21.45		
Time	8:00	surging	8:45	8:54	9:02	9:12	9:27	9:40		
Discharge (Gal.)	—	surging	3.6	3.6	3.6	3.6	3.6	3.6		

WATER QUALITY DATA

pH	6.70	surging	7.01	6.95	6.93	6.84	6.64	stop		
Conductivity	1.30	surging	1.27	1.27	1.27	1.27	1.287	stop		
Temperature (C)	21.1	surging	20.7	19.2	19.2	18.8	18.5	stop		
Color	brown	surging	milky	clear	clear	clear	clear	stop		
Odor	none	surging	none	none	none	none	none	stop		
Turbidity	172	surging	999	38	9	0	0	stop		

Total discharge: 200 gallons Casing volumes removed: 26
Method of disposal of discharge water: Disposed of onto Taracorp Pile

QUALITY ASSURANCE

Sampling Method: Discharge hose
Method to measure water level: electric tape
Bailer ropes new or cleaned? new
pH meter no: Horiba U-10 Calibrated: 6-23-92 DLP
Conductivity meter no: Horiba U-10 Calibrated: 6-23-92 DLP
Comments: Surged well 8:00 - 8:45
Stopped pumping at 9:40; resume pumping at 9:55

Collected by: D. L. Pate

WELL DEVELOPMENT

Project: NJ/Taracorp PDFI Well No: MW-111-92
Project No: 89MC114V Date: 6-22-92

WELL MEASUREMENTS

Well inside diameter: 0.167 (2") ft.
Depth of well casing: 68.1 ft.
Initial water level: 21.3 ft. below MP
Measuring point (MP) Top of casing
Fluid well casing volume: 7.6 gal.
Air temperature: 70°
Weather conditions: Sunny - Breezy

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)	21.30	21.45	21.45	21.45	21.35	21.35	stop			
Time	9:55	10:01	10:10	10:20	10:30	10:40	stop			
Discharge (Gal.)	3.8	3.8	3.8	3.8	3.8	3.8	stop			

WATER QUALITY DATA

pH	6.73	6.71	6.84	6.95	6.96	6.96	stop			
Conductivity	1.26	1.26	1.24	1.27	1.28	1.27	stop			
Temperature (C)	20.4	19.3	18.7	18.9	18.7	18.8	stop			
Color	clear	clear	clear	clear	clear	clear	stop			
Odor	none	none	none	none	none	none	stop			
Turbidity	4	26	10	12	0	0	stop			

Total discharge: 170 gallons Casing volumes removed: 22
Method of disposal of discharge water: Disposed of onto Taracorp Pile

QUALITY ASSURANCE

Sampling Method: Discharge hose
Method to measure water level: electric water level indicator
Bailer ropes new or cleaned? new
pH meter no: Horiba U-10 Calibrated: 6-23-92 DLP
Conductivity meter no: Horiba U-10 Calibrated: 6-23-92 DLP
Comments: Stopped to surge @ 1357

Collected by: D. L. Pate

WELL DEVELOPMENT

Project: NJ/Taracorp PDFI Well No: MW-111-92
Project No: 89MC114V Date: 6-22-92

WELL MEASUREMENTS

Well inside diameter: 0.167 (2") ft.
Depth of well casing: 68.1 ft.
Initial water level: 21.3 ft. below MP
Measuring point (MP) Top of casing
Fluid well casing volume: 7.6 gal.
Air temperature: 70°
Weather conditions: Sunny - Breezy

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)		block	at	15 ft						stop
Time	1430	1439	1450	1500	1515	1520	1530	1542	1545	stop
Discharge (Gal.)	3.6	3.6	3.6	3.0		4.5	4.5	4.5		stop

WATER QUALITY DATA

pH	6.90	6.86	6.68	6.59		6.79	6.77	6.68	stop	
Conductivity	1.23	1.28	1.21	1.24	Re	1.22	1.27	1.26	stop	
Temperature (C)	22.3	19.6	22.1	20.6	set	21.0	20.1	20.1	stop	
Color	brown	tan	clear	clear	pump	milky	clear	clear	stop	
Odor	none	—	—		none	—	—	—	stop	
Turbidity	999	480	18	4		50	13	0	stop	

Total discharge: 200 gallons Casing volumes removed: 26
Method of disposal of discharge water: Disposed of onto Taracorp Pile

QUALITY ASSURANCE

Sampling Method: Discharge hose
Method to measure water level: electric tape
Bailer ropes new or cleaned? new
pH meter no: Horiba U-10 Calibrated: 6-22-92 DLP
Conductivity meter no: Horiba U-10 Calibrated: 6-22-92 DLP
Comments:

Collected by: D. L. Pate

WELL DEVELOPMENT

Project: NJ/Taracorp PDFI Well No: MW-111-92
Project No: 89MC114V Date: 6-22-92

WELL MEASUREMENTS

Well inside diameter: 0.167 (2") ft.
Depth of well casing: 68.1 ft.
Initial water level: 21.3 ft. below MP
Measuring point (MP) Top of casing
Fluid well casing volume: 7.6 gal.
Air temperature: 70°
Weather conditions: Sunny - Breezy

SAMPLING MEASUREMENTS

DISCHARGE

Water (ft.BMP)	12.30	block	at	15	feet					
Time	1615	1622	1630	1640	1650	1700	1710	1710	1712	
Discharge (Gal.)	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0	stop	

WATER QUALITY DATA

pH	6.74	6.74	6.78	6.82	6.80	6.70	6.68	stop		
Conductivity	1.26	1.24	1.22	1.22	1.23	1.24	1.28	stop		
Temperature (C)										
Color	brown	milky	clear	clear	clear	clear	clear	stop		
Odor	none	—	—	—	—	—	—	stop		
Turbidity	999	310	160	50	25	22	20	stop		

Total discharge: 200 gallons Casing volumes removed: 26
Method of disposal of discharge water: Disposed of onto Taracorp Pile

QUALITY ASSURANCE

Sampling Method: Discharge hose
Method to measure water level: electric water level indicator
Bailer ropes new or cleaned? new
pH meter no: Horiba U-10 Calibrated: 6-22-92 DLP
Conductivity meter no: Horiba U-10 Calibrated: 6-22-92 DLP
Comments: Stopped to surge @ 1712

Collected by: D. L. Pate

GEOTECHNICAL TESTING RESULTS

SUMMARY

HYDROMETER TEST

4/81

Project No. 89MC114V Project Engineer _____ Date Set up 1/9/92

Sample No. STR0006100JG

Initial Visual Classification ST-GP; Black, gravelly Sand with a trace of silt

Sample Preparation
☐ Oven dried ☐ Air dried ☒ Natural State
Soil broken up by: ☐ Mortar + pestle ☒ Other _____ Soil passing Sieve No. 10
Dispersing Agent:(1) ☒ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☐ Overnight ☐ Other _____
☒ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content	☐ Natural ☐ Air-Dried
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w(%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	
For Wet or Total set up	
W_{wet} = Estimated Ws x (1+w)	
W_{wet} = _____ x(1+ _____)	
W_{wet} = 77.9 (gm)	
After Test-Actual Ws	
Container No.	P-15
Wgt Container + Dispersant + Dry Soil + _____ (gm)	574.63
Wgt Container (gm)	526.48
Wgt Dry Soil + Dispersant + + _____ (gm)	48.15
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	44.15

Soaking Beaker No. ST Graduate No. 7 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/11/92	10:15	0	—	—	—	—	—
		1/2	21.0	10.3	2.8	0.0722	16.5
		1	"	9.6	"	0.0514	14.7
		2	"	9.0	"	0.0365	13.2
		5	"	8.7	"	0.0223	12.4
		10	"	8.0	"	0.0159	10.7
		15	21.1	7.7	3.7	0.0130	10.1
		31	"	6.9	"	0.0091	8.1
		60	21.2	6.3	3.5	0.0066	7.1
		120	"	5.9	"	0.0047	6.1
		241	21.4	5.3	3.0	0.0033	5.8
	18:24	4[illegible]	21.8	5.2	"	0.0023	5.6
[illegible]	11:24	15[illegible]	21.4	5.1	[illegible]	0.0013	4.1

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ Formed
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations: Average temperature used in calculating test, °C = 21.183

☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average

Specific Gravity, G_s = 2.68 ☐ Tested ☒ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 2.537 (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 9.1[illegible]3 $\sqrt{\frac{Zr}{t}}$

Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 $= \frac{(44.15) \times 100}{70.2232} =$ 62.87 (gm)

(1) R = (Reading - 1) 1000

Remarks: [illegible]

Set-up by [illegible] Run by EJ Taken down by EJ Sieved by _____ Calculated by [illegible]

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/10/92

Sample Number STR0006100TG

Initial Visual Classification _____

Shape of Grains				
Gravel Portion:	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded
Sand Portion: (coarse ≈ medium)	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded

Specimen Tested	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:	_____ Sieves - partial sample by method ____
	method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing	_____ Sieves - partial sample by method ____

Sample Preparation		
	☐ Natural state ☐ Air-dried ☐ Oven-dried	Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr	Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes	

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or (1) _____ soil (gm) (2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wad/1 + (wad) = Wad/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range	ALL		-10 + 200
Container Number			14
Wgt Container + Dry Soil (gm)			199.91
Wgt Container (gm)			122.56
Wgt Dry Soil, W_s (gm)			77.35
Wgt Dry Soil From Hydrometer Test (gm)	90.82		

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N°
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total % Finer N°
3/8"			
4			
10	[illegible]		100%
20	[illegible]		99.9
40	[illegible]		99.8
60	[illegible]		99.8
100	[illegible]		75.5
200	75.00		16.3
Pan	[illegible]		

Maximum particle size if greater than 3" _____

Remarks _____

Set-up by [illegible] Washed by [illegible] Sieved by [illegible] Calculated by [illegible] Reviewed by [illegible]

HYDROMETER TEST

4-81

Project No. 89MC114V Project Engineer _____ Date Set up 1/9/92

Sample No. STR0[illegible]6100TG

Initial Visual Classification Sm, Yellow brown, very fine sand with some silt.

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____ Soil passing Sieve No. 10
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☐ Overnight ☐ Other _____
☐ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content	☐ Natural ☐ Air-Dried
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w(%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = 90 x(1+ 10)

W_{wet} = 99 (gm)

After Test-Actual Ws	
Container No.	P-102
Wgt Container + Dispersant + Dry Soil + _____ (gm)	613.58
Wgt Container (gm)	518.76
Wgt Dry Soil + Dispersant + + _____ (gm)	94.82
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	90.82

Soaking Beaker No. G-7 Graduate No. G3 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/11/92	10:38	0	–	–	–	–	–
		1/2	21.1	10.5	3.7	0.0720	11.9
		1	"	6.5	"	0.0526	5.4
		2	"	5.4	"	0.0376	3.0
		6	"	5.0	"	0.0210	2.3
		10	"	4.9	"	0.0163	2.1
		15	"	4.8	"	0.0133	1.9
		30	21.2	4.7	3.5	0.0094	2.1
		60	"	4.4	"	0.0067	1.6
		120	"	4.2	"	0.0047	1.2
	14:58	260	21.8	4.1	3.11	0.0032	1.9
	18:28	470	"	4.1	"	0.0024	1.9
1/12/92	11:26	1488	21.4	4.3	3.5	0.0013	1.4

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ Normed
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations: Average temperature used in calculating test, °C = 21.267 | ☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average | Specific Gravity, G_s = 2.68 ☐ Tested ☒ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 1.756 (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 0.0132 $\sqrt{\frac{Zr}{t}}$

Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 $= \frac{(90.82) \times 100}{100} =$ 90.82 (gm)

(1) R = (Reading - 1) 1000

Remarks: _____

Set-up by EJ Run by EJ Taken down by EJ Sieved by _____ Calculated by [illegible]

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/10/92
Sample Number STR0010100MG
Initial Visual Classification _____

Shape of Grains	
	Gravel Portion: ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded
	Sand Portion: (coarse + medium) ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded

Specimen Tested	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:	_____ Sieves - partial sample by method ____
method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing		_____ Sieves - partial sample by method ____

Sample Preparation	
	☐ Natural state ☐ Air-dried ☐ Oven-dried — Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr — Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wsd/1 + (wsd) = Wsd/_____ (gm)	
Wgt + s/a or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range		-10	-10 + 200
Container Number		P-17	665
Wgt Container + Dry Soil (gm)			245.22
Wgt Container (gm)			148.54
Wgt Dry Soil, W_s (gm)			96.68
Wgt Dry Soil From Hydrometer Test (gm)		101.81	

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total % Finer N'
3/8"			
4			
10	0		100%
20	0.06		99.9
40	1.09		98.8
60	9.35		90.8
100	65.14		35.[illegible]
200	96.71		5.[illegible]
Pan	96.68		

Maximum particle size if greater than 3" _____

Remarks _____

Set-up by ES Washed by ES Sieved by ES Calculated by DT Reviewed by [illegible]

HYDROMETER TEST

4-81

Project No. 89MC114V Project Engineer _____ Date Set up 1/9/95

Sample No. STK0010100MG

Initial Visual Classification SP, Brown fine sand with a trace of silt.

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☐ Other _____ Soil passing Sieve No. 10
Dispersing Agent: (1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☐ Overnight ☐ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content ☐ Natural ☐ Air-Dried	
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = 100 x (1+ 10)

W_{wet} = 110 (gm)

After Test-Actual Ws	
Container No.	P-17
Wgt Container + Dispersant + Dry Soil + _____ (gm)	624.72
Wgt Container (gm)	518.91
Wgt Dry Soil + Dispersant + + _____ (gm)	105.81
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	101.81

Soaking Beaker No. FU Graduate No. 5 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/9/95	10:09	0	—	—	—	—	—
		1/2	22.0	6.5	3.6	0.0741	4.5
		1	"	5.9	"	0.0526	3.6
		2	"	5.4	"	0.0374	2.8
		5	"	5.3	"	0.0228	2.7
		10	"	5.1	"	0.0162	2.4
		15	"	5.0	3.5	0.0128	2.4
		30	"	4.8	"	0.0094	2.0
		60	21.9	4.6	"	0.0066	1.7
		120	21.9	4.3	"	0.0047	1.3
		240	21.7	4.2	3.2	0.0033	1.3
		480	21.5	4.2	3.1	0.0024	1.7
1/10/95	09:13	1524	21.2	4.1	3.3	0.0014	1.3

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ No
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

alculations: Average temperature used in calculating test, °C = 21.82

☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average

Specific Gravity, G_s = 2.68 ☐ Tested ☑ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) = 1.567\ (R-Rw)$ in %

$D = \sqrt{\frac{18\mu}{G_s G_w}}\sqrt{\frac{Zr}{t}} = 0.01322\sqrt{\frac{Zr}{t}}$

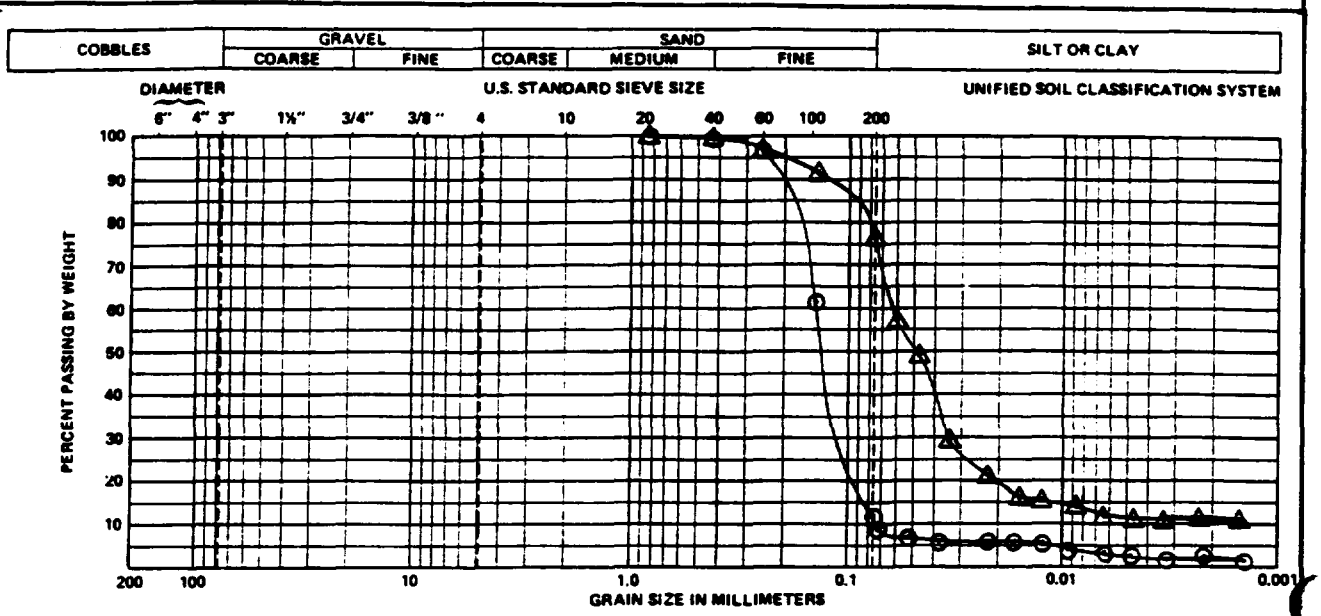
Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 $= \frac{(101.81) \times 100}{100} = 101.81$ (gm)

(1) R = (Reading - 1) 1000

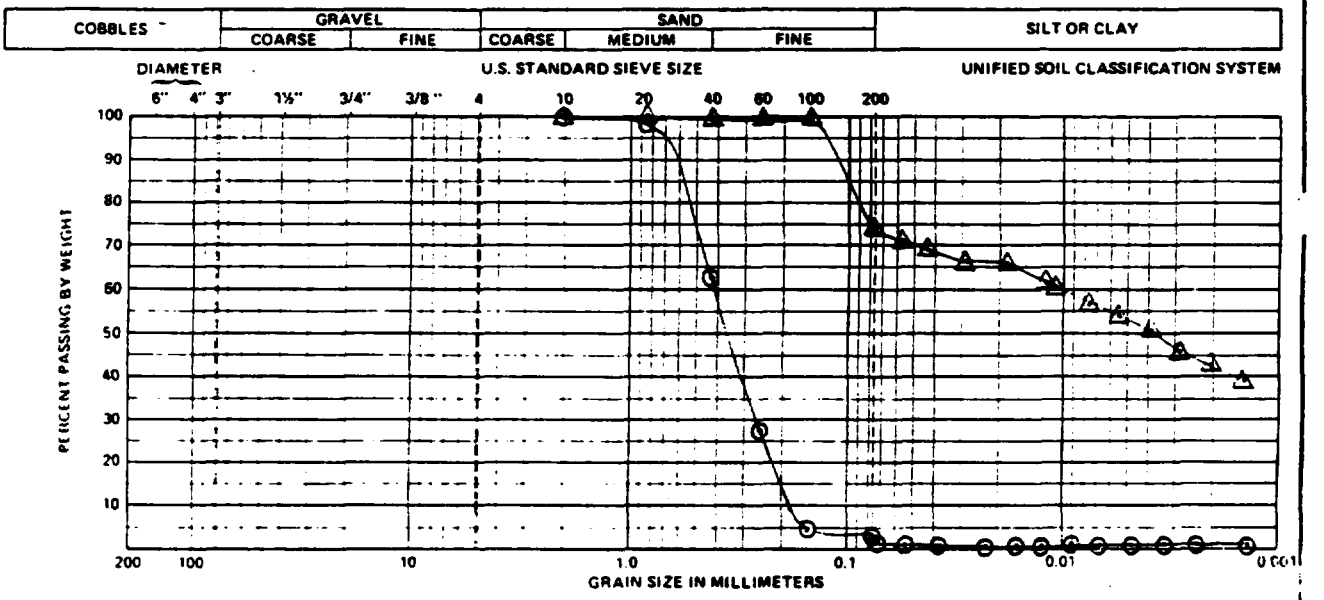
Remarks: _____

Set-up by EJ Run by EJ Taken down by EJ Sieved by _____ Calculated by _____

PARTICLE-SIZE DISTRIBUTION



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w_L (%)	w_P (%)
STR0009	100TG		⊙	SM, brown f. SAND, some Silt; mica noted	28.6		
STR0008	100NG		△	ML, gray-brown slightly plas. clayey SILT, some f. Sand; mica noted	29.0		



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w_L (%)	w_P (%)
STR0008	100TG		⊙	SP, lt. brown m-f SAND, trace Silt	12.0		
STR0007	100NG		△	CH, brown plastic CLAY, some f. Sand	32.9		

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/10/92
Sample Number STR0009100TG
Initial Visual Classification _____

Shape of Grains				
Gravel Portion:	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded
Sand Portion: (coarse + medium)	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded

Specimen Tested	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:	_____ Sieves - partial sample by method ____
method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing		_____ Sieves - partial sample by method ____

Sample Preparation		
	☐ Natural state ☐ Air-dried ☐ Oven-dried	Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab (280) for ____ h.
	Soil soaked ☐ No ☐ Yes, for ____ hr	Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☐ Yes	

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wsd/1 + (wsd) = Wsd/_____ (gm)	
Wgt + 3/8 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

WEIGHT OF TEST SPECIMEN

	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range		-10	-10 + 200
Container Number		P-102	684
Wgt Container + Dry Soil (gm)			195.66
Wgt Container (gm)			123.65
Wgt Dry Soil, W_s (gm)			72.01
Wgt Dry Soil From Hydrometer Test (gm)		81.04	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total Sample % Finer N'
3/8"			
4			
10			
20	0		100%
40	0.40		99.5
60	2.37		97.1
100	31.25		61.4
200	71.11		1.2
Pan	72.12		

Maximum particle size if greater than 3" _____

Remarks _____

Set-up by EJ Washed by EJ Sieved by EJ Calculated by [illegible] Reviewed by [illegible]

HYDROMETER TEST

Project No. 89MC114V Project Engineer _____ Date Set up 11/5/92
Sample No. STK0009100TG
Initial Visual Classification Sm; brown silty fine sand.

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____
Soil passing Sieve No. 10
Dispersing Agent: (1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____
Time Soaked: ☐ Overnight ☐ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content ☐ Natural ☐ Air-Dried	
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws (gm)	

For Wet or _____ set up
W_{wet} = Estimated Ws x (1+w)
W_{wet} = 90 x (1+ .15)
W_{wet} = 103.5 (gm)

After Test-Actual Ws	
Container No.	P-102
Wgt Container + Dispersant + Dry Soil + _____ (gm)	603.96
Wgt Container (gm)	515.92
Wgt Dry Soil + Dispersant + + _____ (gm)	85.04
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	81.04

Soaking Beaker No. G-7 Graduate No. 8 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
11/9/92	09:22	0	—	—	—	—	—
		1/2	22.0	8.1	3.6	0.0730	8.7
		1	"	7.0	"	0.0521	6.7
		2	"	6.7	"	0.0370	6.1
		6	"	6.6	"	0.0206	5.9
		10	"	6.5	3.5	0.0160	5.7
		15	"	6.4	"	0.0130	5.7
		30	"	5.9	"	0.0093	4.7
		64	"	5.7	"	0.0064	4.3
		120	21.9	5.6	"	0.0046	4.1
		241	21.7	5.2	3.1	0.0033	3.5
	15:14	332	21.8	5.2	3.1	0.0022	4.1
11/10/92	8:15	1173	21.2	5.0	3.3	0.0014	3.3

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed ☐ Yes ☐ Omitted	
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations:

Average temperature used in calculating test, °C = 21.7	☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average	Specific Gravity, G_s = 2.68 ☐ Tested ☑ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) = 1.968\ (R-Rw)$ in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} = 0.01323\sqrt{\frac{Zr}{t}}$

Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. _____ = (81.04) x 100 = 21.04 (gm)

(1) R = (Reading - 1) 1000

Remarks: Sand

Set-up by FJ Run by EJ Taken down by FJ Sieved by _____ Calculated by _____

11/27/92

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/10/9-
Sample Number STR0008100NG
Initial Visual Classification _____

Shape of Grains				
Gravel Portion:	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded
Sand Portion: (coarse = medium)	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded

Specimen Tested	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used & obtained by:	_____ Sieves - partial sample by method ____
method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing		_____ Sieves - partial sample by method ____

Sample Preparation		
	☐ Natural state ☐ Air-dried ☐ Oven-dried	Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle, ☐ Other _____, ☐ Pulverizer (Test lab (280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr	Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes	

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wad/1 + (wad) = Wad/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range		-10	-10 + 200
Container Number		T-105	9
Wgt Container + Dry Soil (gm)			137.59
Wgt Container (gm)			121.47
Wgt Dry Soil, W_s (gm)			16.12
Wgt Dry Soil From Hydrometer Test (gm)		63.62	

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total Sample % Finer N'
3/8"			
4			
10			
20	0		100%
40	0.25		99.6
60	1.51		97.2
100	4.57		92.8
200	14.61		77.0
Pan	16.12		

Maximum particle size if greater than 3" _____

Remarks Mica material

Set-up by EJ Washed by _____ Sieved by _____ Calculated by DJ Reviewed by _____

HYDROMETER TEST

4/81

Project No. 89MC114V Project Engineer _____ Date Set up 1/8/92

Sample No. STR0008100NG

Initial Visual Classification SM-SC; [illegible] slightly plastic clayey sand and silty sand.

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____
Soil passing Sieve No. 10
Dispersing Agent: (1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____
Time Soaked: ☐ Overnight ☐ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content ☐ Natural ☐ Air-Dried	
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws (gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = 70 x (1+ 15%)

W_{wet} = 80.5 (gm)

After Test-Actual Ws	
Container No.	P-105
Wgt Container + Dispersant + Dry Soil + _____ (gm)	616.19
Wgt Container (gm)	548.57
Wgt Dry Soil + Dispersant + + _____ (gm)	67.62
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	63.62

Soaking Beaker No. H6 Graduate No. 7 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/8/92	10:15	0	–	–	–	–	–
		1/2	22.0	26.3	3.6	0.0600	56.7
		1	"	20.0	"	0.0457	40.7
		2	"	15.2	"	0.0342	29.2
		5	"	12.0	"	0.0213	21.0
		11	"	10.2	"	0.0146	16.5
		15	"	10.0	3.5	0.0125	16.2
		30	"	9.1	"	0.0088	14.0
		60	"	8.6	"	0.0062	12.7
		120	21.9	8.5	"	0.0045	12.5
		241	21.7	8.0	3.4	0.0032	11.5
	18:13	478	21.8	8.0	3.1	0.0023	12.5
1/10/92	"	1519	21.2	7.6	2.3	0.0014	10.7

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ No
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations:

Average temperature used in calculating test, °C = 21.63	☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average	Specific Gravity, G_s = 2.70 ☐ Tested ☑ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) = 2.496$ (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s G_w}}\sqrt{\frac{Zr}{t}} = 0.01315\sqrt{\frac{Zr}{t}}$

Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 = (63.62) x 100 = 63.62 (gm)

(1) R = (Reading - 1) 1000

Remarks: _____

Set-up by EJ Run by EJ Taken down by EJ Sieved by _____ Calculated by _____

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/9/95

Sample Number STR0008100TG

Initial Visual Classification _____

Shape of Grains				
Gravel Portion:	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded
Sand Portion: (coarse - medium)	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded

Specimen Tested		
	☐ Jar Sample _____ Sieves - whole sample used _____ Sieves - partial sample used + obtained by: method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing	☐ Bag or _____ Sample _____ Sieves - whole sample used _____ Sieves - partial sample by method _____ _____ Sieves - partial sample by method _____

Sample Preparation	
	☐ Natural state ☐ Air-dried ☐ Oven-dried Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or (1) _____ soil (gm) (2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wad/1 + (wad) = Wad/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range	ALL		-10 + 200
Container Number			10
Wgt Container + Dry Soil (gm)			260.69
Wgt Container (gm)			134.24
Wgt Dry Soil, W_s (gm)			126.45
Wgt Dry Soil From Hydrometer Test (gm)	130.90		

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total Sample % Finer N'
3/8"			
4			
10	0		100%
20	1.75		98.7
40	47.79		63.5
60	95.21		27.3
100	112.63		14.0
200	126.18		3.6
Pan	[illegible]		

Maximum particle size if greater than 3" _____

Remarks _____

Set-up by EJ Washed by EJ Sieved by EJ Calculated by DJ Reviewed by [illegible]

HYDROMETER TEST

4/81

Project No. 89MC114V Project Engineer _____ Date Set up 1/2/92

Sample No. STR0008100TG

Initial Visual Classification SP; Light-brown, coarse to fine sand with a trace of silt.

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____ Soil passing Sieve No. 10
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☐ Overnight ☑ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content	☐ Natural ☐ Air-Dried
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = _____ x(1+ _____)

W_{wet} = 151.0 (gm)

After Test-Actual Ws	
Container No.	P-19
Wgt Container + Dispersant + Dry Soil + _____ (gm)	654.81
Wgt Container (gm)	519.91
Wgt Dry Soil + Dispersant + + _____ (gm)	134.9[illegible]
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	130.90

Soaking Beaker No. 1 Graduate No. 5 Hydrometer No. 79-125 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/1/92	10:09	0	—	—	—	—	—
		1/2	21.0	6.1	3.8	0.0749	2.8
		1	"	5.6	"	0.0532	2.2
		2	"	5.2	"	0.0377	1.7
		5	"	5.0		0.0231	1.5
		10	"	5.0	"	0.0163	1.5
		15	"	5.[illegible]		0.0133	1.5
		33	21.1	5.[illegible]	[illegible].7	0.0090	1.6
		62	21.2	4.6	[illegible].5	0.0066	1.3
		121	"	"	"	0.0047	1.3
		241	21.4	4.1	3.0	0.0033	1.3
	18:23	494	21.8	4.0	"	0.0023	1.2
1/2/92	11:23	1514	21.4	4.2	3.5	0.0013	0.9

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ Normal
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations:

Average temperature used in calculating test, °C = 21.175	☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average	Specific Gravity, G_s = 2.68 ☐ Tested ☒ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 1.219 (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 0.01333 $\sqrt{\frac{Zr}{t}}$

Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 $= \frac{(130.90) \times 100}{100} =$ 130.90 (gm)

(1) R = (Reading - 1) 1000

Remarks: _____

Set-up by EJ Run by EJ Taken down by EJ Sieved by _____ Calculated by [signature]

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/9/92
Sample Number STK0007100NG
Initial Visual Classification _____

Shape of Grains				
Gravel Portion:	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded
Sand Portion: (coarse & medium)	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded

Specimen Tested	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:	_____ Sieves - partial sample by method ____
method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing		_____ Sieves - partial sample by method ____

Sample Preparation		
	☐ Natural state ☐ Air-dried ☐ Oven-dried	Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab (280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr	Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes	

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or (1) _____ soil (gm) (2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wod/1 + (wod) = Wod/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range	ALL		-10 +200
Container Number			6
Wgt Container + Dry Soil (gm)			136.37
Wgt Container (gm)			122.00
Wgt Dry Soil, W_s (gm)			14.37
Wgt Dry Soil From Hydrometer Test (gm)	56.35		

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total Sample % Finer N'
3/8"			
4			
10	—		100%
20	.04		99.9
40	.24		99.6
60	.24		99.6
100	.36		99.4
200	14.47		74.3
Pan	14.85		

Maximum particle size if greater than 3" _____

Remarks _____

Set-up by EJ Washed by E J Sieved by M S Calculated by [illegible] Reviewed by [illegible]

HYDROMETER TEST

4-81

Project No. 89MC114V Project Engineer _____ Date Set up 1/8/92

Sample No. STR0007100NG

Initial Visual Classification SC-CL, brown moist soft to firm silty clay and clayey fine sand

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____ Soil passing Sieve No. _____
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☐ Overnight ☐ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content	☐ Natural ☐ Air-Dried
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = 65 x (1+ 15)

W_{wet} = 74.8 (gm)

After Test-Actual Ws	
Container No.	P-104
Wgt Container + Dispersant + Dry Soil + _____ (gm)	611.43
Wgt Container (gm)	551.08
Wgt Dry Soil + Dispersant + + _____ (gm)	60.35
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	56.35

Soaking Beaker No. E-2 Graduate No. 8 Hydrometer No. 79-635 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/10/92	10:07	0	—	—	—	—	—
		1/2	21.7	28.8	3.4	0.0578	71.3
		1	"	27.9	"	0.0413	68.8
		2	"	27.3		0.0295	67.1
		5	"	26.9		0.0177	65.9
		11	"	25.5		0.0121	62.9
		15	21.9	25.4	"	0.0104	61.7
		30	"	24.0	"	0.0075	57.8
		60	21.8	22.6	"	0.0054	53.9
		120	"	21.3	"	0.0039	50.2
		245	21.4	19.8	3.2	0.0028	46.6
	18:07	475	"	18.7	2.9	0.0020	44.3
1/11/92	[illegible]	1368	20.9	17.2	3.0	0.0012	39.9

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes formed
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations:

Average temperature used in calculating test, °C = 21.717	☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average	Specific Gravity, G_s = 2.72 ☐ Tested ☑ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 28.6 (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 0.01310 $\sqrt{\frac{Zr}{t}}$

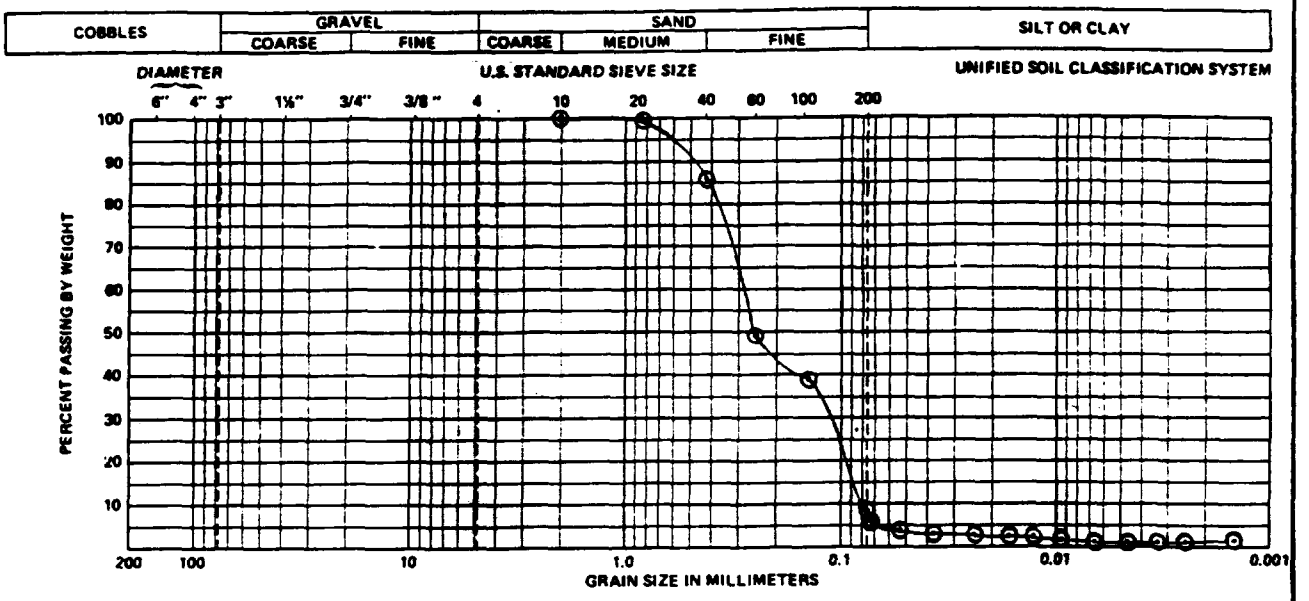
Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 = (56.35) x 100 = 56.35 (gm)

(1) R = (Reading - 1) 1000

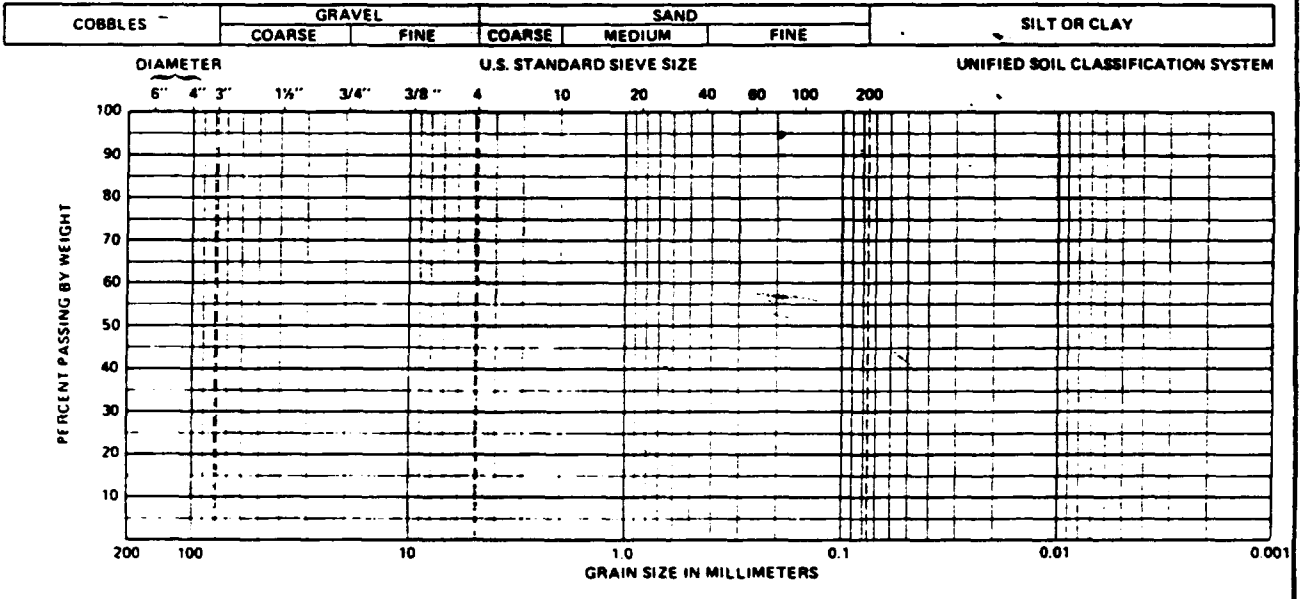
Remarks: _____

Set-up by EJ Run by EJ Taken down by EJ Sieved by _____ Calculated by [signature]

PARTICLE-SIZE DISTRIBUTION



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w_L (%)	w_P (%)
STR0010	100TG		⊙	SP-SM, brown m- f SAND, trace silt	19.1		



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w_L (%)	w_P (%)

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/9/92
Sample Number STR0616100TG
Initial Visual Classification _____

Shape of Grains				
Gravel Portion:	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded
Sand Portion: (coarse + medium)	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded

Specimen Tested	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:	_____ Sieves - partial sample by method ____
method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing		_____ Sieves - partial sample by method ____

Sample Preparation		
	☐ Natural state ☐ Air-dried ☐ Oven-dried	Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab (280)) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr	Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes	

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wod/1 + (wod) = Wod/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN			
	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range	ALL		-10 + 200
Container Number			722
Wgt Container + Dry Soil (gm)			228.49
Wgt Container (gm)			131.06
Wgt Dry Soil, W_s (gm)			97.43
Wgt Dry Soil From Hydrometer Test (gm)	105.67		

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total % Finer N'
3/8"			
4			
10	—		100
20	.59		99.4
40	15.13		85.7
60	53.15		49.7
100	64.54		38.5
200	96.33		8.8
Pan	97.37		

Maximum particle size if greater than 3" _____

Remarks _____

Set-up by ES Washed by E J Sieved by M S Calculated by _____ Reviewed by _____

HYDROMETER TEST

Project No. 89MC114V Project Engineer _____ Date Set up 1/6/92

Sample No. STR0010100TG

Initial Visual Classification SP: Brown, medium to fine sand with a trace of silt.

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☑ Mortar + pestle ☐ Other _____
Soil passing Sieve No. 10
Dispersing Agent: (1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____
Time Soaked: ☐ Overnight ☑ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content ☐ Natural ☐ Air-Dried	
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws (gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = 110 x (1+ .15)

W_{wet} = 126.50 (gm)

After Test-Actual Ws	
Container No.	P-52
Wgt Container + Dispersant + Dry Soil + _____ (gm)	656.51
Wgt Container (gm)	546.84
Wgt Dry Soil + Dispersant + + _____ (gm)	109.67
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	105.67

Soaking Beaker No. E-3 Graduate No. 14 Hydrometer No. 79-125 Meniscus Correction, Cm = 2.6

Date	Time hr:min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/10/92	10:01	0	–	–	–	–	–
		1/2	21.5	7.4	3.5	0.0737	5.9
		1	"	6.3	"	0.0526	4.7
		2	"	1.1	"	0.0372	3.9
		5	21.7	1.0	"	0.0227	3.9
		10	"	5.7	"	0.0161	3.5
		16	"	5.4	"	0.0128	3.0
		30	21.9	5.1	"	0.0094	2.6
		61	21.8	5.0	"	0.0066	2.4
		120	"	5.0	"	0.0047	2.4
		1440	21.9	4.7	3.6	0.0033	2.3
	18:01	4800	"	4.4	3.9	0.0024	2.3
1/12/92	08:20	1273	20.9	4.5	3.0	0.0014	2.3

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed ☐ Yes ☐ No	
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations:

Average temperature used in calculating test, °C = 21.65

☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average

Specific Gravity, G_s = 2.68 ☐ Tested ☑ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 1.512 (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 0.0132 $\sqrt{\frac{Zr}{t}}$

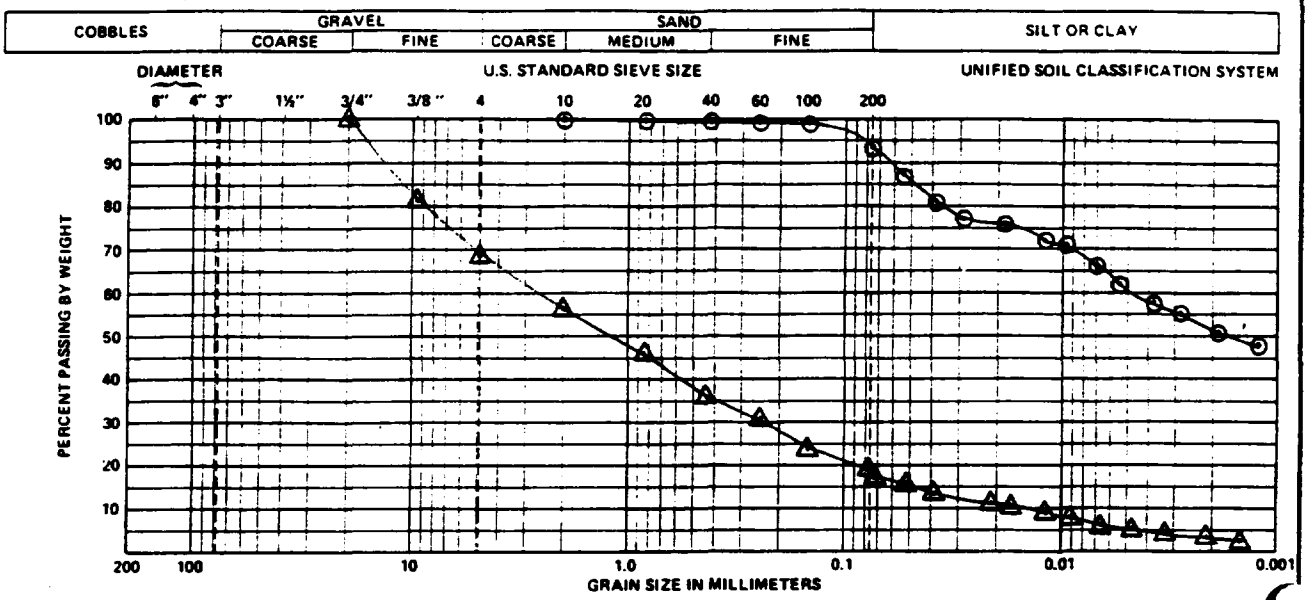
Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 $= \frac{(105.67) \times 100}{100} =$ 105.67 (gm)

(1) R = (Reading - 1) 1000

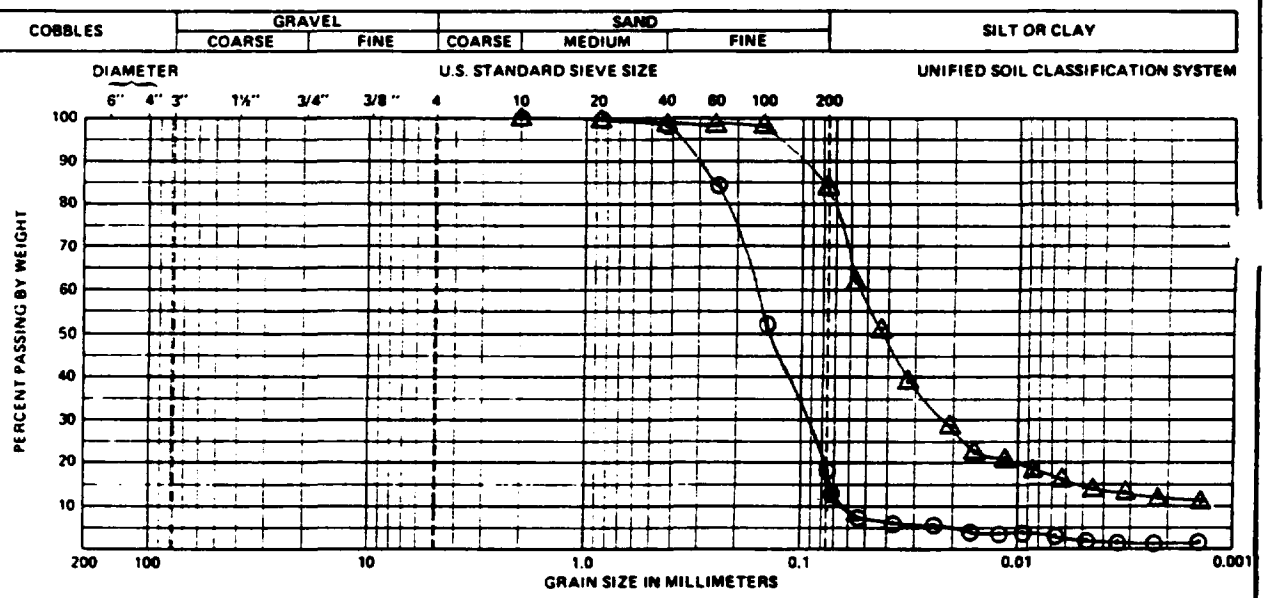
Remarks: _____

Set-up by EJ Run by EJ Taken down by EJ Sieved by _____ Calculated by _____ 1/12/92

PARTICLE-SIZE DISTRIBUTION



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w_L (%)	w_P (%)
STA0003	100TG		⊙	CH, gray-brown very plastic CLAY, trace f. sand	39.7		
STR0005	100KG		△	SM, red-brown f. gravelly c-f SAND, some silt. Note gravel & sand-sized particles are predom. cinder frag.	17.5		



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w_L (%)	w_P (%)
STR0005	100TG		⊙	SM, lt. brown m-f SAND, some silt; mica noted	18.6		
STR0002	100NG		△	CL-ML, gray-brown slightly plastic silty CLAY, some f. sand; mica noted	30.9		

PROJECT NO: 87MC114Y DRAWN BY: CK REVIEWED BY: [illegible] WCCLR-101 (9/80)

(by sieving)

Project Number 89MC114V Project Engineer _____ Date 1/9/[illegible]

Sample Number STAC0031007 G

Initial Visual Classification _____

Shape of Grains	Gravel Portion: ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded
	Sand Portion: (coarse to medium) ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded

Specimen Tested	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:	_____ Sieves - partial sample by method ____
	method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing	_____ Sieves - partial sample by method ____

Sample Preparation	☐ Natural state ☐ Air-dried ☐ Oven-dried	Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ____ h
	Soil soaked ☐ No ☐ Yes, for ____ hr	Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☐ Yes	

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wad/t + (wad) = Wad/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range		-10	-10 + 200
Container Number		P-17	4
Wgt Container + Dry Soil (gm)			137.69
Wgt Container (gm)			134.28
Wgt Dry Soil, W_s (gm)			3.41
Wgt Dry Soil From Hydrometer Test (gm)		55.12	

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N°
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total Sample % Finer N
3/8"			
4			
10	0		100%
20	0.05		99.9
40	0.17		99.7
60	0.29		99.5
100	0.59		98.9
200	3.36		93.[illegible]
Pan	3.56		

Maximum particle size if greater than 3" _____

Remarks Trace of mica.

Set-up by EJ Washed by EJ Sieved by EJ Calculated by DJ Reviewed by _____

Project No. 89MC114V Project Engineer _____ Date Set up 1/6/92

Sample No. STA0003100TG

Initial Visual Classification Ch; Grey-brown, moist, firm, medium to high plasticity silty clay with a trace of sand.

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____ Soil passing Sieve No. 10
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☐ Overnight ☑ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content ☐ Natural ☐ Air-Dried	
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w(%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	
For Wet or _____ set up	
W_{wet} = Estimated Ws x (1+w)	
W_{wet} = 65 x(1+ 15)	
W_{wet} = 74.8 (gm)	
After Test-Actual Ws	
Container No.	P-17
Wgt Container + Dispersant + Dry Soil + _____ (gm)	578.20
Wgt Container (gm)	519.08
Wgt Dry Soil + Dispersant + + _____ (gm)	59.12
Wgt Dispersant + _____ (gm)	4.[illegible]
Wgt Dry Soil, Ws (gm)	55.12

Soaking Beaker No. E-2 Graduate No. 7 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/7/92	09:18	0	–	–	–	–	–
		1/2	21.7	33.7	3.8	0.0534	85.4
		1	"	32.1	"	0.0387	80.8
		2	"	31.0	"	0.0278	77.7
		5	"	30.2	"	0.0167	75.4
		10	"	29.2	"	0.0120	72.6
		15	"	28.6	"	0.0099	70.9
		31	21.8	27.1	"	0.0070	66.6
		60	"	25.7	"	0.0052	62.6
		120	22.1	24.0	3.7	0.0037	58.0
		240	22.0	22.9	3.6	0.0027	55.1
	17:45	507	21.9	21.3	3.7	0.0019	50.3
1/8/92	08:15	1377	21.0	19.8	3.2	0.0012	47.4

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ Not Performed
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations: Average temperature used in calculating test, °C = 21.733 | ☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average | Specific Gravity, G_s = 2.74 ☐ Tested ☑ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 2.557 (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 0.01302 $\sqrt{\frac{Zr}{t}}$

2) Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. _____ $= \frac{(55.12) \times 100}{100} =$ 55.12 (gm)

(1) R = (Reading - 1) 1000

Remarks: [illegible]

Set-up by EJ Run by [illegible] Taken down by EJ Sieved by _____ Calculated by [illegible]

(by sieving)

Project Number 89MC114V Project Engineer _____ Date _____

Sample Number STL0005108kg

Initial Visual Classification _____

Shape of Grains				
	Gravel Portion:	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded
	Sand Portion: (coarse = medium)	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded

Specimen Tested	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:	_____ Sieves - partial sample by method ____
method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing		_____ Sieves - partial sample by method ____

Sample Preparation		
	☐ Natural state ☐ Air-dried ☐ Oven-dried	Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr	Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes	

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or (1) _____ soil (gm) (2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wod/1 + (wod) = Wod/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN				
	Total Test Specimen	Partial Test Specimen		Soil Retained (after washing)
Sieve Range	ALL	+10	-10	-10 + 200
Container Number		678	P-49	636
Wgt Container + Dry Soil (gm)		163.38		211.95
Wgt Container (gm)		126.83		182.99
Wgt Dry Soil, W_s (gm)	79.35	36.55		28.96
Wgt Dry Soil From Hydrometer Test (gm)			42.81	

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N°
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total Sam % Finer N
3/4"	0		100
3/8"	14.92		81.
4	24.32		69.
10	34.07		57.
20	8.56		45.
40	15.54		36.
60	20.06		30.
100	24.32		24
200	28.63		18.
Pan	29.06		

Maximum particle size if greater than 3" _____

Remarks Gravel and sand portion is mainly composed of quartz from Grid 1 No mica

Set-up by EJ Washed by EJ Sieved by EJ Calculated by DC Reviewed by _____

Project No. 89MC114V Project Engineer _____ Date Set up 1/6/[illegible]

Sample No. STR0005100KG

Initial Visual Classification ST-GL: [illegible] brown gravelly sand with a [illegible] of silt.

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____
Soil passing Sieve No. 10
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____
Time Soaked: ☐ Overnight ☐ Other _____
☐ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content	☐ Natural ☐ Air-Dried
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	
For Wet or _____ set up	
W_{wet} = Estimated Ws x (1+w)	
W_{wet} = _____ x(1+ _____)	
W_{wet} = 89.5 (gm)	
After Test-Actual Ws	
Container No.	P-49
Wgt Container + Dispersant + Dry Soil + _____ (gm)	594.92
Wgt Container (gm)	548.13
Wgt Dry Soil + Dispersant + + _____ (gm)	46.81
Wgt Dispersant + _____ (gm)	4[illegible]
Wgt Dry Soil, Ws (gm)	42.81

Soaking Beaker No. L-12 Graduate No. 2 Hydrometer No. 79-620 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/8/92	09:56	0	—	—	—	—	—
		1/2	21.2	13.1	3.8	0.0707	17.6
		1	"	11.4	"	0.0503	16.2
		2	"	10.2	"	0.0360	13.6
		5	21.3	9.5	"	0.0220	12.1
		10	"	8.8	"	0.0157	10.6
		16	"	8.0	"	0.0125	8.9
		31	21.5	7.4	3.6	0.0090	8.1
		60	21.7	6.5	3.5	0.0065	6.4
		120	"	6.2	3.6	0.0046	5.5
		240	22.0	5.9	"	0.0033	4.9
	18:16	500	22.0	5.2	3.6	0.0023	3.4
1/9/92	08:15	1339	22.3	5.0	3.5	0.0014	3.2

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ Performed
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations: Average temperature used in calculating test, °C = 21.558 | ☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average | Specific Gravity, G_s = 2.68 ☐ Tested ☑ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 2.126 (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 0.01328 $\sqrt{\frac{Zr}{t}}$

(2) Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 $= \frac{(42.81) \times 100}{57.0636} =$ 75.02 (gm)

(1) R = (Reading - 1) 1000

Remarks: [illegible]

Set-up by EJ Run by EJ Taken down by EJ Sieved by _____ Calculated by [illegible]

(by sieving)

Project Number 89MC114V Project Engineer _____ Date 1/9/2-

Sample Number STR0005100TF

Initial Visual Classification _____

Shape of Grains				
Gravel Portion:	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded
Sand Portion: (coarse to medium)	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded

Specimen Tested		
	☐ Jar Sample _____ Sieves - whole sample used _____ Sieves - partial sample used + obtained by: method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing	☐ Bag or _____ Sample _____ Sieves - whole sample used _____ Sieves - partial sample by method ____ _____ Sieves - partial sample by method ____

Sample Preparation		
	☐ Natural state ☐ Air-dried ☐ Oven-dried	Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ____ h
	Soil soaked ☐ No ☐ Yes, for ____ hr	Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes	

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wad/1 + (wad) = Wad/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN			
	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range		-10	-10 + 200
Container Number		P-106	650
Wgt Container + Dry Soil (gm)			259.78
Wgt Container (gm)			183.76
Wgt Dry Soil, W_s (gm)			76.02
Wgt Dry Soil From Hydrometer Test (gm)		90.22	

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N°
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total Sam % Finer N
3/8"			
4			
10	0		100
20	0.08		99.[illegible]
40	1.45		98.[illegible]
60	13.75		84.[illegible]
100	42.32		53.[illegible]
200	74.01		18.[illegible]
Pan	76.11		

Maximum particle size if greater than 3" _____

Remarks: Mica noted.

Set-up by FT Washed by FT Sieved by FT Calculated by [illegible] Reviewed by [illegible]

Project No. 89MC114V Project Engineer _____ Date Set up 1/6/92

Sample No. STK0005100TG

Initial Visual Classification Sn: Light-brown fine sand with a trace to some silt

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____ Soil passing Sieve No. 10
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☐ Overnight ☑ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content ☐ Natural ☐ Air-Dried	
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	
For Wet or _____ set up	
W_{wet} = Estimated Ws x (1+w)	
W_{wet} = 90 x(1+ 10)	
W_{wet} = 99 (gm)	
After Test-Actual Ws	
Container No.	P-108
Wgt Container + Dispersant + Dry Soil + _____ (gm)	640.21
Wgt Container (gm)	545.99
Wgt Dry Soil + Dispersant + + _____ (gm)	94.22
Wgt Dispersant + _____ (gm)	4[illegible]
Wgt Dry Soil, Ws (gm)	90.22

Soaking Beaker No. Hs Graduate No. 14 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/6/92	10:15	0	—	—	—	—	—
		1/2	21.3	11.1	2.8	0.0713	12.9
		1	"	8.1	"	0.0518	7.6
		2	"	7.0	"	0.0370	5.7
		5	"	6.9	"	0.0226	5.5
		11	21.5	6.1	3.6	0.0153	4.4
		17	"	6.0	3.[illegible]	0.0123	4.2
		30	21.7	5.[illegible]	3.5	0.0093	4.2
		60	"	5.4	"	0.0066	3.4
		121	"	5.1	3.6	0.0047	2.7
		243	22.0	4.9	"	0.0033	2.3
	18:19	484	22.0	4.8	3.6	0.0023	2.1
1/9/92	08:41	1346	22.1	4.8	3.5	0.0014	2.3

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ Not Performed
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations:

Average temperature used in calculating test, °C = 21.617	☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average	Specific Gravity, G_s = 2.68 ☐ Tested ☒ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) = 1.768\ (R-Rw)$ in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} = 0.01327\sqrt{\frac{Zr}{t}}$

2) Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 $= \frac{(90.22) \times 100}{100} = 90.22$ (gm)

(1) R = (Reading - 1) 1000

Remarks: Save mat'l for [illegible]

Set-up by EJ Run by EJ Taken down by EJ Sieved by _____ Calculated by _____

(by sieving)

Project Number 89MC114V Project Engineer _____ Date 11 9 [illegible]

Sample Number STR2002100NG

Initial Visual Classification _____

Shape of Grains	Gravel Portion: ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded
	Sand Portion: (coarse to medium) ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded

Specimen Tested	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:	_____ Sieves - partial sample by method ___
	method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing	_____ Sieves - partial sample by method ___

Sample Preparation	☐ Natural state ☐ Air-dried ☐ Oven-dried	Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ___
	Soil soaked ☐ No ☐ Yes, for ___ hr	Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes	

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wad/1 + (wad) = Wad/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range		-10	-10 + 200
Container Number		T-53	692
Wgt Container + Dry Soil (gm)			134.97
Wgt Container (gm)			123.48
Wgt Dry Soil, W_s (gm)			11.49
Wgt Dry Soil From Hydrometer Test (gm)		65.57	

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ___ Sieve	Tot'l Sample % Finer N°
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ___ Sieve	Total Sam % Finer N
3/8"			
4			
10	0		100
20	0.06		99.[illegible]
40	0.14		99.[illegible]
60	0.20		99.[illegible]
100	0.30		99.[illegible]
200	10.48		84
Pan	11.54		

Maximum particle size if greater than 3" _____

Remarks Trail of mica.

Set-up by FT Washed by [illegible] Sieved by [illegible] Calculated by [illegible] Reviewed by [illegible]

HYDROMETER TEST

4 81

Project No. 89MC114V Project Engineer _____ Date Set up 1/6/92

Sample No. STK0002100NG

Initial Visual Classification CH-ML Gray-brown slightly plastic clayey silt with a trace of fine sand

Sample Preparation
☐ Oven dried ☐ Air dried ☒ Natural State
Soil broken up by: ☐ Mortar + pestle ☒ Other _____
Soil passing Sieve No. 10
Dispersing Agent: (1) ☒ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____
Time Soaked: ☐ Overnight ☒ Other _____
☒ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content ☐ Natural ☐ Air-Dried	
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws (gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = 70 x (1+ 20)

W_{wet} = 84.0 (gm)

After Test-Actual Ws	
Container No.	P-53
Wgt Container + Dispersant + Dry Soil + _____ (gm)	611.73
Wgt Container (gm)	542.16
Wgt Dry Soil + Dispersant + + _____ (gm)	69.57
Wgt Dispersant + _____ (gm)	4
Wgt Dry Soil, Ws (gm)	65.57

Soaking Beaker No. K-11 Graduate No. G3 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
11/6/92	10:07	0	–	–	–	–	–
		1/2	21.3	30.0	3.8	0.0569	63.2
		1	"	25.1	"	0.0429	51.4
		2	"	20.5	"	0.0321	39.8
		5	"	15.7	"	0.0204	28.7
		10	"	13.4	"	0.0145	23.2
		16	"	12.2	"	0.0118	20.3
		30	21.5	11.1	3.6	0.0085	18.1
		60	21.7	10.2	3.5	0.0062	16.2
		120	"	9.7	3.6	0.0044	14.7
		240	22.0	9.4	"	0.0031	14.0
	18:17	495	22.0	9.2	3.6	0.0022	13.5
11/7/92	08:16	1334	22.3	8.9	3.5	0.0014	13.0

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ No
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations:

Average temperature used in calculating test, °C = 21.583	☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average	Specific Gravity, G_s = 2.72 ☐ Tested ☒ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) = 2.412\ (R-Rw)$ in %

$D = \sqrt{\frac{18\mu}{G_s-G_w}}\sqrt{\frac{Zr}{t}} = 0.01312\sqrt{\frac{Zr}{t}}$

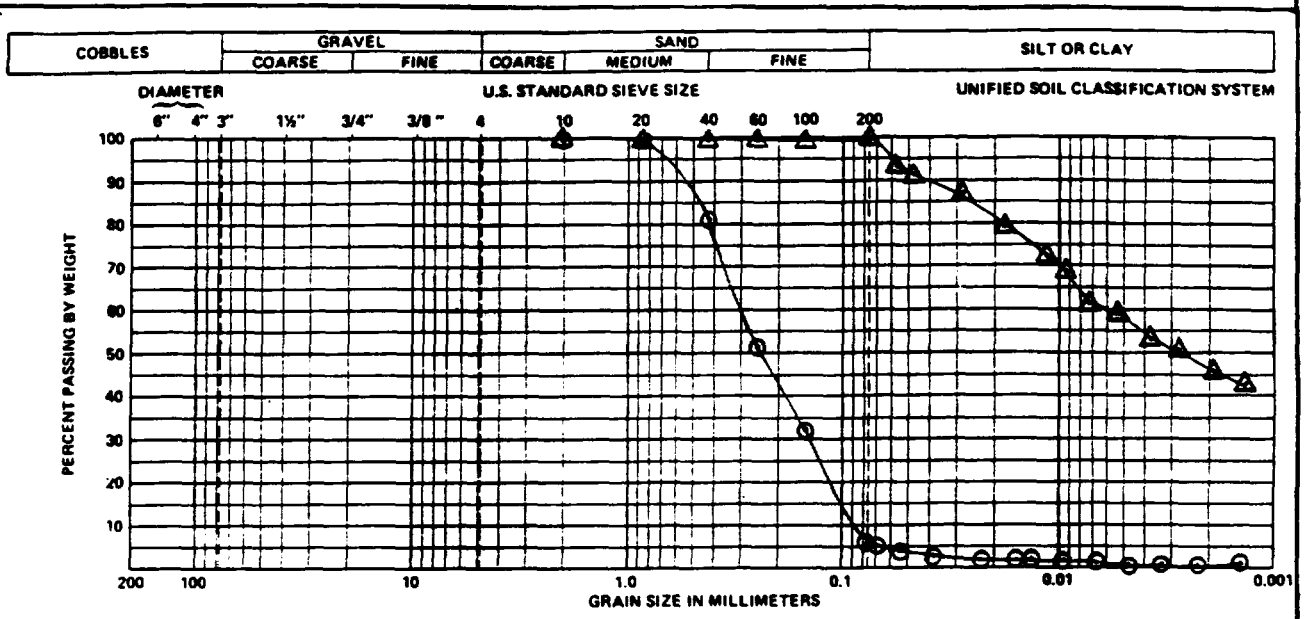
2) Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 $= \frac{(65.5)}{100} \times 100 = 65.57$ (gm)

(1) R = (Reading - 1) 1000

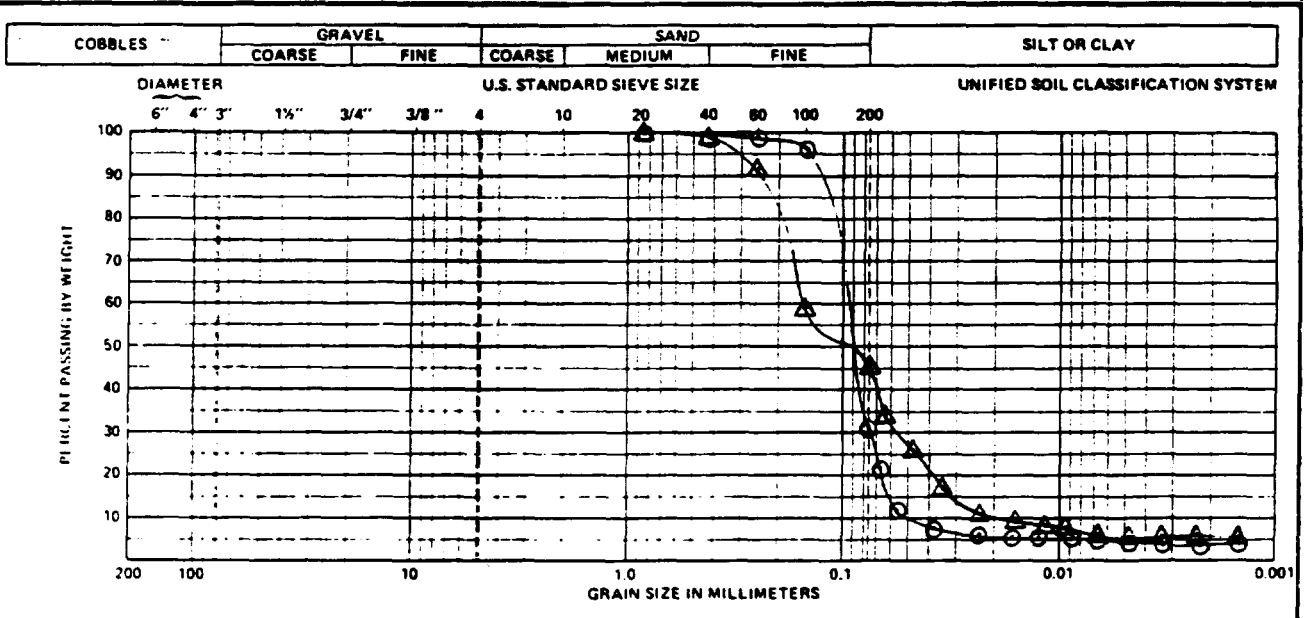
Remarks: _____

Set-up by EJ Run by EJ Taken down by EJ Sieved by _____ Calculated by _____

PARTICLE-SIZE DISTRIBUTION



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w_L (%)	w_P (%)
STR0002	100TG		⊙	SP-SM, brown m-f SAND, trace silt; mica noted	12.2		
STR0001	100NG		△	CH gray-brown very plastic CLAY	35.9		



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w_L (%)	w_P (%)
STR0001	100TG		○	SM brown silty f. SAND; mica noted	10.4		
STR0004	100MG		△	SM, gray-brown silty f. SAND; mica noted	24.8		

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/9/9[illegible]
Sample Number STR0002100TG
Initial Visual Classification _____

Shape of Grains	
	Gravel Portion: ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded
	Sand Portion: (coarse to medium) ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded

Specimen Tested	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:	_____ Sieves - partial sample by method ____
method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing		_____ Sieves - partial sample by method ____

Sample Preparation	
	☐ Natural state ☐ Air-dried ☐ Oven-dried — Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr — Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wod/1 + (wod) = Wod/_____ (gm)	
Wgt + 3/8 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range		-10	-10 + 200
Container Number		T-104	638
Wgt Container + Dry Soil (gm)			281.44
Wgt Container (gm)			182.60
Wgt Dry Soil, W_s (gm)			98.84
Wgt Dry Soil From Hydrometer Test (gm)		103.98	

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total % Finer N
3/8"			
4			
10	0		100 %
20	0.19		99.8
40	18.36		82.3
60	49.91		52.[illegible]
100	68.97		33.[illegible]
200	97.62		[illegible]
Pan	98.89		

Maximum particle size if greater than 3" _____

Remarks Trace of mica

Set-up by EJ Washed by EJ Sieved by EJ Calculated by [illegible] Reviewed by _____

HYDROMETER TEST

4/81

Project No. 89MC114V Project Engineer _____ Date Set up 1/6/92

Sample No. STK00D2100TG

Initial Visual Classification SM, Brown medium to fine sand with a trace to some silt

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____ Soil passing Sieve No. 10
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☐ Overnight ☐ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content ☐ Natural ☐ Air-Dried	
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = 100 x(1+ 10)

W_{wet} = 110 (gm)

After Test-Actual Ws	
Container No.	P-104
Wgt Container + Dispersant + Dry Soil + _____ (gm)	659.12
Wgt Container (gm)	551.14
Wgt Dry Soil + Dispersant + + _____ (gm)	107.98
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	103.98

Soaking Beaker No. G-7 Graduate No. 12 Hydrometer No. 79-125 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/6/92	10:22	0	—	—	—	—	—
		1/2	21.5	7.0	3.[illegible]	0.0738	5.2
		1	"	6.1	"	0.0527	3.8
		2	"	5.6	"	0.0374	3.1
		5	"	5.3		0.0[illegible]9	2.6
		11	"	5.0		0.0155	2.1
		15	"	5.0		0.0132	2.1
		30	21.7	4.8	3.5	0.0094	2.0
		60	"	4.3	"	0.0067	1.2
		120	"	"	3.6	0.0047	1.1
		240	22.0	4.1	"	0.0033	0.8
	18:20	478	22	4.0	3.6	0.0024	0.6
1/9/92	05:42	[illegible]	22.1	4.1	3.5	0.0014	0.9

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ Formed
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations: Average temperature used in calculating test, °C = 21.63

☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average

Specific Gravity, G_s = 2.68 ☐ Tested ☑ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) = 1.534\ (R-Rw)$ in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} = 0.01326\sqrt{\frac{Zr}{t}}$

Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 = ([illegible]) x 100 = 103.98 (gm)

(1) R = (Reading - 1) 1000

Remarks: _____

Set-up by EJ Run by EJ Taken down by EJ Sieved by _____ Calculated by [illegible]

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/9/92
Sample Number STKPOG110ONG
Initial Visual Classification _____

Shape of Grains	
	Gravel Portion: ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded
	Sand Portion: (coarse to medium) ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded

Specimen Tested	
	☐ Jar Sample _____ Sieves - whole sample used _____ Sieves - partial sample used + obtained by: method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing
	☐ Bag or _____ Sample _____ Sieves - whole sample used _____ Sieves - partial sample by method ____ _____ Sieves - partial sample by method ____

Sample Preparation	
	☐ Natural state ☐ Air-dried ☐ Oven-dried Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab 1280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wad/1 + (wad) = Wad/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range		-10	-10 + 200
Container Number		P-14	582
Wgt Container + Dry Soil (gm)			148.23
Wgt Container (gm)			148.15
Wgt Dry Soil, W_s (gm)			0.08
Wgt Dry Soil From Hydrometer Test (gm)		57.63	

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N"
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total % Finer N
3/8"			
4			
10	0		100
20	0.0[illegible]		99.9
40	0.0[illegible]		99.9
60	0.05		99.9
100	0.06		99.[illegible]
200	0.08		99.[illegible]
Pan	0.9		

Maximum particle size if greater than 3" _____

Remarks _____

Set-up by EJ Washed by EJ Sieved by EJ Calculated by TO Reviewed by [illegible]

HYDROMETER TEST

4-81

Project No. 89MC114V Project Engineer _____ Date Set up 1/6/9[illegible]

Sample No. STR0001100NG

Initial Visual Classification ~~[illegible] silt, [illegible] silt.~~

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☑ Mortar + pestle ☐ Other _____ Soil passing Sieve No. 10
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☐ Overnight ☑ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content ☐ Natural ☐ Air-Dried	
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w(%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = _____ x(1+ _____)

W_{wet} = 73.3 (gm)

After Test-Actual Ws	
Container No.	P-14
Wgt Container + Dispersant + Dry Soil + _____ (gm)	588.86
Wgt Container (gm)	527.23
Wgt Dry Soil + Dispersant + + _____ (gm)	61.63
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	57.63

Soaking Beaker No. A-1 Graduate No. 1 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/7/92	10:08	0	—	—	—	—	—
		1/2	21.3	38.1	3.8	0.0497	93.7
		1	"	37.3	"	0.0356	91.5
		2	"	35.9	"	0.0258	87.7
		5	"	32.7	"	0.0161	79.0
		10	"	30.4	"	0.0118	72.7
		16	21.5	28.7	3.[illegible]	0.0096	68.6
		31	"	[illegible]	"	0.0071	63.4
		60	21.7	25.1	2.5	0.0052	59.0
		120	"	23.2	3.6	0.0038	53.6
		240	22.0	22.0	"	0.0027	50.3
	18:18	492	22.0	20.3	3.6	0.0019	45.6
1/7/92	08:40	1352	22.1	19.1	3.5	0.0012	42.6

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ Not Performed
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations: Average temperature used in calculating test, °C = 21.5[illegible]

☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average

Specific Gravity, G_s = 2.74 ☐ Tested ☑ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 2.722 (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 0.01305 $\sqrt{\frac{Zr}{t}}$

Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 2 = (57.63) x 100 = 57.63 (gm)

(1) R = (Reading - 1) 1000

Remarks: _____

Set-up by [illegible] Run by [illegible] Taken down by [illegible] Sieved by _____ Calculated by [illegible]

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/9/92
Sample Number STR00C1100TG
Initial Visual Classification _____

Shape of Grains	Gravel Portion: ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded
	Sand Portion: (coarse to medium) ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded

Specimen Tested	☐ Jar Sample _____ Sieves - whole sample used _____ Sieves - partial sample used + obtained by: method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing	☐ Bag or _____ Sample _____ Sieves - whole sample used _____ Sieves - partial sample by method ____ _____ Sieves - partial sample by method ____

Sample Preparation	
	☐ Natural state ☐ Air-dried ☐ Oven-dried — Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab 1280) for ____ h.
	Soil soaked ☐ No ☐ Yes, for ____ hr — Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☐ Yes

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wad/1 + (wad) = Wad/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

WEIGHT OF TEST SPECIMEN

	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range		-10	-10 + 200
Container Number		P-52	691
Wgt Container + Dry Soil (gm)			187.77
Wgt Container (gm)			123.68
Wgt Dry Soil, W_s (gm)			64.09
Wgt Dry Soil From Hydrometer Test (gm)		84.51	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N"
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Tota. % Finer N
3/8"			
4			
10			
20	0		100%
40	0.25		99.7
60	0.67		99.4
100	2.38		97.2
200	58.24		21.1
Pan	64.29		

Maximum particle size if greater than 3" _____

Remarks _____

Set-up by EJ Washed by EJ Sieved by EJ Calculated by EJ Reviewed by _____

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/9/92

Sample Number STA0003100MG

Initial Visual Classification _____

Shape of Grains				
	Gravel Portion:	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded
	Sand Portion: (coarse to medium)	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded

Specimen Tested		
	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:	_____ Sieves - partial sample by method ____
method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing		_____ Sieves - partial sample by method ____

Sample Preparation		
	☐ Natural state ☐ Air-dried ☐ Oven-dried	Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab (280)) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr	Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☐ Yes	

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wod/1 + (wod) = Wod/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

WEIGHT OF TEST SPECIMEN

	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range		-10	-10 + 200
Container Number		P-105	734
Wgt Container + Dry Soil (gm)			153.42
Wgt Container (gm)			133.03
Wgt Dry Soil, W_s (gm)			20.39
Wgt Dry Soil From Hydrometer Test (gm)		64.39	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total Samp % Finer N
3/8"			
4			
10	0		100.0
20	0.02		100.0
40	0.10		99.8
60	0.35		99.5
100	0.61		99.1
200	18.64		72.0
Pan	20.54		

Maximum particle size if greater than 3" _____

Remarks Trace of mica.

Set-up by EJ Washed by EJ Sieved by EJ Calculated by EJ Reviewed by [illegible]

HYDROMETER TEST

4/81

Project No. 89MC114V Project Engineer _____ Date Set up 1/6/92

Sample No. STA0003100LG

Initial Visual Classification Mhi Grey-brown silt with a trace to some sand and gravel

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☐ Other _____
Soil passing Sieve No. 10
Dispersing Agent (1): ☑ $(NaPO_3)_6$ at 4.0gm/liter ☐ Other _____
Time Soaked: ☐ Overnight ☐ Other _____
☐ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content	☐ Natural ☐ Air-Dried
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = 70 x (1+ 10/0)

W_{wet} = 77 (gm)

After Test-Actual Ws	
Container No.	P-102
Wgt Container + Dispersant + Dry Soil + _____ (gm)	585.61
Wgt Container (gm)	519.01
Wgt Dry Soil + Dispersant + + _____ (gm)	66.6
Wgt Dispersant + _____ (gm)	4.3
Wgt Dry Soil, Ws (gm)	62.60

Soaking Beaker No. 1 Graduate No. 8 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/7/92	09:12	0	—	—	—	—	—
		1/2	21.7	27.2	3.8	0.0594	59.0
		1	"	21.5	"	0.0450	44.6
		2	"	16.7	"	0.0335	32.5
		5	"	12.8	"	0.0211	22.7
		10	"	11.4	"	0.0152	19.2
		16	"	11.0	"	0.0120	18.1
		30	21.8	10.1	"	0.0089	15.9
		60	"	9.7	"	0.0063	14.9
		120	22.1	9.4	3.7	0.0045	14.4
		240	22.0	8.8	3.6	0.0032	13.1
	17:44	512	21.9	8.5	3.7	0.0022	12.1
1/8/92	08:14	1382	21.0	8.1	3.2	0.0013	12.3

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ Informed
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations:

Average temperature used in calculating test, °C = 21.733	☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average	Specific Gravity, G_s = 2.70 ☐ Tested ☑ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 2.520 (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 0.01318 $\sqrt{\frac{Zr}{t}}$

Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. _____ $= \frac{(62.60) \times 100}{99.3178} =$ 63.03 (gm)

(1) R = (Reading - 1) 1000

Remarks: [illegible]

Set-up by EJ Run by EJ Taken down by EJ Sieved by _____ Calculated by [illegible]

HYDROMETER TEST

4/81

Project No. 89MC114V Project Engineer _____ Date Set up 1/6/92

Sample No. STA0003100MG

Initial Visual Classification 5m ML; Grey-brown, silty very fine sand

Sample Preparation
☐ Oven dried ☐ Air dried ☐ Natural State
Soil broken up by: ☐ Mortar + pestle ☐ Other _____ Soil passing Sieve No. _____
Dispersing Agent:(1) ☐ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☐ Overnight ☐ Other _____
☐ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content ☐ Natural ☐ Air-Dried	
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w(%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = 70 x(1+ 15%)

W_{wet} = 80.5 (gm)

After Test-Actual Ws	
Container No.	P-105
Wgt Container + Dispersant + Dry Soil + _____ (gm)	617.13
Wgt Container (gm)	549.74
Wgt Dry Soil + Dispersant + + _____ (gm)	68.39
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	64.39

Soaking Beaker No. 44 Graduate No. 5 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/7/92	09:24	0	–	–	–	–	–
		1/2	21.7	25.3	3.8	0.0608	53.0
		1	"	19.1	"	0.0462	37.7
		2	"	14.8	"	0.0342	27.1
		5	"	11.9	"	0.0213	20.0
		10	"	10.6	"	0.0153	16.8
		15	"	10.2	"	0.0125	15.8
		32	21.3	9.5	"	0.0086	14.1
		60	21.9	9.1	"	0.0063	13.1
		120	22.1	8.7	3.7	0.0045	12.3
		241	22.0	8.4	3.6	0.0032	11.8
	17:46	1[illegible]2	21.9	8.3	3.7	0.0022	11.3
1/8/92	08:16	1372	21.0	7.9	3.[illegible]	0.0013	11.6

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ Performed
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations: Average temperature used in calculating test, °C = 21.742

☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average

Specific Gravity, G_s = 2.70 ☐ Tested ☒ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 2.4[illegible] (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 0.01318 $\sqrt{\frac{Zr}{t}}$

Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 $= \frac{(64.39) \times 100}{100} =$ 64.39 (gm)

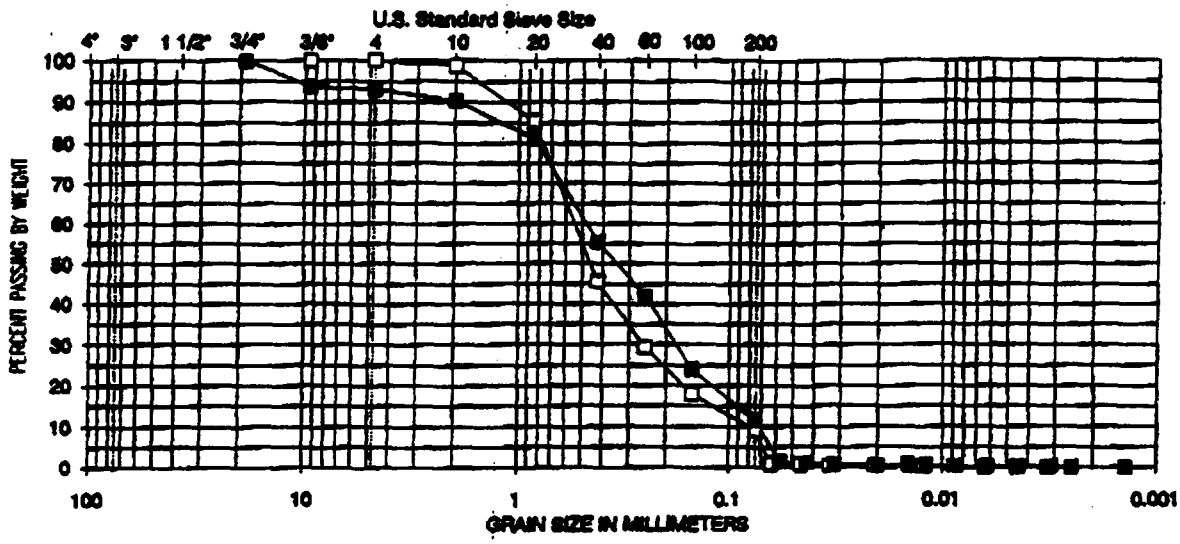
(1) R = (Reading - 1) 1000

Remarks: [illegible]

Set-up by EJ Run by [illegible] Taken down by EJ Sieved by _____ Calculated by [illegible]

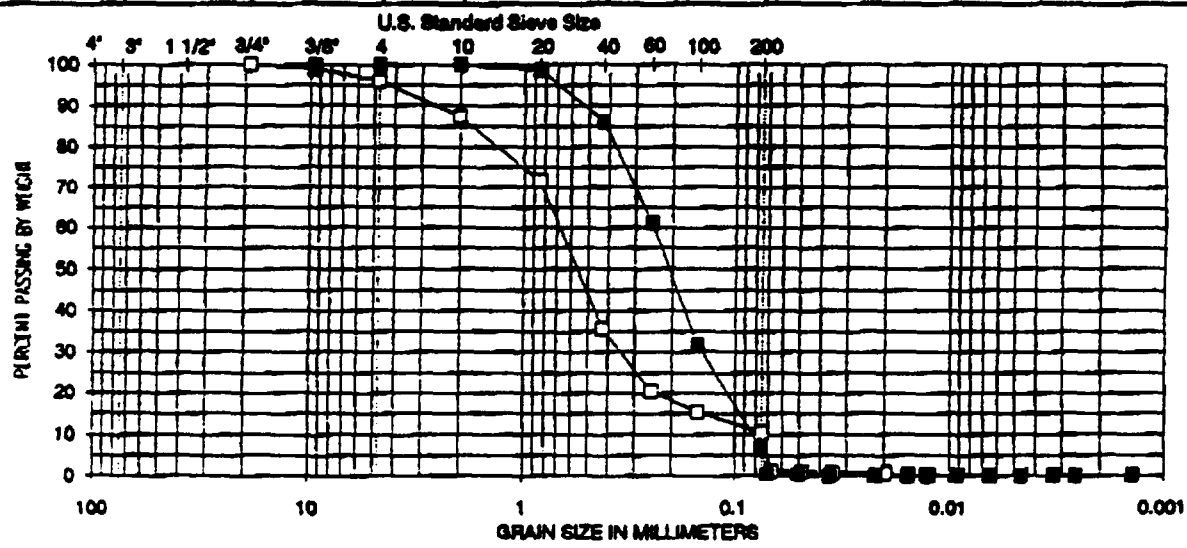
PARTICLE-SIZE DISTRIBUTION

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



BORING	SAMPLE	DEPTH (FT)	SYMBOL	CLASSIFICATION	w (%)	wl (%)	wp (%)
MW-103-D	—	69-71	□	SW-SM, grey-brown m-f SAND, trace c. sand and silt; mica	—	—	—
				noted.			
MW-104-92	—	65-67	■	SP-SM, dark-brown m-f SAND, trace f. gravel and silt; mica	—	—	—
				noted.			

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



BORING	SAMPLE	DEPTH (FT)	SYMBOL	CLASSIFICATION	w (%)	wl (%)	wp (%)
MW-109-92	—	65-67	□	SW-SM, grey-brown c-f SAND, trace f. gravel and silt; mica	—	—	—
				noted.			
MW-111-92	—	60-67	■	SP-SM, grey-brown f. SAND, some m. sand, trace silt; mica	—	—	—
				noted.			

File: HYDPLOT.XLS Project No.:89MC114V Plotted by:PMD Reviewed by: Date: 8/21/92

HYDROMETER [illegible]

Project No. 89MC114V Project Engineer _____ Date Set Up 7/29/92
Boring No. MW-103-TJ Sample No. _____ Depth (ft) 69.0 to 71.0
Initial Visual Classification SP, Grey-brown, moist, coarse to fine s[illegible] with a trace of silt

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____
Soil passing Sieve No. 10
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____
Time Soaked: ☐ Overnight ☑ Other 6 days
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☑ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content. ☐ Natural ☐ Air-Dried	
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry/Set-up, Ws (gm)	
For Wet or _____ Set up	
W_{wet} = Estimated Ws x (1+w)	
W_{wet} = _____ x (1+ _____)	
W_{wet} = _____ (gm)	
After Test-Actual Ws	
Container No.	P-5[illegible]
Wgt Container + Dispersant + Dry Soil + _____ (gm)	851.[illegible]
Wgt Container (gm)	530.[illegible]
Wgt Dry Soil + Dispersant + _____ (gm)	320.8
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	316.8

Soaking Beaker No. 2-B Graduate No. 2 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.[illegible]

Date	Time hr:min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer	Dia. D mm	Total Sample % Finer
8/31/92	10:30	0	–	–	–	–	–		
		1/2	22.8	21.2	3.6	0.0629	0.8	0.0629	8.7
		1	"	18.2	"	0.0459	0.7	0.0459	7.2
		2	"	15.8	"	0.0333	0.5	0.0333	6.0
		5	"	13.6	"	0.0206	0.4	0.0206	4.9
		11	"	11.9	"	0.0142	0.4	0.0142	4.1
		15	"	11.0	"	0.0122	0.3	0.0122	3.6
		30	"	9.2	"	0.0088	0.3	0.0088	2.8
		60	22.6	8.3	"	0.0063	0.2	0.0063	2.3
		120	22.4	7.5	"	0.0045	0.2	0.0045	1.9
		242	"	7.0	"	0.0032	0.2	0.0032	1.7
	16:49	379	22.2	6.2	"	0.0025	0.1	0.0025	1.3
9/4/92	08:00	1290	"	6.0	"	0.0014	0.1	0.0014	1.2

Calculations: Average temperature used in calculating test, °C = 22.6167

☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average

Specific Gravity, G_s = 2.72 ☒ Tested ☐ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-R_w) = \cancel{0.0445}\ 0.493\ (R-R_w)$ in %

$D = \sqrt{\frac{B_w}{G_s G_w}}\sqrt{\frac{\Sigma r}{t}} = 0.01297\ \sqrt{\frac{\Sigma r}{t}}$

(2) Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 = (316.8) x 100 = ~~3520.111~~ 320.66 gm
9.0
98.8

(1) R = (Reading - 1) x 1000

Remarks: +10 in dish 66%

Set-up by EJ Run by EJ Taken down by EJ [illegible]

PMD

HYDROMETER TEST

Project No. 89MC114V Project Engineer _____ Date Set Up 7/29/92
Boring No. MW-104-92 Sample No. _____ Depth (ft) 65.0 to 67.0
Initial Visual Classification SP-SM; Dark-brown, very wet, m-f sand with tr. to some silt, trace c-sand and gravel.

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____ Soil passing Sieve No. 10
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☐ Overnight ☑ Other 6 days
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content	☐ Natural ☐ Air-Dried
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws (gm)	
For wet or _____ set up	
W_{wet} = Estimated Ws x (1+w)	
W_{wet} = _____ x (1+ _____)	
W_{wet} = _____ (gm)	
After Test-Actual Ws	
Container No.	P-106
Wgt Container + Dispersant + Dry Soil + _____ (gm)	885.15
Wgt Container (gm)	517.58
Wgt Dry Soil + Dispersant + _____ (gm)	367.[illegible]
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	363.57

Soaking Beaker No. ST Graduate No. 3 Hydrometer No. H-625 Meniscus Correction, cm = 0.6

Date	Time hr:min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
8/3/91	10:18	0	–	–	–	–	–
		1/2	22.6	30.1	2.6	0.0569	1.3
		1	"	25.2	"	0.0430	1.1
		2	"	21.2	"	0.0319	0.9
		5	"	17.9	"	0.0199	0.7
		10	"	15.9	"	0.0144	0.6
		15	"	14.8	"	0.0119	0.6
		30	"	13.0	"	0.0086	0.5
		60	22.5	11.2	"	0.0062	0.4
		120	22.4	10.1	"	0.0044	0.3
		244	"	9.1	"	0.0031	0.3
	16:47	389	22.2	7.9	"	0.0025	0.2
8/4/92	07:58	1300	"	7.2	"	0.0014	0.2

Sieving Performed: Diam D (mm)	Total Sample % Finer
0.0569	10.5
0.0430	8.6
0.0319	7.0
0.0199	5.7
0.0144	4.9
0.0119	4.4
0.0086	3.7
0.0062	3.1
0.0044	2.6
0.0031	2.2
0.0025	1.7
0.0014	1.4

Calculations: Average temperature used in calculating test, °C = 22.4917

☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used not average

Specific Gravity, G_s = 2.68 ☐ Tested ☒ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-R_w) = \cancel{0.050}\ 0.397\ (R-R_w)$ in %

$D = \sqrt{\frac{18\ \eta}{G_s G_w}}\sqrt{\frac{\Sigma r}{t}} = 0.01315\sqrt{\frac{\Sigma r}{t}}$

(2) Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 = (363.57) x 100 = ~~316.40~~ 402.18 (gm)
~~11.5~~ 90.4

(1) R = (Reading - 1) 1000

Remarks: +10 in dish

Set-up by EJ Run by EJ Taken down by EJ Sieved by _____ Reviewed by _____ DMD

SEP 17 '92 14:36 P.6

HYDROMETER TEST

Project No. 89MC114V Project Engineer _____ Date Set Up 7/29/92
Boring No. MW-109-92 Sample No. _____ Depth (ft) 65.0 to 67.0
Initial Visual Classification SP-SM; Grey-brown, moist to wet C-F sand with a trace of silt and gravel

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____ Soil passing Sieve No. 10
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☐ Overnight ☑ Other 6 days
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☑ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content ☐ Natural ☐ Air-Dried	
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, ws(gm)	
For Wet or _____ set up	
W_{wet} = Estimated Ws x (1+w)	
W_{wet} = _____ x (1+ _____)	
W_{wet} = _____ (gm)	
After Test-Actual Ws	
Container No.	X-5
Wgt Container + Dispersant + Dry Soil + _____ (gm)	712.6
Wgt Container (gm)	530.9
Wgt Dry Soil + Dispersant + _____ (gm)	181.7
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, ws (gm)	177.7

Soaking Beaker No. Z-A Graduate No. 7 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.6

Date	Time hr:min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sample % Finer N	Diam D (mm)	Total Sample % Finer
8/3/92	10:36	0	—	—	—	—	—		
		1/2	22.6	16.0	3.6	0.0673	1.1	0.0673	9.7
		1	"	13.9	"	0.0486	1.0	0.0486	8.1
		2	"	12.1	"	0.0350	0.8	0.0350	6.7
		6	"	10.2	"	0.0198	0.6	0.0198	5.2
		10	"	9.3	"	0.0154	0.5	0.0154	4.5
		15	"	8.7	"	0.0127	0.5	0.0127	4.0
		30	"	7.3	"	0.0091	0.3	0.0091	2.9
		60	"	6.9	"	0.0064	0.3	0.0064	2.6
		120	22.4	6.3	"	0.0046	0.2	0.0046	2.1
		240	22.5	5.9	"	0.0033	0.2	0.0033	1.8
	16:50	374	22.2	5.3	"	0.0026	0.2	0.0026	1.3
8/4/92	08:01	1285	"	5.1	"	0.0014	0.1	0.0014	1.2

Calculations: Average temperature used in calculating test, °C = 22.5083

☐ This average used to calculate all tests. "✓" in Temperature column indicates value actual temperature used, not average.

Specific Gravity, G_s = 2.68 ☐ Tested ☒ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-R_w) = \cancel{0.092}\ 0.783\ (R-R_w)$ in %

$D = \sqrt{\frac{R_w}{G_s G_w}}\sqrt{\frac{\eta}{t}} = 0.01314\sqrt{\frac{\eta}{t}}$

(2) Where $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 = (177.77) 100 = ~~1725.92~~ 203.63 ~~10.3~~ 87.3

(1) R = (Reading - 1) 1000

Remarks: X10 in dish 713

Setup by EJ Run by EJ Taken down by EJ Sieved by _____

RMO

Project No. 89MC114V Project Engineer: _____ 7/29/92
Boring No. MW-111-92 Sample No. _____ Depth: 60.0 to 62.0
Initial Visual Classification SP-SM: Gray-brown moist to wet m-f sand with a trace to some non-plastic silt

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar & pestle ☑ Other _____
Soil passing Sieve No. 10
Dispersing Agent: (1) ☑ $(NaPO_3)_6$ or 4.0gm/Liter ☐ Other _____
Time Soaked: ☐ Overnight ☑ Other 6 days
☐ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☑ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content: ☐ Natural ☐ Air-Dried	
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Metaphosphate

Weight of Soil Used in Test: Ws
For Sieve Analysis, Wt. _____
For Wet Sieve _____ Set up
Wwet = Estimated Ws = (1+w)
Wwet = _____ x (1+ _____)
Wwet = _____ (gm)

After Test: Actual Ws

Container No.	P-101
Wgt Container + Dry Soil	769.8
Wgt Container	546.7
Wgt Dry Soil	223
	4.0
Wgt Dry Soil	219.05

Soaking Beaker No. 2-D Graduate No. 8 Hydrometer No. 79-625 Initial Reading = 0.6

Date	Time hr: min	Elap. Time, t (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O / Disper. Rw (1)	Diameter D (mm)	Total Sample % Finer
8/5/91	10:26	0	–	–	–	–	–
		1/2	22.7	12.0	5.6	0.0700	0.4
		1	"	9.6	"	0.0506	0.3
		2	"	8.5	"	0.0361	0.2
		5	"	8.2	"	0.0228	0.2
		10	"	8.0	"	0.0156	0.2
		16	"	7.5	"	0.0124	0.2
		30	"	7.0	"	0.0091	0.2
		60	22.5	6.2	"	0.0065	0.1
		120	22.4	6.0	"	0.0046	0.1
		240	22.3	5.7	"	0.0033	0.1
	16:48	384	22.1	5.2	"	0.0026	0.1
8/6/91	07:59	1295	"	5.1	"	0.0014	0.1

Diam D (mm)	Total Sample % Finer
0.0700	6.1
0.0506	4.4
0.0361	3.6
0.0221	3.3
0.0156	3.2
0.0124	2.6
0.0091	2.5
0.0065	1.9
0.0046	1.7
0.0033	1.5
0.0026	1.2
0.0014	1.1

Calculations: Average temperature used in calculating test, °C = 22.5417

☐ This average used to calculate all results in Temperature column indicates actual temperature used, not average. Specific Gravity, G_s = 2.68 ☒ Assumed

$N' = \frac{100\,G_s}{W_s^{(2)}(G_s-1)}(R-Rw) = 0.047$ (R-Rw in %) 0.727

$D = \frac{18\eta}{W_s G_s \gamma_w} \cdot 0.01314$

Where $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 = (219.05) 100 = 219.49 ~~222.0~~

(1) R = (Reading - 1) 1000

Remarks: + 10 in 24h 99.8

Set-up by EJ Run by EJ Taken down by EJ

Pg 10

HYDROMETER TEST

4-81

Project No. 89MC114V Project Engineer _____ Date Set up 1/6/92

Sample No. STR0001100TG

Initial Visual Classification Sm; Brown, fine sand with a trace to some silt.

Sample Preparation
☐ Oven dried ☐ Air dried ☒ Natural State
Soil broken up by: ☐ Mortar + pestle ☒ Other _____ Soil passing Sieve No. 10
Dispersing Agent:(1) ☒ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☐ Overnight ☐ Other _____
☒ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content ☐ Natural ☐ Air-Dried	
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = 85 x(1+ 10)

W_{wet} = 93.5 (gm)

After Test-Actual Ws	
Container No.	P-52
Wgt Container + Dispersant + Dry Soil + _____ (gm)	635.46
Wgt Container (gm)	546.95
Wgt Dry Soil + Dispersant + + _____ (gm)	88.51
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	84.51

Soaking Beaker No. D-4 Graduate No. 4 Hydrometer No. 74-625 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/7/92	09:30	0	–	–	–	–	–
		1/2	21.7	15.2	3.8	0.0685	21.5
		1	"	9.9	"	0.0509	11.5
		2	"	8.2	"	0.0365	8.3
		5	"	7.7	"	0.0224	7.4
		10	21.8	7.3	"	0.0159	6.6
		17	"	7.0	"	0.0122	6.0
		32	"	6.7	"	0.0089	5.5
		60	21.9	6.2	"	0.0065	4.5
		120	22.1	6.0	3.7	0.0046	4.3
		244	22.0	5.7	3.6	0.0033	4.0
	17:27	497	21.9	5.7	3.7	0.0023	3.8
1/8/92	08:17	1367	21.0	5.3	3.2	0.0014	4.0

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ Normed
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations: Average temperature used in calculating test, °C = 21.759 | ☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average | Specific Gravity, G_s = 2.68 ☐ Tested ☒ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 1.[illegible] (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 0.01325 $\sqrt{\frac{Zr}{t}}$

(2) Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 = (84.51) x 100 = 84.51 (gm)

(1) R = (Reading - 1) 1000

Remarks: [illegible]

Set-up by [illegible] Run by [illegible] Taken down by [illegible] Sieved by _____ Calculated by [illegible]

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/11/92
Sample Number STROOG4100MG
Initial Visual Classification _____

Shape of Grains				
Gravel Portion:	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded
Sand Portion: (coarse + medium)	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded

Specimen Tested		
☐ Jar Sample	_____ Sieves - whole sample used	☐ Bag or _____ Sample
	_____ Sieves - partial sample used + obtained by:	_____ Sieves - whole sample used
method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing		_____ Sieves - partial sample by method ____
		_____ Sieves - partial sample by method ____

Sample Preparation	
☐ Natural state ☐ Air-dried ☐ Oven-dried	Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle, ☐ Other _____, ☐ Pulverizer (Test lab (280)) for ____ hr
Soil soaked ☐ No ☐ Yes, for ____ hr	Sample washed on No. 200 sieve ☐ No ☐ Yes
Sample from Hydrometer Test ☐ No ☑ Yes	

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wod/1 + (wod) = Wod/_____ (gm)	
Wgt + S/O or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

Water Content ☐ Natural ☐ Air-dried	
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

WEIGHT OF TEST SPECIMEN

	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range	ALL		-10 + 200
Container Number			44
Wgt Container + Dry Soil (gm)			173.63
Wgt Container (gm)			125.01
Wgt Dry Soil, W_s (gm)			48.62
Wgt Dry Soil From Hydrometer Test (gm)	56.70		

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total % Finer N'
3/8"			
4			
10			
20	0		100%
40	0.61		99.3
60	5.99		93.1
100	35.39		59.2
200	47.54		45.2
Pan	48.61		

Maximum particle size if greater than 3" _____

Remarks Trace of mica.

Set-up by EJ Washed by EJ Sieved by EJ Calculated by DT Reviewed by _____

HYDROMETER TEST

4-81

Project No. 89MC114V Project Engineer _____ Date Set up 11/10/92

Sample No. STR000W00MG

Initial Visual Classification SM: Grey-brown fine sand with some silt.

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____ Soil passing Sieve No. 10
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☐ Overnight ☑ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content ☐ Natural ☐ Air-Dried	
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = 90 x (1+ 10)

W_{wet} = 99 (gm)

After Test-Actual Ws	
Container No.	P-52
Wgt Container + Dispersant + Dry Soil + _____ (gm)	637.58
Wgt Container (gm)	546.88
Wgt Dry Soil + Dispersant + + _____ (gm)	90.70
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	86.70

Soaking Beaker No. F-6 Graduate No. 8 Hydrometer No. 79-[illegible] Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
11/3/92	09:41	0	—	—	—	—	—
		1/2	22.4	22.5	3.9	0.0629	34.4
		1	"	17.5	"	0.0470	25.2
		2	"	13.0	"	0.0348	16.9
		5	"	10.3	"	0.0217	12.0
		10	"	9.1	"	0.0155	9.8
		15	"	8.6	"	0.0127	8.8
		30	"	7.9	"	0.0091	7.5
		60	"	7.3	"	0.0064	6.4
		[illegible]	22.3	7.[illegible]	"	0.0046	6.3
		240	22.2	7.1		0.0032	6.1
	17:34	473	22.1	7.1	3.7	0.0023	6.3
[illegible]	08:12	1357	"	6.7	"	0.0014	5.5

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ Normal
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations:

Average temperature used in calculating test, °C = 22.325	☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average	Specific Gravity, G_s = 2.68 ☐ Tested ☑ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 1.940 (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 0.01317 $\sqrt{\frac{Zr}{t}}$

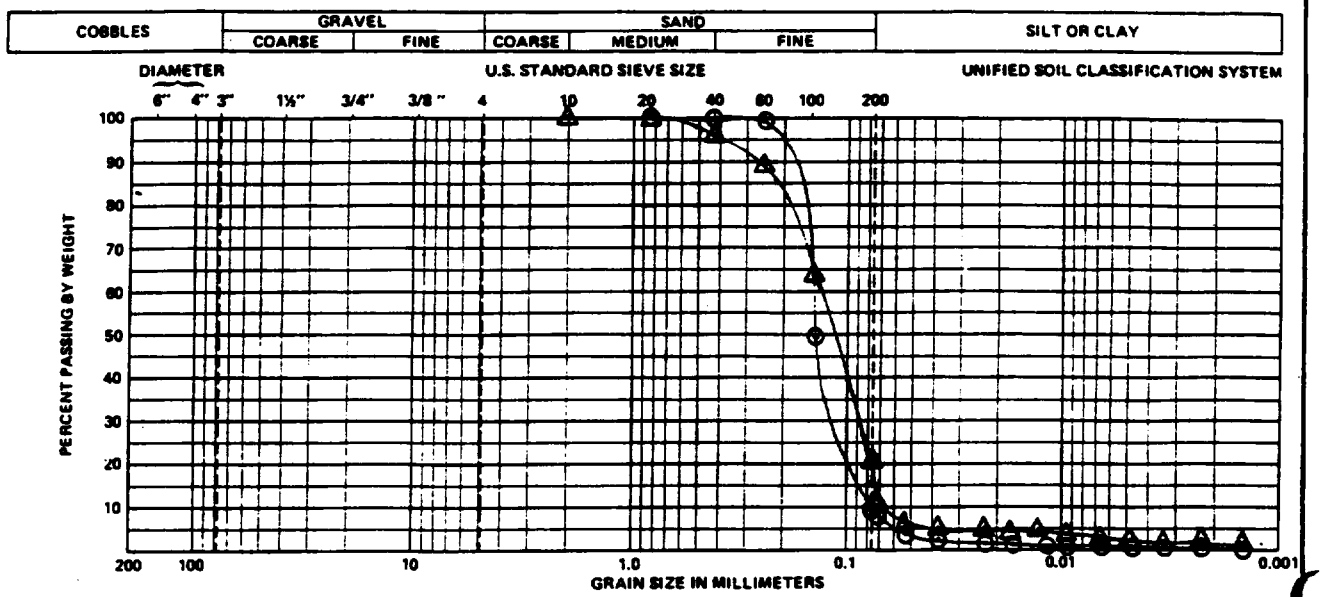
Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 $= \frac{(86.70) \times 100}{100} =$ 86.70 (gm)

(1) R = (Reading - 1) 1000

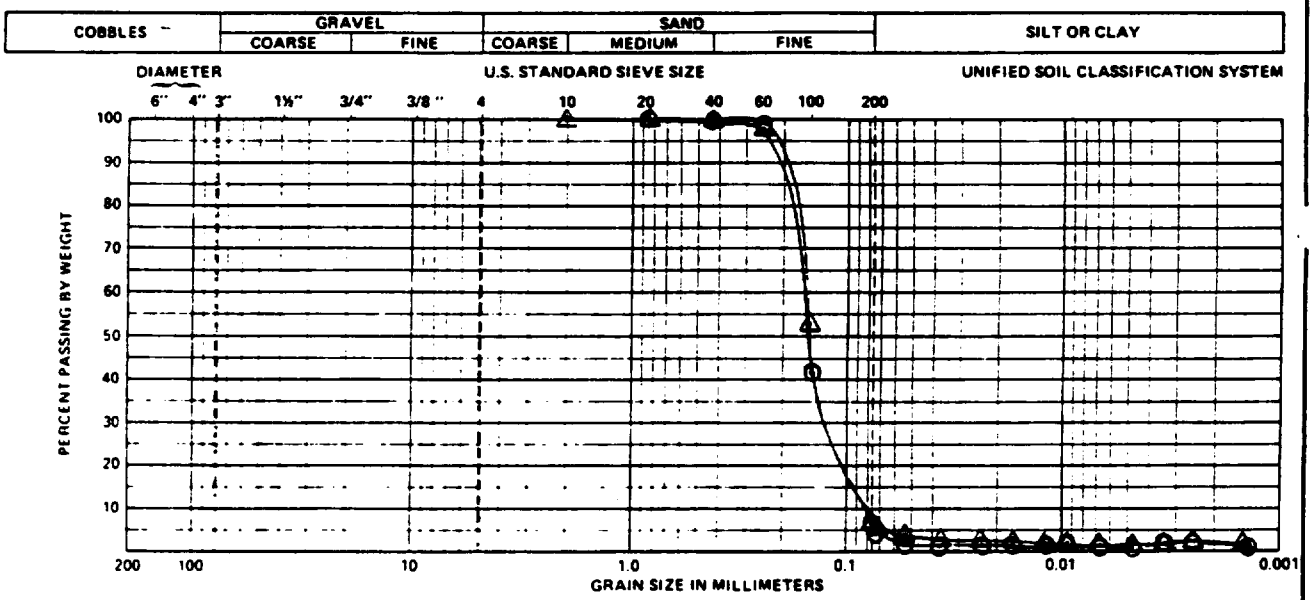
Remarks: _____

Set-up by [illegible] Run by [illegible] Taken down by [illegible] Sieved by _____ Calculated by [illegible]

PARTICLE-SIZE DISTRIBUTION



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w_L (%)	w_P (%)
STR0004	100NG		⊙	SP-SM, yellow-brown f. SAND, trace Silt; mica noted	6.2		
STR0004	100TG		△	SM, gray-brown f. SAND, some Silt, trace m. Sand; mica noted	26.4		



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w_L (%)	w_P (%)
STR0009	100MG		⊙	SP-SM, lt. brown f. SAND, trace Silt	3.6		
STR0009	100NG		△	SP-SM, brown f. SAND, trace Silt	5.2		

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/11/92

Sample Number ST20004100NG

Initial Visual Classification _____

Shape of Grains				
	Gravel Portion:	☐ Angular	☐ Subangular	☐ Rounded ☐ Subrounded
	Sand Portion: (coarse = medium)	☐ Angular	☐ Subangular	☐ Rounded ☐ Subrounded

Specimen Tested	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:	_____ Sieves - partial sample by method ____
	method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scope after mixing	_____ Sieves - partial sample by method ____

Sample Preparation		
	☐ Natural state ☐ Air-dried ☐ Oven-dried	Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr	Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes	

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or (1) _____ soil (gm) (2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wad/1 + (wad) = Wad/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range	ALL		-10 +200
Container Number			43
Wgt Container + Dry Soil (gm)			220.72
Wgt Container (gm)			124.87
Wgt Dry Soil, W_s (gm)			95.85
Wgt Dry Soil From Hydrometer Test (gm)	1.4.13		

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total Samp. % Finer N'
3/8"			
4			
10			
20	0		100%
40	0.09		99.9
60	0.59		99.4
100	53.32		48.8
200	93.97		9.8
Pan	95.8[illegible]		

Maximum particle size if greater than 3" _____

Remarks [illegible]

Set-up by EJ Washed by EJ Sieved by EJ Calculated by DJ Reviewed by [illegible]

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/11/92

Sample Number STR0004100TG

Initial Visual Classification _____

Shape of Grains				
	Gravel Portion:	☐ Angular	☐ Subangular	☐ Rounded ☐ Subrounded
	Sand Portion: (coarse to medium)	☐ Angular	☐ Subangular	☐ Rounded ☐ Subrounded

Specimen Tested		
	☐ Jar Sample _____ Sieves - whole sample used _____ Sieves - partial sample used + obtained by: method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing	☐ Bag or _____ Sample _____ Sieves - whole sample used _____ Sieves - partial sample by method ____ _____ Sieves - partial sample by method ____

Sample Preparation		
	☐ Natural state ☐ Air-dried ☐ Oven-dried	Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ____ h.
	Soil soaked ☐ No ☐ Yes, for ____ hr	Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes	

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wad/1 + (wad) = Wad/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range	ALL	-10	-10 + 200
Container Number			38
Wgt Container + Dry Soil (gm)			193.35
Wgt Container (gm)			124.50
Wgt Dry Soil, W_s (gm)			68.85
Wgt Dry Soil From Hydrometer Test (gm)	84.45		

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N°
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total % Finer N
3/8"			
4			
10	[illegible]		100%
20	[illegible]		99.8
40	3.05		96.4
60	9.12		89.2
100	[illegible]		64.4
200	67.45		20.1
Pan	[illegible]		

Maximum particle size if greater than 3" _____

Remarks _____

Set-up by EJ Washed by [illegible] Sieved by EJ Calculated by [illegible] Reviewed by [illegible]

HYDROMETER TEST

4 81

Project No. 89MC114V Project Engineer _____ Date Set up 1/10/92

Sample No. STK0004100NG

Initial Visual Classification Sm; yellow-brown, fine sand with a trace to some silt.

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____ Soil passing Sieve No. 10
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☐ Overnight ☐ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content	☐ Natural ☐ Air-Dried
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w(%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = 100 x(1+ 10)

W_{wet} = 110 (gm)

After Test-Actual Ws	
Container No.	P-104
Wgt Container + Dispersant + Dry Soil + _____ (gm)	659.13
Wgt Container (gm)	551.00
Wgt Dry Soil + Dispersant + + _____ (gm)	108.13
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	104.13

Soaking Beaker No. A-1 Graduate No. 4 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.1

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/13/92	09:17	0	—	—	—	—	—
		1/2	22.2	9.0	3.9	0.0722	7.8
		1	"	6.8	"	0.0520	4.4
		2	"	5.9	"	0.0371	3.1
		5	"	5.4	"	0.0227	2.3
		10	22.3	5.3	"	0.0161	2.1
		15	"	5.1	"	0.0131	1.8
		30	22.4	5.0	3.8	0.0093	1.8
		60	"	4.9	"	0.0066	1.7
		123	22.3	4.7	"	0.0046	1.4
		240	22.2	4.5	"	0.0033	1.1
	17:30	493	22.1	4.2	3.7	0.0023	0.8
1/14/92	08:14	1377	"	4.2	"	0.0014	0.8

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes formed
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations: Average temperature used in calculating test, °C = 22.2 ✓

☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average

Specific Gravity, G_s = 2.68 ☐ Tested ☑ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 1.532 (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 0.01318 $\sqrt{\frac{Zr}{t}}$

Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 $= \frac{(104.13) \times 100}{100} =$ 104.13 (gm)

(1) R = (Reading - 1) 1000

Remarks: _____

Set-up by EJ Run by EJ Taken down by EJ Sieved by _____ Calculated by [illegible]

HYDROMETER TEST

4-81

Project No. 89MC114V Project Engineer _____ Date Set up 1/10/92

Sample No. STR00041007 G

Initial Visual Classification SM; Grey-brown, fine sand with a trace to some silt.

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____ Soil passing Sieve No. 10
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☐ Overnight ☐ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content	☐ Natural ☐ Air-Dried
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w(%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = 90 x(1+ 15)

W_{wet} = 103.5 (gm)

After Test-Actual Ws	
Container No.	P-51
Wgt Container + Dispersant + Dry Soil + _____ (gm)	630.79
Wgt Container (gm)	542.34
Wgt Dry Soil + Dispersant + + _____ (gm)	88.45
Wgt Dispersant + _____ (gm)	4.[illegible]
Wgt Dry Soil, Ws (gm)	84.45

Soaking Beaker No. D-4 Graduate No. G-3 Hydrometer No. 79-629 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/15/92	09:35	0	—	—	—	—	—
		1/2	22.4	10.4	3.5	0.0712	12.5
		1	"	7.7	"	0.0516	7.4
		2	"	6.7	"	0.0368	5.5
		5	"	6.5	"	0.0225	5.1
		10	"	6.3	"	0.0159	4.7
		15	"	6.2	"	0.0130	4.5
		30	"	5.8	"	0.0092	3.8
		60	"	5.5	"	0.0065	3.2
		120	22.3	5.4	"	0.0046	3.0
		240	22.2	5.2	"	0.0033	2.6
	17:32	478	22.1	5.1	3.7	0.0023	2.6
[illegible]	[illegible]	1362	"	5.0	"	0.0014	2.5

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ Normed
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations: Average temperature used in calculating test, °C = 22.325

☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average

Specific Gravity, G_s = 2.68 ☐ Tested ☒ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 1.889 (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 0.01317 $\sqrt{\frac{Zr}{t}}$

Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 = ([illegible]) x 100 / 100 = 84.45 (gm)

(1) R = (Reading - 1) 1000

Remarks: _____

6

Set-up by [illegible] Run by [illegible] Taken down by [illegible] Sieved by _____ Calculated by [illegible]

[illegible] 1/27/92

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/9/9-
Sample Number STK00C9100MG
Initial Visual Classification _____

Shape of Grains	
	Gravel Portion: ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded
	Sand Portion: (coarse = medium) ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded

Specimen Tested	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:	_____ Sieves - partial sample by method ___
method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing		_____ Sieves - partial sample by method ___

Sample Preparation	
	☐ Natural state ☐ Air-dried ☐ Oven-dried — Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab (280) for ___ h
	Soil soaked ☐ No ☐ Yes, for ___ hr — Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wad/1 + (wad) = Wad/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

Water Content ☐ Natural ☐ Air-dried	
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

WEIGHT OF TEST SPECIMEN

	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range	ALL		-10 + 200
Container Number			703
Wgt Container + Dry Soil (gm)			226.06
Wgt Container (gm)			126.47
Wgt Dry Soil, W_s (gm)			99.59
Wgt Dry Soil From Hydrometer Test (gm)	105.91		

Sieve No.	Cum. Weight Retained (gm)	% Finer than ___ Sieve	Tot'l Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ___ Sieve	Total Samp % Finer N
3/8"			
4			
10			
20	[illegible]		100%
40	[illegible]		99.9
60	[illegible]		98.8
100	62.96		40.6
200	90.55		6.4
Pan	[illegible]		

Maximum particle size if greater than 3" _____

Remarks _____

Set-up by [illegible] Washed by [illegible] Sieved by [illegible] Calculated by [illegible] Reviewed by [illegible]

HYDROMETER TEST

4 81

Project No. 89MC114V Project Engineer _____ Date Set up 1/8/92

Sample No. STK0009100M3

Initial Visual Classification 5m: light-brown silty fine sand

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☑ Mortar + pestle ☐ Other _____ Soil passing Sieve No. 10
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☐ Overnight ☐ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content	☐ Natural ☐ Air-Dried
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w(%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = 100 x(1+ 10%)

W_{wet} = 110 (gm)

After Test-Actual Ws	
Container No.	P-105
Wgt Container + Dispersant + Dry Soil + _____ (gm)	658.42
Wgt Container (gm)	548.51
Wgt Dry Soil + Dispersant + + _____ (gm)	109.91
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	105.91

Soaking Beaker No. I-9 Graduate No. 10 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/11/92	10:[illegible]	0	—	—	—	0 —	—
		1/2	21.1	6.9	3.7	0.0743	4.8
		1	"	5.8	"	0.0530	3.2
		2	"	5.[illegible]	"	0.0377	2.3
		5	"	5.2	"	0.0230	2.3
		10	"	5.1	"	0.0163	2.1
		16	"	4.9	"	0.0129	1.7
		30	[illegible]	4.[illegible]	3.5	0.0094	2.0
		60	"	4.5	"	0.0067	1.5
		122	"	4.2	"	0.0047	1.1
	14:[illegible]	270	[illegible]	4.[illegible]	3.0	0.0032	1.8
	15:[illegible]	480	"	4.[illegible]	"	0.0024	1.8
1/14/92	11:[illegible]	1499	21.3	4.2	3.5	0.0013	1.1

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ Normed
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations:

Average temperature used in calculating test, °C = 21.258	☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average	Specific Gravity, G_s = 2.68 ☐ Tested ☒ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) = 1.506\ (R-Rw)$ in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} = 0.01332\sqrt{\frac{Zr}{t}}$

Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 $= \frac{(105.91) \times 100}{100} = 105.91$ (gm)

(1) R = (Reading - 1) 1000

Remarks: [illegible]

Set-up by EJ Run by EJ Taken down by EJ Sieved by _____ Calculated by [illegible]

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/9/95

Sample Number STR0009100NG

Initial Visual Classification _____

Shape of Grains				
	Gravel Portion:	☐ Angular	☐ Subangular	☐ Rounded ☐ Subrounded
	Sand Portion: (coarse = medium)	☐ Angular	☐ Subangular	☐ Rounded ☐ Subrounded

Specimen Tested	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:	_____ Sieves - partial sample by method ____
	method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing	_____ Sieves - partial sample by method ____

Sample Preparation		
	☐ Natural state ☐ Air-dried ☐ Oven-dried	Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr	Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes	

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or (1) _____ soil (gm) (2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wad/1 + (wad) = Wad/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range	ALL		-10 + 200
Container Number			707
Wgt Container + Dry Soil (gm)			226.79
Wgt Container (gm)			129.57
Wgt Dry Soil, W_s (gm)			97.22
Wgt Dry Soil From Hydrometer Test (gm)	104.45		

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N°
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total % Finer N°
3/8"			
4			
10	~~6~~		100%
20	.15		99.9
40	.31		99.7
60	2.30		97.8
100	48.70		53.4
200	96.91		7.2
Pan	97.46		

Maximum particle size if greater than 3" _____

Remarks _____

Set-up by EJ Washed by EJ Sieved by MS Calculated by PT Reviewed by [illegible]

HYDROMETER TEST

4 81

Project No. 89MC114V Project Engineer _____ Date Set up 1/7/92

Sample No. 5TK0009100NG

Initial Visual Classification SP, Brown fine Sand with a trace of silt.

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____ Soil passing Sieve No. 10
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☐ Overnight ☐ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content	☐ Natural ☐ Air-Dried
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = 100 x (1+ 10)

W_{wet} = 110 (gm)

After Test-Actual Ws	
Container No.	P-53
Wgt Container + Dispersant + Dry Soil + _____ (gm)	650.35
Wgt Container (gm)	541.90
Wgt Dry Soil + Dispersant + + _____ (gm)	108.45
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	104.45

Soaking Beaker No. K-11 Graduate No. 5 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/10/92	09:49	0	—	—	—	—	—
		1/2	21.4	7.4	3.7	0.0737	5.7
		1	"	6.2	"	0.0527	3.8
		2	"	5.7	"	0.0374	3.1
		5	21.5	5.6	3.5	0.0228	3.2
		10	"	5.4	"	0.0162	2.9
		15	21.7	5.1	3.4	0.0132	2.6
		31	"	4.9	"	0.0092	2.3
		63	21.8	4.6	"	0.0065	1.8
		120	"	4.6	"	0.0047	1.8
		241	21.9	4.4	3.2	0.0033	1.8
		480	"	4.2	2.9	0.0024	2.0
1/10/92	[illegible]	1383	20.9	4.2	3.0	0.0014	1.8

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☑ Informed
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations:

Average temperature used in calculating test, °C = 21.575	☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average	Specific Gravity, G_s = 2.68 ☐ Tested ☑ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 1.527 (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 0.01328 $\sqrt{\frac{Zr}{t}}$

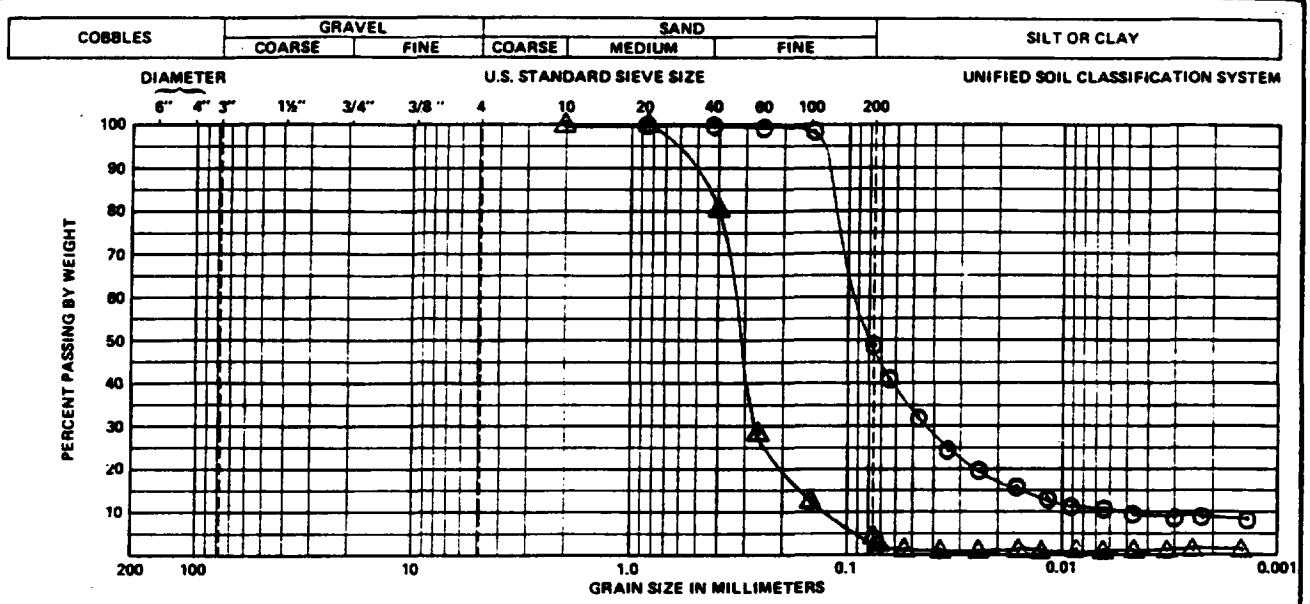
Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 $= \frac{(104.45) \times 100}{100} =$ 104.45 (gm)

(1) R = (Reading - 1) 1000

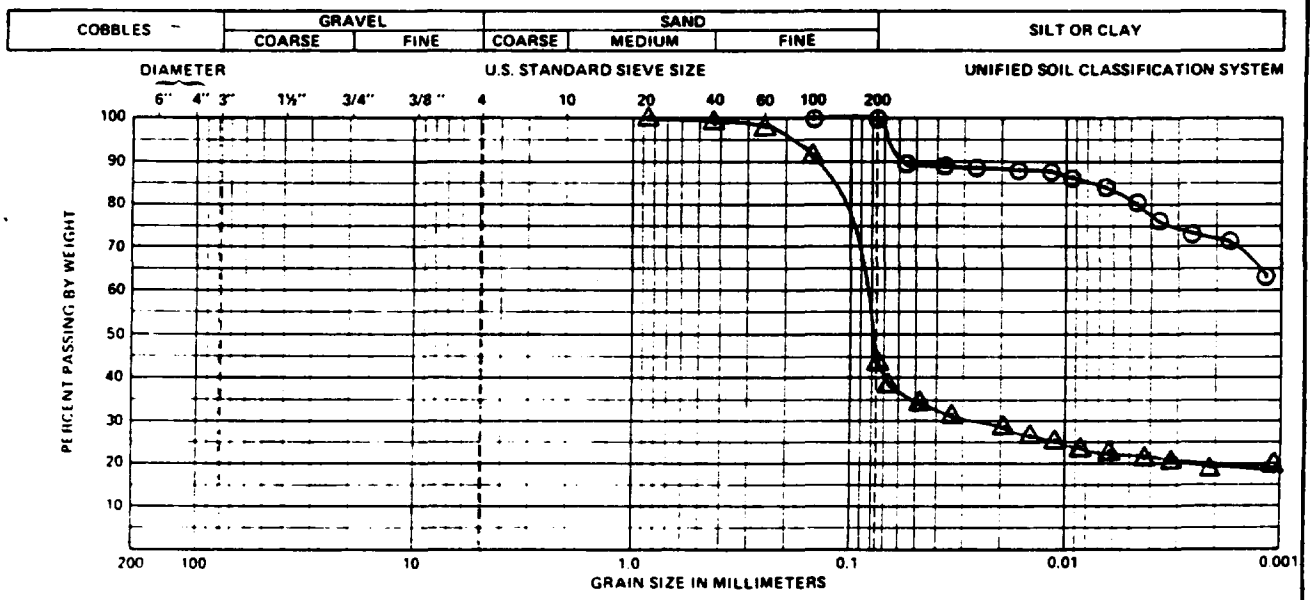
Remarks: _____

Set-up by EJ Run by EJ Taken down by EJ Sieved by _____ Calculated by DJ

PARTICLE-SIZE DISTRIBUTION



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w_L (%)	w_P (%)
SR00001	100NG		⊙	SM, brown clayey silty f. SAND; mica noted; trace clay found in lenses	28.0		
SR00001	100TG		△	SP, lt. brown m-f SAND, trace silt	17.7		



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w_L (%)	w_P (%)
SB00001	100MG		⊙	CH, gray-brown very plastic CLAY; mica noted	44.0		
SB00001	100NG		△	SC, lt. brown clayey f. SAND	31.8		

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/9/92
Sample Number SR00001100NG
Initial Visual Classification _____

Shape of Grains	
	Gravel Portion: ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded
	Sand Portion: (coarse = medium) ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded

Specimen Tested	
	☐ Jar Sample
	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:
method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing	
	☐ Bag or _____ Sample
	_____ Sieves - whole sample used
	_____ Sieves - partial sample by method ____
	_____ Sieves - partial sample by method ____

Sample Preparation	
	☐ Natural state ☐ Air-dried ☐ Oven-dried
	Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab 1280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr
	Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes

Total Weight of Test Specimen ing Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or (1) _____ soil (gm) (2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wod/1 + (wod) = Wod/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range	ALL		-10 + 200
Container Number			709
Wgt Container + Dry Soil (gm)			166.84
Wgt Container (gm)			129.63
Wgt Dry Soil, W_s (gm)			37.21
Wgt Dry Soil From Hydrometer Test (gm)	71.19		

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total Sample % Finer N'
3/8"			
4			
10			
20			100%
40	0.04		99.9
60			99.8
100			98.5
200			48.8
Pan			

Maximum particle size if greater than 3" _____

Remarks _____

Set-up by EJ Washed by _____ Sieved by _____ Calculated by DJ Reviewed by _____

HYDROMETER TEST

4/81

Project No. 89MC114V Project Engineer _____ Date Set up 1/8/92

Sample No. SR000011CONG

Initial Visual Classification SM-ML; Brown silty very fine sand with a trace of grey plastic sandy clay (lenses)

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☑ Mortar + pestle ☐ Other _____
Soil passing Sieve No. _____
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____
Time Soaked: ☐ Overnight ☐ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content ☐ Natural ☐ Air-Dried	
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w(%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = 75 x(1+ 20)

W_{wet} = 90 (gm)

After Test-Actual Ws	
Container No.	P-50
Wgt Container + Dispersant + Dry Soil + _____ (gm)	621.31
Wgt Container (gm)	546.12
Wgt Dry Soil + Dispersant + + _____ (gm)	75.19
Wgt Dispersant + _____ (gm)	4.[illegible]
Wgt Dry Soil, Ws (gm)	71.19

Soaking Beaker No. E-1 Graduate No. 12 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/11/92	10:21	0	—	—	—	—	—
		1/2	21.0	21.8	3.8	0.0638	40.2
		1	"	17.9	"	0.0471	31.5
		2	"	14.8	"	0.0344	24.5
		5	21.1	12.2	3.7	0.0214	19.0
		10	"	10.5	"	0.0154	15.2
		15	"	9.9	"	0.0126	13.8
		30	"	9.0	"	0.0090	11.8
		60	21.2	8.3	3.5	0.0064	10.7
		120	"	7.9	"	0.0046	9.8
	14:54	273	21.6	7.3	3.0	0.0030	9.6
	18:25	484	"	7.2	"	0.0023	9.4
1/12/92	11:04	1503	21.3	7.2	3.5	0.0013	8.3

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ Not Required
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations:

Average temperature used in calculating test, °C = 21.225	☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average	Specific Gravity, G_s = 2.70 ☐ Tested ☒ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 2.231 (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 0.01325 $\sqrt{\frac{Zr}{t}}$

Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 $= \frac{(71.19) \times 100}{100} =$ 71.19 (gm)

(1) R = (Reading - 1) 1000

Remarks: _____

Set-up by EJ Run by EJ Taken down by EJ Sieved by _____ Calculated by [illegible]

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/9/92
Sample Number SK00001100TG
Initial Visual Classification _____

Shape of Grains	Gravel Portion: ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded
	Sand Portion: (coarse = medium) ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded

Specimen Tested	☐ Jar Sample _____ Sieves - whole sample used _____ Sieves - partial sample used & obtained by: method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing	☐ Bag or _____ Sample _____ Sieves - whole sample used _____ Sieves - partial sample by method ____ _____ Sieves - partial sample by method ____

Sample Preparation	
	☐ Natural state ☐ Air-dried ☐ Oven-dried — Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr — Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes.

Total Weight of Test Specimen using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wad/1 + (wad) = Wad/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

WEIGHT OF TEST SPECIMEN

	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range	ALL		-10 + 200
Container Number			702
Wgt Container + Dry Soil (gm)			254.92
Wgt Container (gm)			126.53
Wgt Dry Soil, W_s (gm)			128.39
Wgt Dry Soil From Hydrometer Test (gm)	133.47		

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total Sample % Finer N'
3/8"			
4			
10	0		100%
20	.25		99.8
40	26.52		82.1
60	95.98		28.1
100	115.41		13.5
200	127.91		4.2
Pan	128.20		

Maximum particle size if greater than 3" _____

Remarks _____

Set-up by EJ Washed by EJ Sieved by MS Calculated by DT Reviewed by _____

HYDROMETER TEST

4/81

Project No. 89MC114V Project Engineer _____ Date Set up 1/8/92

Sample No. SR00001100TG

Initial Visual Classification SP; Light brown, medium to fine sand with a trace of silt.

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☑ Mortar + pestle ☐ Other _____ Soil passing Sieve No. 10
Dispersing Agent:(1) ☐ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☑ Overnight ☐ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content ☐ Natural ☐ Air-Dried	
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = _____ x(1+ _____)

W_{wet} = 145 (gm)

After Test-Actual Ws	
Container No.	P-108
Wgt Container + Dispersant + Dry Soil + _____ (gm)	643.35
Wgt Container (gm)	545.88
Wgt Dry Soil + Dispersant + + _____ (gm)	137.47
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	133.47

Soaking Beaker No. A-1 Graduate No. 7 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/10/92	09:43	0	—	—	—	—	—
		1/2	21.4	6.2	3.7	0.0745	3.0
		1	"	5.7	"	0.0529	2.4
		2	"	5.3	"	0.0375	1.9
		5	"	5.1	"	0.0229	1.7
		10	21.5	5.1	2.6	0.0162	1.9
		15	"	5.0	"	0.0133	1.8
		33	21.7	5.0	3.[illegible]	0.0089	1.9
		62	21.8	4.6	"	0.0065	1.4
		121	"	4.5	"	0.0047	1.3
		244	21.9	4.5	3.2	0.0033	1.6
		487	"	4.0	2.9	0.0024	1.3
1/11/92	08:51	1388	20.9	4.0	3.0	0.0014	1.2

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed ☐ Yes ☐ Informed	
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations:

Average temperature used in calculating test, °C = 21.55	☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average	Specific Gravity, G_s = 2.68 ☐ Tested ☑ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 1.195 (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 0.01328 $\sqrt{\frac{Zr}{t}}$

Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 = (133.47) x 100 / 100 = 133.47 (gm)

(1) R = (Reading - 1) 1000

Remarks: [illegible]

Set-up by EJ Run by EJ Taken down by EJ Sieved by _____ Calculated by [illegible]

[illegible] 1/27/92

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/10/92

Sample Number SBV0001100 MG

Initial Visual Classification _____

Shape of Grains				
	Gravel Portion:	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded
	Sand Portion: (coarse - medium)	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded

Specimen Tested	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:	_____ Sieves - partial sample by method ____
	method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing	_____ Sieves - partial sample by method ____

Sample Preparation		
	☐ Natural state ☐ Air-dried ☐ Oven-dried	Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr	Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes	

Total Weight of Test Specimen using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wad/1 + (wad) = Wad/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range		-10	-10 + 200
Container Number		P-15	662
Wgt Container + Dry Soil (gm)			149.01
Wgt Container (gm)			148.98
Wgt Dry Soil, W_s (gm)			0.03
Wgt Dry Soil From Hydrometer Test (gm)		533Y	

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total Sample % Finer N'
3/8"			
4			
10			
20			
40			
60			
100	0		100%
200	0.02		100
Pan	0.03		

Maximum particle size if greater than 3" _____

Remarks [illegible]

Set-up by EJ Washed by EJ Sieved by EJ Calculated by [illegible] Reviewed by [illegible]

HYDROMETER TEST

4/81

Project No. 89MC114V Project Engineer _____ Date Set up 1/7/92

Sample No. SBV0001100MG

Initial Visual Classification CH: Grey-brown, moist, firm, silty clay with a trace of sand.

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____ Soil passing Sieve No. 10
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☐ Overnight ☐ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content	☐ Natural ☐ Air-Dried
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = 60 x(1+ 20)

W_{wet} = 72 (gm)

After Test-Actual Ws	
Container No.	P-15
Wgt Container + Dispersant + Dry Soil + _____ (gm)	583.96
Wgt Container (gm)	526.62
Wgt Dry Soil + Dispersant + + _____ (gm)	57.34
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	53.34

Soaking Beaker No. UU Graduate No. 2 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/9/92	10:02	0	—	—	—	—	—
		1/2	22.0	33.9	3.6	0.0532	89.5
		1	"	33.8	"	0.0377	89.2
		2	"	33.5	"	0.0268	88.3
		5	"	33.4	"	0.0158	88.0
		10	"	33.3	"	0.0112	87.7
		15	"	32.8	"	0.0092	86.2
		30	"	32.1	3.5	0.0066	84.4
		60	"	3[illegible]	"	0.0048	80.9
		120	21.9	29.4	"	0.0035	76.5
		240	21.7	28.4	3.4	0.0025	73.8
		480	21.8	26.9	3.1	0.0018	70.3
1/10/92	08:12	1330	21.2	24.7	3.3	0.0011	63.2

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ Formed
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations: Average temperature used in calculating test, °C = 21.83

☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average

Specific Gravity, G_s = 2.74 ☐ Tested ☑ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 2.952 (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 0.0130 $\sqrt{\frac{Zr}{t}}$

Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 = (53.34) x 100 = 53.34 (gm)

(1) R = (Reading - 1) 1000

Remarks: _____

Set-up by [illegible] Run by [illegible] Taken down by _____ Sieved by _____ Calculated by _____

PARTICLE-SIZE ANALYSIS
(by sieving)

16.75

Project Number 89MC114V Project Engineer _____ Date 1/9/92
Sample Number SB10001100NG
Initial Visual Classification _____

Shape of Grains	
	Gravel Portion: ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded
	Sand Portion: (coarse to medium) ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded

Specimen Tested	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:	_____ Sieves - partial sample by method ____
method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing		_____ Sieves - partial sample by method ____

Sample Preparation	
	☐ Natural state ☐ Air-dried ☐ Oven-dried — Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr — Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes

Total Weight of Test Specimen ing Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wsd/1 + (wsd) = Wsd/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range		-10	-10 + 200
Container Number		P-16	740
Wgt Container + Dry Soil (gm)			169.22
Wgt Container (gm)			131.43
Wgt Dry Soil, W_s (gm)			37.79
Wgt Dry Soil From Hydrometer Test (gm)		66.65	

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total Samp. % Finer N
3/8"			
4			
10			
20	0		100%
40	0.13		99.8
60	0.22		99.7
100	5.80		91.3
200	37.34		4.0
Pan	37.93		

Maximum particle size if greater than 3" _____

Remarks No wire.

Set-up by [illegible] Washed by EJ Sieved by EJ Calculated by [illegible] Reviewed by [illegible]

HYDROMETER TEST

4/81

Project No. 89MC114V Project Engineer _____ Date Set up 1/6/92

Sample No. SBV0001100NG

Initial Visual Classification Sm-SC; Light-brown silty fine sand and sandy clay.

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☐ Other _____
Soil passing Sieve No. 10
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____
Time Soaked: ☐ Overnight ☑ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content ☐ Natural ☐ Air-Dried	
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = 70 x(1+ 15)

W_{wet} = 80.5 (gm)

After Test-Actual Ws	
Container No.	P-16
Wgt Container + Dispersant + Dry Soil + _____ (gm)	588.47
Wgt Container (gm)	517.62
Wgt Dry Soil + Dispersant + + _____ (gm)	70.65
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	66.65

Soaking Beaker No. E-1 Graduate No. 12 Hydrometer No. 70-645 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/7/92	09:36	0	—	—	—	—	—
		1/2	21.7	20.1	3.8	0.0650	39.0
		1	"	18.3	"	0.0469	34.7
		2	"	17.2	"	0.0335	32.1
		6	21.8	16.1	"	0.0187	29.4
		11	"	15.1	"	0.0140	27.0
		18	"	14.7	"	0.0110	26.1
		31	"	14.1	"	0.0084	24.7
		66	"	13.5	"	0.0061	23.2
		120	22.1	12.9	3.7	0.0043	22.0
		240	22.0	12.3	3.6	0.0031	20.8
	17:48	492 ✓	21.9	11.9	3.7	0.0022	19.6
1/8/92	08:16	1362 ✓	21.0	11.2	3.2	0.0013	19.1

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ No
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations:

Average temperature used in calculating test, °C = 21.758

☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average

Specific Gravity, G_s = 2.68 ☐ Tested ☑ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 2.313 (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 0.01325 $\sqrt{\frac{Zr}{t}}$

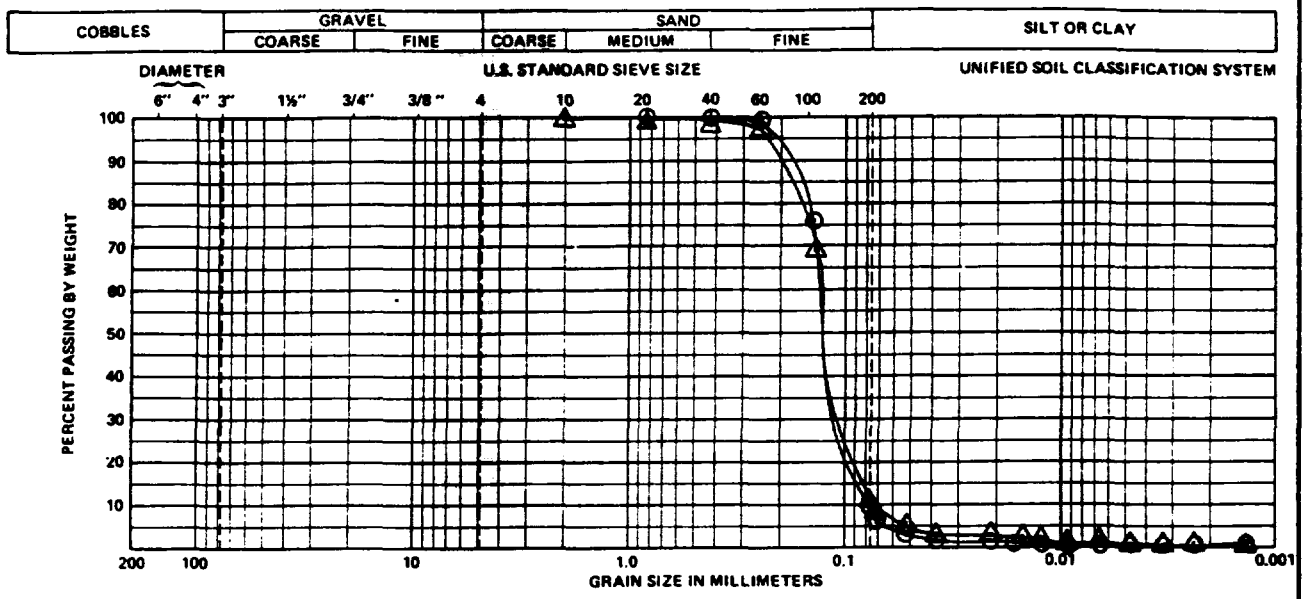
Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 $= \frac{(66.65) \times 100}{100} =$ 66.65 (gm)

(1) R = (Reading - 1) 1000

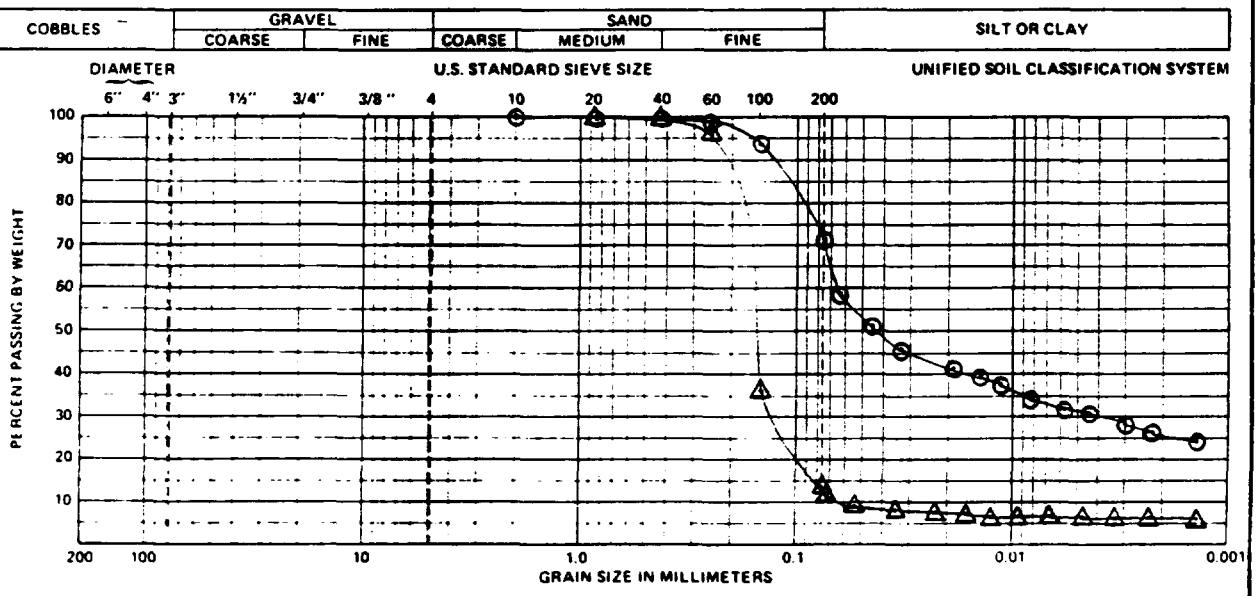
Remarks: _____

Set-up by EJ Run by EJ Taken down by EJ Sieved by _____ Calculated by EJ

PARTICLE-SIZE DISTRIBUTION



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w_L (%)	w_P (%)
SBV0001	100TG		⊙	SP-SM, lt. brown f. SAND, trace Silt	10.9		
SBV0002	100TG		△	SP-SM, lt. brown f. SAND, trace silt; mica noted	8.6		



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w_L (%)	w_P (%)
STA0001	100KG		⊙	CH, brown very plastic CLAY, Some f. Sand; mica noted	19.8		
STA0001	100LG		△	SM, yellow-brown f. SAND, Some Silt; mica noted	14.6		

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/9/92
Sample Number SBU0001100TG
Initial Visual Classification _____

Shape of Grains				
Gravel Portion:	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded
Sand Portion: (coarse to medium)	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded

Specimen Tested		
	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:	_____ Sieves - partial sample by method ____
method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing		_____ Sieves - partial sample by method ____

Sample Preparation	
	☐ Natural state ☐ Air-dried ☐ Oven-dried — Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab (280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr — Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☐ Yes

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or (1) _____ soil (gm) (2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wad/1 + (wad) = Wad/_____ (gm)	
Wgt + S/A or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN

	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range		-10	-10 + 200
Container Number		P-15	672
Wgt Container + Dry Soil (gm)			231.98
Wgt Container (gm)			149.51
Wgt Dry Soil, W_s (gm)			82.47
Wgt Dry Soil From Hydrometer Test (gm)		89.06	

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Total Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total % Finer N'
3/8"			
4			
10			
20	0		100.0
40	0.04		99.9
60	0.47		99.5
100	22.21		75.1
200	80.34		3.8
Pan	82.65		

Maximum particle size if greater than 3" _____

Remarks No mica

Set-up by EJ Washed by EJ Sieved by EJ Calculated by PT Reviewed by _____

HYDROMETER TEST

4-81

Project No. 89MC114V Project Engineer _____ Date Set up 1/6/92

Sample No. SBV0001100 T6

Initial Visual Classification Sm; light-brown fine sand with a trace to some silt.

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☐ Other _____
Soil passing Sieve No. 10
Dispersing Agent: (1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____
Time Soaked: ☐ Overnight ☐ Other _____
☐ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content	☐ Natural ☐ Air-Dried
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = 85 x (1+ .10)

W_{wet} = 93.5 (gm)

After Test-Actual Ws	
Container No.	P-15
Wgt Container + Dispersant + Dry Soil + _____ (gm)	619.74
Wgt Container (gm)	526.68
Wgt Dry Soil + Dispersant + + _____ (gm)	93.06
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	89.06

Soaking Beaker No. H6 Graduate No. 1 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/7/92	09:51	0	–	–	–	–	–
		1/2	21.8	7.8	3.8	0.0733	7.2
		1	"	6.1	"	0.0526	4.1
		2	"	5.6	"	0.0373	3.2
		6	"	5.4	"	0.0208	2.9
		10	"	5.3	"	0.0161	2.7
		15	"	5.0	"	0.0132	2.1
		30	"	5.0	"	0.0093	2.1
		61	22.1	4.7	3.1	0.0066	1.8
		1:10	"	4.5	3.7	0.0047	1.4
		241	22.0	4.3	3.6	0.0033	1.3
	11:50	479	21.9	4.3	3.7	0.0024	1.1
1/8/92	08:20	1349	21.0	4.3	3.2	0.0014	2.0

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ No
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations:

Average temperature used in calculating test, °C = 21.58

☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average

Specific Gravity, G_s = 2.68 ☐ Tested ☑ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) = 1.791\ (R-Rw)$ in %

$D = \sqrt{\frac{18\mu}{G_s G_w}}\sqrt{\frac{Zr}{t}} = 0.01324\ \sqrt{\frac{Zr}{t}}$

Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 = (89.06 / 100) x 100 = 89.06 (gm)

(1) R = (Reading - 1) 1000

Remarks: _____

Set-up by EJ Run by EJ Taken down by EJ Sieved by _____ Calculated by _____

1/23/92

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/9/92
Sample Number SBV0002100TG
Initial Visual Classification _____

Shape of Grains	
	Gravel Portion: ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded
	Sand Portion: (coarse to medium) ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded

Specimen Tested	
	☐ Jar Sample
	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:
method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing	
	☐ Bag or _____ Sample
	_____ Sieves - whole sample used
	_____ Sieves - partial sample by method ____
	_____ Sieves - partial sample by method ____

Sample Preparation	
	☐ Natural state ☐ Air-dried ☐ Oven-dried — Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr — Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wod/1 + (wod) = Wod/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

WEIGHT OF TEST SPECIMEN

	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range		-10	-10 + 200
Container Number		P-50	7Z.6
Wgt Container + Dry Soil (gm)			206.55
Wgt Container (gm)			131.24
Wgt Dry Soil, W_s (gm)			75.31
Wgt Dry Soil From Hydrometer Test (gm)		83.46	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Total % Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total % Finer N
3/8"			
4			
10	0		100%
20	0.20		99.8
40	0.77		99.1
60	2.56		96.9
100	25.52		69.4
200	74.63		10.6
Pan	75.52		

Maximum particle size if greater than 3" _____

Remarks Trace of mica [illegible]

Set-up by [illegible] Washed by EJ Sieved by _____ Calculated by [illegible] Reviewed by [illegible]

HYDROMETER TEST

4-81

Project No. 89MC114V Project Engineer _____ Date Set up 1/6/92
Sample No. SBV0002100TG
Initial Visual Classification SM: Light-brown, silty very-fine sand.

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☐ Other _____
Soil passing Sieve No. 10
Dispersing Agent: (1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____
Time Soaked: ☐ Overnight ☐ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for ____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content ☐ Natural ☐ Air-Dried	
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up
W_{wet} = Estimated Ws x (1+w)
W_{wet} = 85 x (1+ .15)
W_{wet} = 97.8 (gm)

After Test-Actual Ws	
Container No.	P-50
Wgt Container + Dispersant + Dry Soil + _____ (gm)	633.81
Wgt Container (gm)	546.35
Wgt Dry Soil + Dispersant + + _____ (gm)	87.46
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	83.46

Soaking Beaker No. ST Graduate No. 14 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/7/92	09:43	0	–	–	–	–	–
		1/2	21.8	7.9	3.8	0.0732	7.8
		1	"	6.6	"	0.0524	5.4
		2	"	5.8	"	0.0373	3.8
		6	"	5.6	"	0.0208	3.4
		12	"	5.3	"	0.0147	2.9
		15	"	5.2	"	0.0132	2.7
		30	"	5.0	"	0.0093	2.3
		60	22.1	4.7	3.7	0.0066	1.9
		120	"	4.4	3.7	0.0047	1.3
		240	22.0	4.3	3.6	0.0033	1.3
	17:49	486	21.9	4.3	3.7	0.0023	1.1
1/8/92	08:11	1356	21.0	4.2	3.2	0.0014	1.9

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed ☐ Yes ☐ No	
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations: Average temperature used in calculating test, °C = 21.08

☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average

Specific Gravity, G_s = 2.68 ☐ Tested ☑ Assumed

$$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) = 1.911\ (R-Rw) \text{ in } \%$$

$$D = \sqrt{\frac{18\mu}{G_s-G_w}}\sqrt{\frac{Zr}{t}} = 0.01324\sqrt{\frac{Zr}{t}}$$

Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 $= (83.46) \times 100 / 100 = 83.46$ (gm)

(1) R = (Reading - 1) 1000

Remarks: _____

Set-up by EJ Run by EJ Taken down by EJ Sieved by _____ Calculated by _____

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/10/92
Sample Number STA0001100 KG
Initial Visual Classification _____

Shape of Grains	
	Gravel Portion: ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded
	Sand Portion: (coarse = medium) ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded

Specimen Tested	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:	_____ Sieves - partial sample by method ____
	method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing	_____ Sieves - partial sample by method ____

Sample Preparation	
	☐ Natural state ☐ Air-dried ☐ Oven-dried — Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr — Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wsd/1 + (wsd) = Wsd/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_0 (gm)	

WEIGHT OF TEST SPECIMEN			
	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range	ALL		-10 +200
Container Number			739
Wgt Container + Dry Soil (gm)			147.83
Wgt Container (gm)			131.30
Wgt Dry Soil, W_0 (gm)			16.53
Wgt Dry Soil From Hydrometer Test (gm)	55.80		

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total % Finer N'
3/8"			
4			
10	0		100%
20	0.07		99.9
40	0.10		99.8
60	0.16		99.7
100	3.69		93.4
200	11.72		71.3
Pan	11.54		

Maximum particle size if greater than 3" _____

Remarks Total of [illegible]

Set-up by EJ Washed by EJ Sieved by EJ Calculated by DJ Reviewed by [illegible]

HYDROMETER TEST

4/81

Project No. 89MC114V Project Engineer _____ Date Set up 1/9/92

Sample No. STA0001166KG

Initial Visual Classification CH; Brown moist, firm, highly Plastic silty clay with a trace of sand.

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____ Soil passing Sieve No. 10
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☐ Overnight ☐ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content	☐ Natural ☐ Air-Dried
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w(%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)
W_{wet} = 60 x(1+ 10)
W_{wet} = 66 (gm)

After Test-Actual Ws	
Container No.	P-108
Wgt Container + Dispersant + Dry Soil + _____ (gm)	605.74
Wgt Container (gm)	545.94
Wgt Dry Soil + Dispersant + + _____ (gm)	59.80
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	55.80

Soaking Beaker No. H6 Graduate No. 14 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/13/92	09:23	0	—	—	—	—	—
		1/2	22.2	24.3	3.9	0.0609	57.8
		1	"	22.1	"	0.0442	51.6
		2	22.3	20.1	"	0.0320	45.9
		5	"	19.0	"	0.0195	42.8
		10	"	17.6	"	0.0140	38.8
		15	22.4	17.1	3.8	0.0115	37.7
		30	"	16.0	"	0.0082	34.6
		60	"	15.3	"	0.0059	32.6
		120	22.3	14.7	"	0.0042	30.9
		240	22.2	13.9	"	0.0030	28.6
	17:31	488	22.1	13.2	3.7	0.0021	26.9
1/14/92	09:15	1372	"	12.4	"	0.0013	24.7

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ Informed
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations: Average temperature used in calculating test, °C = 22.267

☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average

Specific Gravity, G_s = 2.72 ☐ Tested ☑ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 2.834 (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 0.01302 $\sqrt{\frac{Zr}{t}}$

Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 $= \frac{(55.80) \times 100}{100} =$ 55.80 (gm)

(1) R = (Reading - 1) 1000

Remarks: _____

Set-up by [illegible] Run by [illegible] Taken down by [illegible] Sieved by _____ Calculated by [illegible]

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/10/92
Sample Number STA00011001G
Initial Visual Classification _____

Shape of Grains	
Gravel Portion:	☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded
Sand Portion: (coarse & medium)	☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded

Specimen Tested	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used & obtained by:	_____ Sieves - partial sample by method ____
method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing		_____ Sieves - partial sample by method ____

Sample Preparation	
	☐ Natural state ☐ Air-dried ☐ Oven-dried — Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr — Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wsd/1 + (wsd) = Wsd/_____ (gm)	
Wgt + S/A or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen. W_s (gm)	

WEIGHT OF TEST SPECIMEN	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range	ALL		-16 +200
Container Number			685
Wgt Container + Dry Soil (gm)			205.11
Wgt Container (gm)			125.09
Wgt Dry Soil, W_s (gm)			80.02
Wgt Dry Soil From Hydrometer Test (gm)	72.83		

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total % Finer N'
3/8"			
4			
10			
20	[illegible]		100%
40	[illegible]		99.8
60	3.211		96.5
100	55.02		36.5
200	79.53		14.3
Pan	[illegible]		

Maximum particle size if greater than 3" _____

Remarks _____

Set-up by [illegible] Washed by _____ Sieved by _____ Calculated by [illegible] Reviewed by [illegible]

HYDROMETER TEST

4 81

Project No. 89MC114V Project Engineer _____ Date Set up 1/9/92

Sample No. STA0001100LG

Initial Visual Classification Sm-Yellow-brown fine sand with some silt.

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____
Soil passing Sieve No. 10
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____
Time Soaked: ☐ Overnight ☑ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content	☐ Natural ☐ Air-Dried
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w(%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = 90 x(1+ 10)

W_{wet} = 99 (gm)

After Test-Actual Ws	
Container No.	P-17
Wgt Container + Dispersant + Dry Soil + _____ (gm)	615.64
Wgt Container (gm)	518.81
Wgt Dry Soil + Dispersant + + _____ (gm)	96.83
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	92.83

Soaking Beaker No. H5 Graduate No. 2 Hydrometer No. 79-47-5 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/11/92	10:32	0	—	—	—	—	—
		1/2	21.1	10.4	3.7	0.0720	11.5
		1	"	9.3	"	0.0515	9.6
		2		8.8	"	0.0365	8.8
		5	"	8.7	"	0.0223	8.6
		11	"	8.5	"	0.0150	8.2
		15	"	8.3	"	0.0129	7.7
		30	[illegible]	8.0	3.5	0.0092	7.7
		60	"	8.0	"	0.0065	7.7
		122	"	7.7	"	0.0046	7.2
	14:57	265	21.8	7.3	3.7	0.0031	7.4
	15:[illegible]7	475	"	7.5	"	0.0023	7.4
1/1	[illegible]	1493	21.2	7.5	3.5	0.0013	6.9

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ Normed
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations:

Average temperature used in calculating test, °C = 21.25	☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average	Specific Gravity, G_s = 2.68 ☐ Tested ☒ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 1.718 (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 0.01332 $\sqrt{\frac{Zr}{t}}$

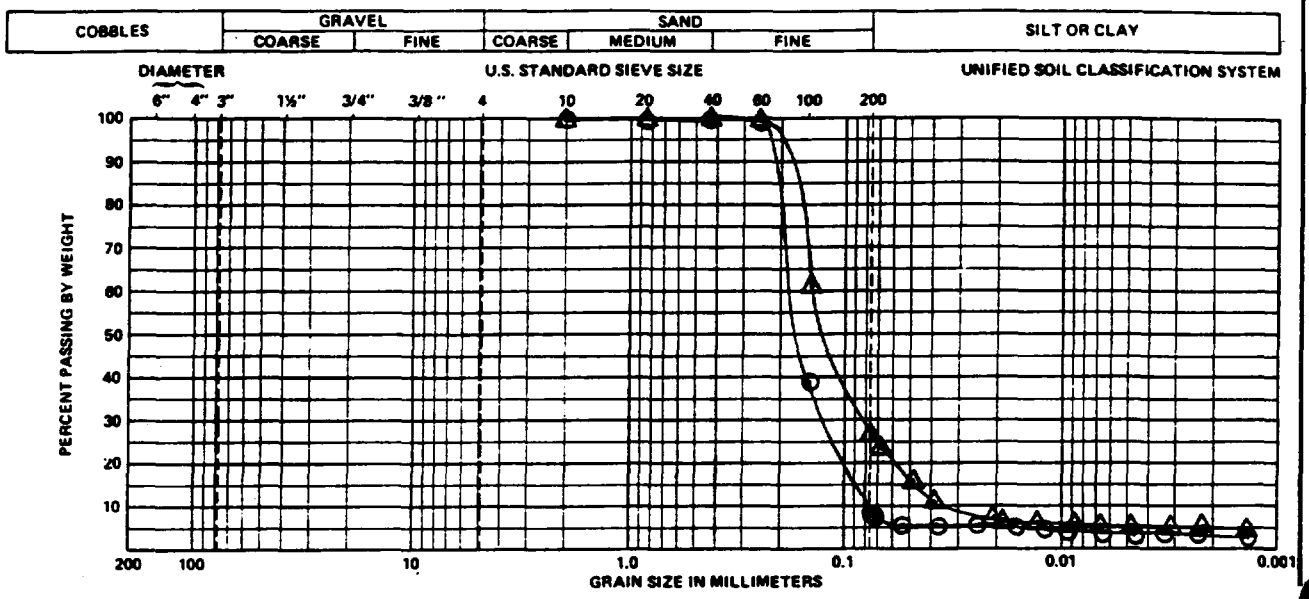
Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 $= \frac{(92.83) \times 100}{100} =$ 92.83 (gm)

(1) R = (Reading - 1) 1000

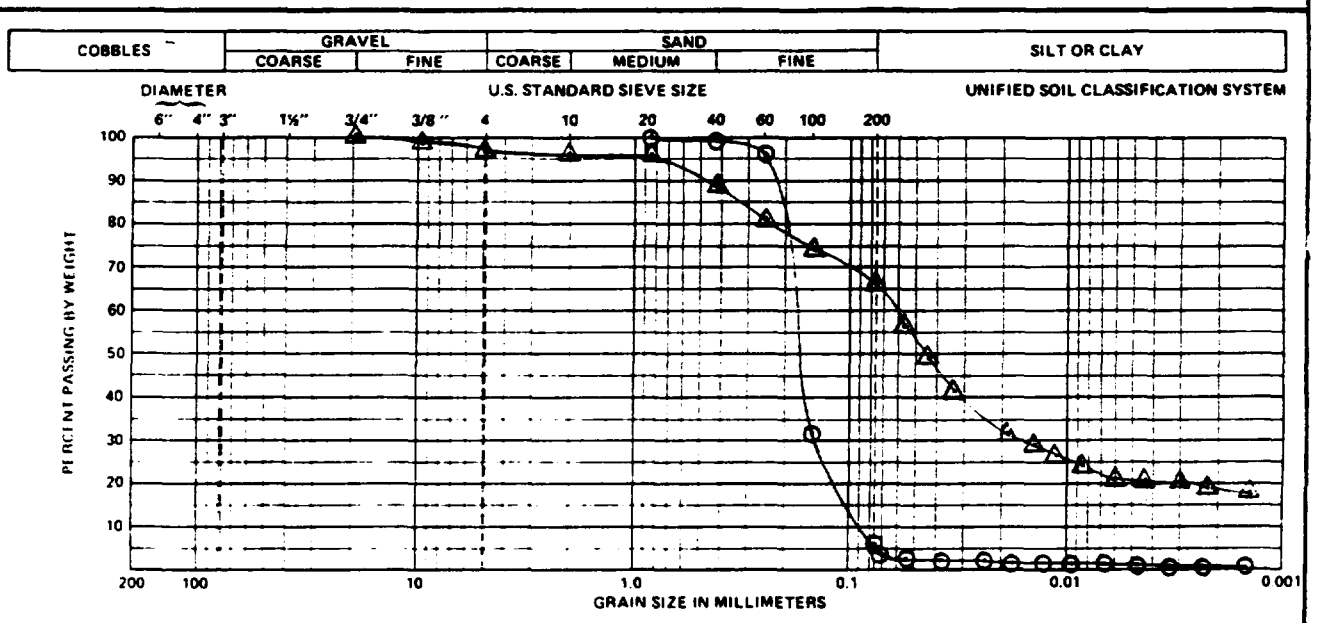
Remarks: _____

Set-up by EJ Run by EJ Taken down by EJ Sieved by _____ Calculated by [illegible]

PARTICLE-SIZE DISTRIBUTION



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w_L (%)	w_P (%)
STA0001	100MG		⊙	SP-SM, brown f. SAND, trace Silt	11.2		
STA0001	100NG		△	SM, yellow-brown f. SAND, Some silt; mica noted	9.4		



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w_L (%)	w_P (%)
STA0001	100TG		⊙	SM, yellow-brown f. SAND, trace silt; mica noted	8.5		
STA0002	100LG		△	CL gray-brown sandy plastic CLAY, trace f. gravel ~ note sample mixture of CL clay & silty sand	27.3		

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/9/92
Sample Number STA6D0110DMG
Initial Visual Classification _____

Shape of Grains	
	Gravel Portion: ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded
	Sand Portion: (coarse to medium) ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded

Specimen Tested		
	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:	_____ Sieves - partial sample by method ____
method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing		_____ Sieves - partial sample by method ____

Sample Preparation	
	☐ Natural state ☐ Air-dried ☐ Oven-dried — Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr — Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes

Total Weight of Test Specimen using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wsd/1 + (wsd) = Wsd/_____ (gm)	
Wgt + 3/8 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

WEIGHT OF TEST SPECIMEN

	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range	ALL		-10 +200
Container Number			714
Wgt Container + Dry Soil (gm)			223.94
Wgt Container (gm)			129.70
Wgt Dry Soil, W_s (gm)	1		94.24
Wgt Dry Soil From Hydrometer Test (gm)	102.50		

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N°
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total Samp. % Finer N
3/8"			
4			
10	~0		100.2
20	.19		99.8
40	.24		99.8
60	1.42		98.6
100	62.77		33.8
200	94.21		8.1
Pan	94.49		

Maximum particle size if greater than 3" _____

Remarks _____

Set-up by EJ Washed by EJ Sieved by MS Calculated by DZ Reviewed by _____

HYDROMETER TEST

4/81

Project No. 89MC114V Project Engineer _____ Date Set up 1/8/92

Sample No. STA00+00 100MG

Initial Visual Classification SM; brown fine sand with a trace to some silt.

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____
Soil passing Sieve No. 10
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____
Time Soaked: ☐ Overnight ☑ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content ☐ Natural ☐ Air-Dried	
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = 100 x (1+ 11%)

W_{wet} = 111 (gm)

After Test-Actual Ws	
Container No.	P-49
Wgt Container + Dispersant + Dry Soil + _____ (gm)	654.43
Wgt Container (gm)	547.93
Wgt Dry Soil + Dispersant + _____ (gm)	106.50
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	102.50

Soaking Beaker No. J-10 Graduate No. 4 Hydrometer No. 79-625 Meniscus Correction, Cm = 6.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/16/92	09:55	0	–	–	–	–	–
		1/2	21.5	7.8	3.5	0.0734	6.7
		1	"	7.3	"	0.0521	5.9
		2	"	7.1	"	0.0369	5.6
		5	"	7.0	"	0.0225	5.4
		10	21.7	6.9	3.4	0.0160	5.3
		15	"	6.7	"	0.0130	5.1
		30	21.9	6.2	"	0.0093	4.6
		60	21.8	6.1	"	0.0066	4.2
		120	"	6.0	"	0.0046	4.0
		240	21.7	5.9	3.2	0.0033	4.2
		480	"	5.6	2.9	0.0023	4.2
1/16/92	09:53	1378	20.9	5.7	3.0	0.0014	4.2

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed ☐ Yes ☐ No	
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations: Average temperature used in calculating test, °C = 21.633

☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average

Specific Gravity, G_s = 2.68 ☐ Tested ☑ Assumed

$$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) = 1.536\ (R-Rw) \text{ in } \%$$

$$D = \sqrt{\frac{18\mu}{G_s G_w}}\sqrt{\frac{Zr}{t}} = 0.0132\ \sqrt{\frac{Zr}{t}}$$

Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 $= \frac{(102.50) \times 100}{100} = 102.50$ (gm)

(1) R = (Reading - 1) 1000

Remarks: _____

Set-up by EJ Run by EJ Taken down by EJ Sieved by _____ Calculated by [illegible]

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/10/92
Sample Number STA0001100NG
Initial Visual Classification _____

Shape of Grains	
	Gravel Portion: ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded
	Sand Portion: (coarse = medium) ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded

Specimen Tested	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:	_____ Sieves - partial sample by method ____
method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing		_____ Sieves - partial sample by method ____

Sample Preparation	
	☐ Natural state ☐ Air-dried ☐ Oven-dried — Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr — Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes

Total Weight of Test Specimen using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wsd/1 + (wsd) = Wsd/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range		-10	-10 + 200
Container Number		P-16	72G
Wgt Container + Dry Soil (gm)			197.34
Wgt Container (gm)			131.37
Wgt Dry Soil, W_s (gm)			65.97
Wgt Dry Soil From Hydrometer Test (gm)		88.87	

Water Content ☐ Natural ☐ Air-dried	
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total Sample % Finer N'
3/8"			
4			
10	0		100%
20	0.09		99.9
40	0.22		99.8
60	2.71		97.0
100	34.77		60.9
200	63.75		38.3
Pan	65.96		

Maximum particle size if greater than 3" _____

Remarks Micro [illegible]

Set-up by EJ Washed by [illegible] Sieved by [illegible] Calculated by [illegible] Reviewed by [illegible]

HYDROMETER TEST

4-81

Project No. 89MC114V Project Engineer _____ Date Set up 1/8/92
Sample No. STA0001100NG
Initial Visual Classification SM-ML; yellow-brown silty fine sand

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____
Soil passing Sieve No. 10
Dispersing Agent: (1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____
Time Soaked: ☐ Overnight ☐ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content ☐ Natural ☐ Air-Dried	
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up
W_{wet} = Estimated Ws x (1+w)
W_{wet} = 90 x (1+ .15)
W_{wet} = 103.5 (gm)

After Test-Actual Ws	
Container No.	P-16
Wgt Container + Dispersant + Dry Soil + _____ (gm)	610.64
Wgt Container (gm)	517.77
Wgt Dry Soil + Dispersant + _____ (gm)	92.87
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	88.87

Soaking Beaker No. ST Graduate No. G-3 Hydrometer No. 79-62 Meniscus Correction, Cm = [illegible]

Date	Time hr:min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/8/92	09:50	0	—	—	—	—	—
		1/2	22.0	17.2	3.9	0.0670	23.9
		1	"	12.8	"	0.0495	16.6
		2	"	10.0	"	0.0359	10.9
		5	"	8.5	"	0.0222	8.3
		10	"	8.1	3.6	0.0157	8.1
		15	"	7.8	"	0.0129	7.7
		33	"	7.5	"	0.0087	7.0
		61	"	7.2	3.5	0.0064	6.6
		1246	21.9	6.9	"	0.0045	6.1
		2445	21.7	6.3	3.4	0.0032	5.7
		4226	21.9	6.2	3.1	0.0023	5.6
[illegible]	[illegible]	1340	21.2	6.1	3.3	0.0014	4.8

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed ☐ Yes ☐ No	
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations: Average temperature used in calculating test, °C = 21.33

☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average

Specific Gravity, G_s = 2.68 ☐ Tested ☒ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 1.72 $(R-Rw)$ in %

$D = \sqrt{\frac{18\mu}{G_s G_w}}\sqrt{\frac{Zr}{t}} =$ 0.01323 $\sqrt{\frac{Zr}{t}}$

2) Where $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. _____ = (88.87) x 100 = 88.87 (gm)

(1) R = (Reading - 1) 1000

Remarks: _____

Set-up by [illegible] Run by [illegible] Taken down by [illegible] Sieved by _____ Calculated by [illegible]

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/11/92

Sample Number STA0001100TG

Initial Visual Classification _____

Shape of Grains				
Gravel Portion:	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded
Sand Portion: (coarse to medium)	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded

Specimen Tested		
	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:	_____ Sieves - partial sample by method ____
method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing		_____ Sieves - partial sample by method ____

Sample Preparation		
	☐ Natural state ☐ Air-dried ☐ Oven-dried	Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr	Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☐ Yes	

Total Weight of Test Specimen ing Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wsd/1 + (wsd) = Wsd/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN			
	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range	ALL		-10 + 200
Container Number			724
Wgt Container + Dry Soil (gm)			230.38
Wgt Container (gm)			131.50
Wgt Dry Soil, W_s (gm)			98.88
Wgt Dry Soil From Hydrometer Test (gm)	104.72		

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total Sample % Finer N'
3/8"			
4			
10			
20	9		10.73
40	0.22		99.8
60	3.72		96.4
100	70.86		32.3
200	98.21		6.2
Pan	98.65		

Maximum particle size if greater than 3" _____

Remarks Mica noted.

Set-up by EJ Washed by EJ Sieved by EJ Calculated by DT Reviewed by _____

HYDROMETER TEST

4 81

Project No. 89MC114Y Project Engineer _____ Date Set up 1/10/92

Sample No. STA0001100TG

Initial Visual Classification Silt, yellow-brown, very fine sand with trace of silt.

Sample Preparation
☐ Oven dried ☐ Air dried ☐ Natural State
Soil broken up by: ☐ Mortar + pestle ☐ Other _____
Soil passing Sieve No. _____
Dispersing Agent: (1) ☐ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____
Time Soaked: ☐ Overnight ☐ Other _____
☐ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content ☐ Natural ☐ Air-Dried	
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws (gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = 100 x (1+ 10)

W_{wet} = 110 (gm)

After Test-Actual Ws	
Container No.	P-49
Wgt Container + Dispersant + Dry Soil + _____ (gm)	656.68
Wgt Container (gm)	547.96
Wgt Dry Soil + Dispersant + + _____ (gm)	108.72
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	104.72

Soaking Beaker No. FU Graduate No. 2 Hydrometer No. 79-65-5 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/13/92	09:29	0	–	–	–	–	–
		1/2	22.5	6.6	3.9	0.0737	4.1
		1	"	6.0	"	0.0524	3.2
		2	"	5.9	"	0.0371	3.0
		5	"	5.5	"	0.0226	2.9
		10	22.6	5.6	3.5	0.0160	2.4
		15	"	5.2	"	0.0131	2.1
		30	"	5.[illegible]	"	0.0093	1.8
		60	"	[illegible]	"	0.0066	1.5
		120	[illegible]	4.7	"	0.0047	1.4
		245	22.2	4.5	"	0.0033	1.1
	17:22	483	22.1	4.4	3.7	0.0023	1.1
1/14/92	07:[illegible]	1167	1	4.3	"	0.0014	0.9

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed ☐ Yes ☐ No	
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations: Average temperature used in calculating test, °C = 22.292

☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average

Specific Gravity, G_s = 2.68 ☐ Tested ☒ Assumed

$$N' = \frac{100\,G_s}{W_s^{(2)}(G_s-1)}(R-Rw) = 1.523\,(R-Rw) \text{ in } \%$$

$$D = \sqrt{\frac{18\mu}{G_s G_w}}\sqrt{\frac{Zr}{t}} = 0.01317\sqrt{\frac{Zr}{t}}$$

where $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 $= \frac{(104.72) \times 100}{100} = 104.72$ (gm)

(1) R = (Reading - 1) 1000

Remarks: _____

Set-up by [illegible] Run by [illegible] Taken down by [illegible] Sieved by _____ Calculated by [illegible]

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/9/92

Sample Number STA00[illegible]210CLG

Initial Visual Classification _____

Shape of Grains				
	Gravel Portion:	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded
	Sand Portion: (coarse ≈ medium)	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded

Specimen Tested		
	☐ Jar Sample _____ Sieves - whole sample used _____ Sieves - partial sample used + obtained by: method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing	☐ Bag or _____ Sample _____ Sieves - whole sample used _____ Sieves - partial sample by method ____ _____ Sieves - partial sample by method ____

Sample Preparation		
	☐ Natural state ☐ Air-dried ☐ Oven-dried	Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr	Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes	

Total Weight of Test Specimen using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or (1) _____ soil (gm) (2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wad/1 + (wad) = Wad/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

WEIGHT OF TEST SPECIMEN

	Total Test Specimen	Partial Test Specimen		Soil Retained (after washing)
Sieve Range	ALL	+10	-10	-10 +200
Container Number		614		5
Wgt Container + Dry Soil (gm)		148.65		171.38
Wgt Container (gm)		138.39		148.31
Wgt Dry Soil, W_s (gm)	188.51	10.26		23.07
Wgt Dry Soil From Hydrometer Test (gm)			72.86	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total Sample % Finer N'
3/4	—		100.0
3/8"	3.13		98.3
4	4.79		97.5
10	6.73		96.4
20	.61		95.6
40	5.24		89.5
60	12.05		80.5
100	16.41		74.7
200	22.88		66.1
Pan	23.15		

Maximum particle size if greater than 3" _____

Remarks _____

Set-up by [illegible] Washed by EJ Sieved by MS Calculated by [illegible] Reviewed by [illegible]

HYDROMETER TEST

4/81

Project No. 89MC114V Project Engineer _____ Date Set up 1/7/92

Sample No. STA0002100LG

Initial Visual Classification SM-SC; Grey-brown slightly plastic clayey sand and non-plastic silty sand with a trace of gravel

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____ Soil passing Sieve No. 10
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☐ Overnight ☐ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

-#10

Water Content	☑ Natural ☐ Air-Dried
Container No.	LA-106
Wgt Container + Wet Soil (gm)	66.81
Wgt Container + Dry Soil (gm)	62.73
Wgt Container (gm)	40.12
Water Content, w (%)	18.05

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)
W_{wet} = 75 x(1+ 15)
W_{wet} = 86.3 (gm)

After Test-Actual Ws	
Container No.	P-51
Wgt Container + Dispersant + Dry Soil + _____ (gm)	619.26
Wgt Container (gm)	542.40
Wgt Dry Soil + Dispersant + + _____ (gm)	76.8[illegible]
Wgt Dispersant + _____ (gm)	4.[illegible]
Wgt Dry Soil, Ws (gm)	72.86

Soaking Beaker No. F-6 Graduate No. 1 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/10/92	10:13	0	—	—	—	—	—
		1/2	21.7	30.2	3.4	0.0570	56.3
		1	"	26.8	"	0.0422	49.2
		2	"	23.0	"	0.0313	41.2
		6	"	19.1	"	0.0180	33.0
		10	21.9	17.4	"	0.0142	29.4
		15	"	16.4	"	0.0117	27.3
		30	"	15.1	"	0.0084	24.6
		60	21.8	14.3	"	0.0060	22.9
		120	"	13.5	"	0.0043	21.2
		241	21.9	12.9	3.2	0.0030	20.4
	18:03	470	"	12.3	2.9	0.0022	19.8
1/11/92	08:5[illegible]	1363	20.9	11.7	3.0	0.0013	18.3

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ Normed
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve

Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations: Average temperature used in calculating test, °C = 21.733 | ☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average | Specific Gravity, G_s = 2.70 ☐ Tested ☒ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 2.102 (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 0.01318 $\sqrt{\frac{Zr}{t}}$

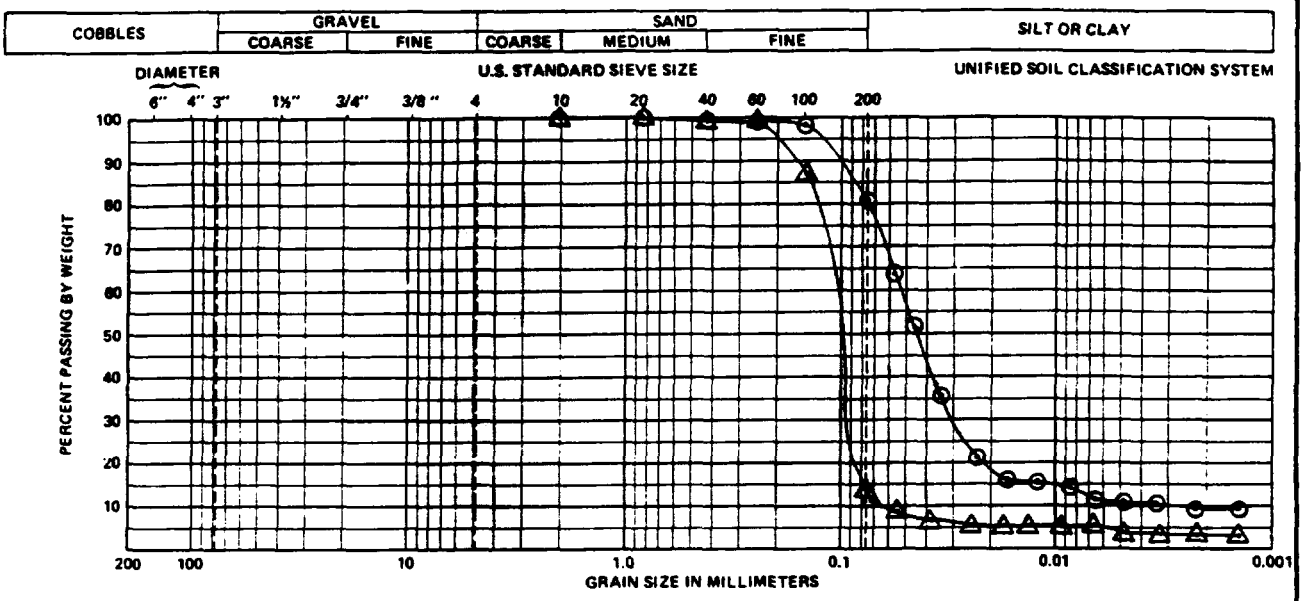
Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 $= \frac{(72.86) \times 100}{96.4300} =$ 75.56 (gm)

(1) R = (Reading - 1) 1000

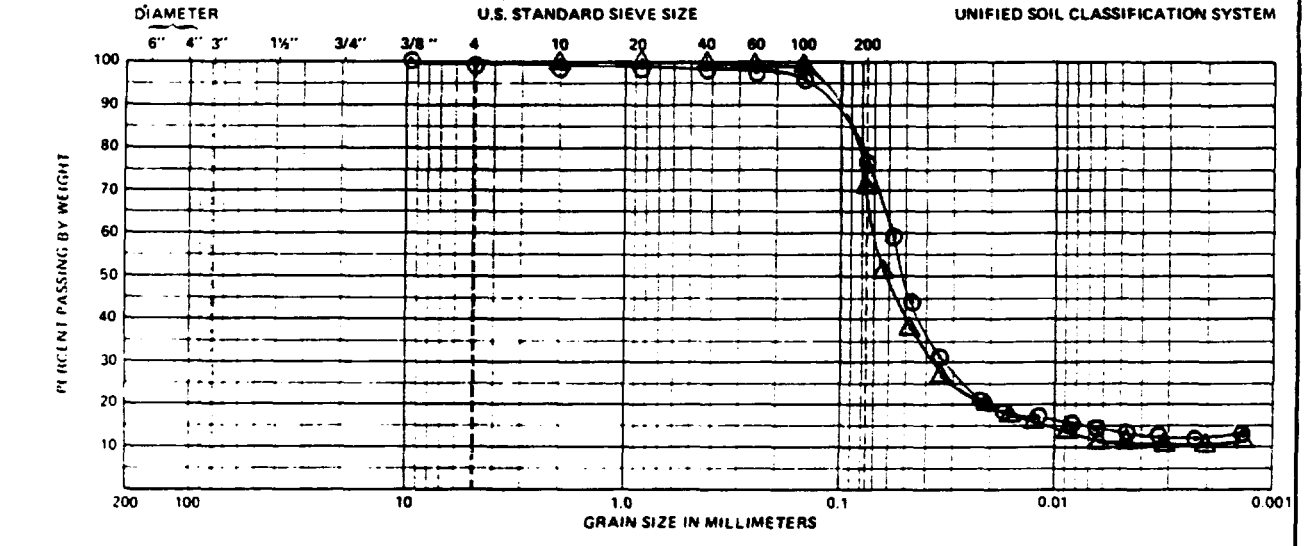
Remarks: [illegible]

Set-up by EJ Run by EJ Taken down by [illegible] Sieved by _____ Calculated by DJ

PARTICLE-SIZE DISTRIBUTION



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w_L (%)	w_P (%)
STA0002	100MG		⊙	Mbr brown - dk brown non-plastic SILT, Some f. Sand; mica noted	32.0		
STA0002	100TG		△	SM, brown f. SAND, some silt; mica noted	13.6		



BORING	SAMPLE	DEPTH (ft)	SYMBOL	CLASSIFICATION	w (%)	w_L (%)	w_P (%)
STA0003	100LG		⊙	Mbr gray-brown non-plastic SILT Some f. Sand; mica noted	27.1		
STA0003	100MG		△	Mbr gray-brown non-plastic SILT, some f. Sand; mica noted	30.7		

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/9/95

Sample Number STA0002100MG

Initial Visual Classification _____

Shape of Grains				
Gravel Portion:	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded
Sand Portion: (coarse to medium)	☐ Angular	☐ Subangular	☐ Rounded	☐ Subrounded

Specimen Tested	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:	_____ Sieves - partial sample by method ____
method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing		_____ Sieves - partial sample by method ____

Sample Preparation		
	☐ Natural state ☐ Air-dried ☐ Oven-dried	Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab (280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr	Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes	

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wod/1 + (wod) = Wod/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range		-10	-10 + 200
Container Number		P-51	635
Wgt Container + Dry Soil (gm)			191.74
Wgt Container (gm)			178.74
Wgt Dry Soil, W_s (gm)			13.00
Wgt Dry Soil From Hydrometer Test (gm)		65.70	

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total: % Finer N
3/8"			
4			
10	0		100.2
20	0.03		100
40	0.21		99.7
60	0.56		99.1
100	1.56		97.6
200	12.40		81.1
Pan	13.11		

Maximum particle size if greater than 3" _____

Remarks Mica noted

Set-up by EJ Washed by EJ Sieved by EJ Calculated by DT Reviewed by [illegible]

HYDROMETER TEST

4/81

Project No. 89MC114V Project Engineer _____ Date Set up 1/7/92

Sample No. STA0002100MG

Initial Visual Classification Sm - ML; Brown to dark brown, silty very fine sand

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____ Soil passing Sieve No. 10
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☐ Overnight ☑ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content	☐ Natural ☐ Air-Dried
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w(%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = 70 x(1+ 20)

W_{wet} = 84 (gm)

After Test-Actual Ws	
Container No.	P-51
Wgt Container + Dispersant + Dry Soil + _____ (gm)	612.17
Wgt Container (gm)	542.47
Wgt Dry Soil + Dispersant + + _____ (gm)	69.70
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	65.70

Soaking Beaker No. 1 Graduate No. 10 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/8/92	09:50	0	—	—	—	—	—
		1/2	21.2	30.5	3.8	0.0568	64.5
		1	"	24.8	"	0.0434	50.8
		2	"	19.5		0.0330	35.5
		5	"	12.6	"	0.0212	21.3
		10	21.3	10.9	"	0.0153	17.2
		16	"	10.1	"	0.0122	15.2
		31	21.5	9.7	3.6	0.0088	14.7
		60	21.7	9.0	3.5	0.0064	13.3
		122	"	8.8	3.6	0.0045	12.6
		243	22.0	8.3	"	0.0032	11.4
	18:15	505	22.0	7.7	3.6	0.0022	9.9
1/9/92	0[illegible]4	1344	22.3	7.6	3.5	0.0014	7.9

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ Normed
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No.	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations:

Average temperature used in calculating test, °C = 21.55	☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average	Specific Gravity, G_s = 2.70 ☐ Tested ☑ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 2.417 (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 0.01320 $\sqrt{\frac{Zr}{t}}$

Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 $= \frac{(65.70)}{100} \times 100 =$ 65.70 (gm)

(1) R = (Reading - 1) 1000

Remarks: _____

Set-up by EJ Run by EJ Taken down by EJ Sieved by _____ Calculated by ✓

1/22/92

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/9/92
Sample Number STA0002100TG
Initial Visual Classification _____

Shape of Grains	Gravel Portion: ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded
	Sand Portion: (coarse to medium) ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded

Specimen Tested	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used & obtained by:	_____ Sieves - partial sample by method ____
method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing		_____ Sieves - partial sample by method ____

Sample Preparation	☐ Natural state ☐ Air-dried ☐ Oven-dried	Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr	Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes	

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wsd/1 + (wsd) = Wsd/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN	Total Test Specimen	Partial Test Specimen	Soil Retained (after washing)
Sieve Range		-10	-10 +200
Container Number		P-19	1
Wgt Container + Dry Soil (gm)			217.26
Wgt Container (gm)			134.34
Wgt Dry Soil, W_s (gm)			82.92
Wgt Dry Soil From Hydrometer Test (gm)		94.85	

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N°
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total % Finer N
3/8"			
4			
10	0		100%
20	0.03		100
40	0.12		99.9
60	0.37		99.7
100	11.99		87.4
200	81.41		14.2
Pan	83.03		

Maximum particle size if greater than 3" _____

Remarks [illegible]

Set-up by EJ Washed by EJ Sieved by EJ Calculated by [illegible] Reviewed by [illegible]

HYDROMETER TEST

4/81

Project No. 89MC114V Project Engineer _____ Date Set up 1/7/92

Sample No. STA0002100TG

Initial Visual Classification SM: Brown very-fine sand with a trace to some silt.

Sample Preparation
☐ Oven dried ☐ Air dried ☑ Natural State
Soil broken up by: ☐ Mortar + pestle ☑ Other _____ Soil passing Sieve No. 10
Dispersing Agent:(1) ☑ $(NaPO_3)_6$ at 4.0gm/Liter ☐ Other _____ Time Soaked: ☐ Overnight ☑ Other _____
☑ ASTM Dispersion Cup & Mixer used for one minute ☐ Air Dispersion device used for _____ minute ☐ Other _____
De-foaming agent used ☐ Yes ☐ No

Drying Container No.	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt Dry Soil (gm)	

Water Content	☐ Natural ☐ Air-Dried
Container No.	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (%)	

DISPERSING AGENT $(NaPO_3)_6$
Sodium Meta-phosphate

Weight of Soil Used in Test, Ws	
For Oven-dry set-up, Ws(gm)	

For Wet or _____ set up

W_{wet} = Estimated Ws x (1+w)

W_{wet} = 90 x(1+ 10)

W_{wet} = 99 (gm)

After Test-Actual Ws	
Container No.	P-19
Wgt Container + Dispersant + Dry Soil + _____ (gm)	618.84
Wgt Container (gm)	519.99
Wgt Dry Soil + Dispersant + + _____ (gm)	98.85
Wgt Dispersant + _____ (gm)	4.0
Wgt Dry Soil, Ws (gm)	94.85

Soaking Beaker No. ST Graduate No. 4 Hydrometer No. 79-625 Meniscus Correction, Cm = 0.6

Date	Time hr: min	Elap. Time, Δt (min)	Temp. °C	Hyd. Reading, R (1)	Hyd. Reading H_2O/Disper. Rw (1)	Diameter D (mm)	Total Sam. % Finer N'
1/8/92	10:29	0	—	—	—	—	—
		1/2	21.5	11.0	3.6	0.0713	12.4
		1	"	8.5	"	0.0516	8.2
		2	"	7.9	"	0.0367	7.2
		5	"	7.8	"	0.0223	7.1
		10	"	7.4	"	0.0159	6.4
		15	21.7	7.2	3.5	0.0130	6.2
		30	"	6.9	"	0.0092	5.7
		60	"	6.6	"	0.0065	5.2
		120	"	6.3	3.6	0.0046	4.5
		240	22.0	6.1	"	0.0033	4.2
	18:21	472	22	5.9	3.6	0.0023	3.9
1/9/92	05:43	1134	22.1	5.8	3.5	0.0014	3.9

Sieving Performed After Hyd. Test	
Complete Sieve Analysis Performed	☐ Yes ☐ Informed
Soil Retained After Washing on No. 200 Sieve	
Container No.	
Wgt. Container + Dry Soil (gm)	
Wgt Container (gm)	
Wgt. Dry Soil (gm)	

% Passing No. 200 Sieve		
Sieve No	Cumulative Wgt. Retained (gm)	Total Sample % Finer, N'
200		
Pan		

Calculations: Average temperature used in calculating test, °C = 21.72

☐ This average used to calculate all points "✓" in Temperature column indicates where actual temperature used, not average

Specific Gravity, G_s = 2.68 ☐ Tested ☒ Assumed

$N' = \frac{100\ G_s}{W_s^{(2)}(G_s-1)}(R-Rw) =$ 1682 (R-Rw) in %

$D = \sqrt{\frac{18\mu}{G_s - G_w}}\sqrt{\frac{Zr}{t}} =$ 0.01326 $\sqrt{\frac{Zr}{t}}$

Where: $W_s^{(2)} = W_s \times 100 \div$ % Passing Sieve No. 10 $= \frac{(94.85) \times 100}{10} =$ 94.85 (gm)

(1) R = (Reading - 1) 1000

Remarks: _____

Set-up by [illegible] Run by [illegible] Taken down by [illegible] Sieved by _____ Calculated by _____

PARTICLE-SIZE ANALYSIS
(by sieving)

(6/75)

Project Number 89MC114V Project Engineer _____ Date 1/9/92
Sample Number STA0003100LG
Initial Visual Classification _____

Shape of Grains	
	Gravel Portion: ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded
	Sand Portion: (coarse to medium) ☐ Angular ☐ Subangular ☐ Rounded ☐ Subrounded

Specimen Tested	☐ Jar Sample	☐ Bag or _____ Sample
	_____ Sieves - whole sample used	_____ Sieves - whole sample used
	_____ Sieves - partial sample used + obtained by:	_____ Sieves - partial sample by method ____
method: (a) ☐ splitter (b) ☐ quartering (c) ☐ representative scoop after mixing		_____ Sieves - partial sample by method ____

Sample Preparation	
	☐ Natural state ☐ Air-dried ☐ Oven-dried — Soil broken up: ☐ No ☐ Yes, by: ☐ Mortar and pestle ☐ Other _____ ☐ Pulverizer (Test lab L280) for ____ hr
	Soil soaked ☐ No ☐ Yes, for ____ hr — Sample washed on No. 200 sieve ☐ No ☐ Yes
	Sample from Hydrometer Test ☐ No ☑ Yes

Total Weight of Test Specimen Using Air-dried or _____ Method of Sample Preparation	
Scalped on _____ Sieve	
Wgt Air-dried or _____ soil (gm) (1)	
(2)	
(3)	
Total wgt of above scalped soil (gm)	
Dry wgt of above scalped soil = Wod/1 + (wod) = Wod/_____ (gm)	
Wgt + 3/4 or _____ oven-dried or _____ soil	
Total Wgt of Test Specimen, W_s (gm)	

WEIGHT OF TEST SPECIMEN				
	Total Test Specimen	Partial Test Specimen		Soil Retained (after washing)
Sieve Range	ALL	-10	+10	-10 +200
Container Number		T-102	23	696
Wgt Container + Dry Soil (gm)			134.62	140.61
Wgt Container (gm)			134.19	125.29
Wgt Dry Soil, W_s (gm)	63.03		0.43	15.32
Wgt Dry Soil From Hydrometer Test (gm)		62.60		

Water Content	☐ Natural ☐ Air-dried
Container Number	
Wgt Container + Wet Soil (gm)	
Wgt Container + Dry Soil (gm)	
Wgt Container (gm)	
Water Content, w (gm)	

Sieve No.	Cum. Weight Retained (gm)	% Finer than ____ Sieve	Tot'l Sample % Finer N'
3"			
1 1/2"			
3/4"			
3/8"			
4			
10			
Pan			

Sieve No.	Cum. Wgt Retained (gm)	% Finer than ____ Sieve	Total % Finer N
3/8"	0		100.0
4	.22		99.7
10	.43		99.3
20	[illegible]		98.7
40	0.73		98.2
60	0.99		97.7
100	1.91		96.4
200	13.91		77.2
Pan	15.55		

Maximum particle size if greater than 3" _____

Remarks Trace organics

Set-up by [illegible] Washed by [illegible] Sieved by [illegible] Calculated by [illegible] Reviewed by [illegible]