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US Army Corps
of Engineers
Savannah District

HARTWELL LAKE PROJECT
Savannah River, Georgia And South Carolina

REHABILITATION OF CLEMSON UPPER DIVERSION DAM

CONTRACT NO. DACW21-83-C-0066

CONSTRUCTION FOUNDATION REPORT

VOLUME 2 OF 2

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AUGUST 1989

U.S. ARMY ENGINEER DISTRICT, SAVANNAH
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

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HARTWELL LAKE PROJECT

SAVANNAH RIVER, GEORGIA AND SOUTH CAROLINA

REHABILITATION OF CLEMSON UPPER DIVERSION DAM

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In Two Volumes

VOLUME II - APPENDICES B THRU E

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August 1989

U.S. ARMY ENGINEER DISTRICT, SAVANNAH
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APPENDICES

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REHABILITATION OF CLEMSON UPPER DIVERSION DAM

CONSTRUCTION FOUNDATION REPORT

APPENDIX B

Boring Logs - "New Piezometers"

Hole No. PC-201A

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 3 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT 4X5 1/2"dia bit 6"rock bit
2. LOCATION (Coordinates or Station) 11+04.5 28.5' upstream	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314
4. HOLE NO. (As shown on drawing title and file number) PC-201A	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 0; UNDISTURBED 0
5. NAME OF DRILLER C.D. Justiss	14. TOTAL NUMBER CORE BOXES 0
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER N/A
	16. DATE HOLE: STARTED 18 Dec 1983; COMPLETED 19 Dec 1983
7. THICKNESS OF OVERBURDEN 79.0'	17. ELEVATION TOP OF HOLE 677.3'
8. DEPTH DRILLED INTO ROCK 0.0'	18. TOTAL CORE RECOVERY FOR BORING N/A %
9. TOTAL DEPTH OF HOLE 79.0'	19. SIGNATURE OF INSPECTOR Thaddius Zielonka, Jr.

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
677.3'	0'		Riprap.			Random Backfill
	5					
666.8'	10		10.5'			6"Hole Dia.
			(SM) Brown & reddish-brown, fine to med.grained micaceous silty SAND.			
	15					
	20					3/4" SCH 40 PVC RISER; Random Backfill
	25					
647.3'	30					

Continued on sht 2

NOTE: Soils visually field classified in accordance with the Unified Soil Classification System

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 677.3'	Hole No. PC-201A
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 3 SHEETS

ELEVATION 647.3'	DEPTH 30'	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			(SM) Continued Brown, tan, & reddish-brown, fine to med. grained, micaceous silty SAND.			Random Backfill
	35					
	40					
	45					
	50					
	55					
	60					
	65		Tan w/some gravel.			66.5' Bentonite Seal
607.3'	70		Continued on sht 3			3/4" SCH 40 PVC RISER

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 677.3' | **Hole No.** PC-201A

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 3 OF 3 SHEETS

ELEVATION 607.3'	DEPTH 70'	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			(SM) Continued Tan, fine to med. grained silty SAND. With some gravel.			Bentonite Seal 72.0' Sand Backfill 76.0' 78.0' 2.0' Well screen
	75					
600.8'			76.5'			
			(GM) Tan silty sandy GRAVEL.			
597.3'						
	80		Bottom of Boring 79.0'			

Hole No. PE-201A

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 2 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT 4x5 1/2"dia bit,6"rock bit
2. LOCATION (Coordinates or Station) 11+09, 29' upstream	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314
4. HOLE NO. (As shown on drawing title and file number) PE-201A	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 0; UNDISTURBED 0
5. NAME OF DRILLER H. Brown	14. TOTAL NUMBER CORE BOXES 0
6. DIRECTION OF HOLE [XX] VERTICAL [ ] INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER N/A
	16. DATE HOLE: STARTED 11 Jan 1984; COMPLETED 12 Jan 1984
7. THICKNESS OF OVERBURDEN 65.0'	17. ELEVATION TOP OF HOLE 677.3'
8. DEPTH DRILLED INTO ROCK 0.0'	18. TOTAL CORE RECOVERY FOR BORING N/A %
9. TOTAL DEPTH OF HOLE 65.0'	19. SIGNATURE OF INSPECTOR Thaddius Zielonka, Jr.

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
677.3'	0'		Riprap			
	5					
666.8'	10		10.5'			6" Hole Dia.
			(SM) Brown & reddish brown, fine to med.grained micaceous silty SAND.			
	15					Cement Bentonite Grout
	20					3/4" SCH 40 PVC RISER
	25					
647.3'	30					

Continued on sht 2

NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 677.3'	Hole No. PE-201A
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 2 SHEETS

ELEVATION 647.3'	DEPTH 30'	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			(SM) Continued Brown & reddish-brown, fine to med. grained micaceous silty SAND.			
	35					
	40					Cement Bentonite Grout
	45					3/4" SCH 40 PVC RISER
	50					
	55					55.0' Bentonite Seal 59.0'
	60					Sand Backfill 62.0' 64.0'
612.3	65		Bottom of Boring 65.0'			

Hole No. PF-201A

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 3 SHEETS

1. PROJECT: Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT: 4X5 1/2"dia bit, 5"rock bit
2. LOCATION (Coordinates or Station): Sta. 11+00, 29' Upstream	11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL; 1 3/8" splitspoon, 6"fish-tail
3. DRILLING AGENCY: Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 314
4. HOLE NO. (As shown on drawing title and file number): PF-201A	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 14; UNDISTURBED 0
5. NAME OF DRILLER: C.D. Justiss	14. TOTAL NUMBER CORE BOXES: 1
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER: N/A
	16. DATE HOLE: STARTED 14 Dec 1983; COMPLETED 17 Dec 1983
7. THICKNESS OF OVERBURDEN: 79.5'	17. ELEVATION TOP OF HOLE: 677.3'
8. DEPTH DRILLED INTO ROCK: 13.5'	18. TOTAL CORE RECOVERY FOR BORING: 60.0 %
9. TOTAL DEPTH OF HOLE: 93.0'	19. SIGNATURE OF INSPECTOR: Thaddius Zielonka, Jr.

ELEVATION 677.3'	DEPTH 0'	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. JAR	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	BLOWS
			Riprap			Random Backfill	
	5						
666.3'	10		(SM) Light reddish-brown, fine-med.micaceous silty SAND. With trace of fine gravel.		1, 2	6" Hole Diam.	
	15		Color change to light brown.		3		23
			Light reddish-brown & fine grained w/no gravel below 15.0'.			3/4" SCH 40 PVC	
	20		Color change to red-brown.		4		
			Color change to tan-brown.		5	Random Backfill	22
651.3'	25		25.5' No Recovery (Hit rock). 27.0'				8
650.3'			(SM) Reddish-brown fine grained micaceous silty SAND. With trace of med. sand.		6		2
647.3'	30		Continued on sht 2			100 0.3	

NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.

BLOWS PER FOOT: Number required to drive 1 3/8"ID splitspoon w/ 140 lb. hammer falling 30".

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 677.3' MSL | **Hole No.** PF-201A

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 2 OF 3 SHEETS

ELEVATION 647.3'	DEPTH b30	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. JAR	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	BLOWS
			(SM) Red-brown fine grained micaceous silty SAND.		7		26 25
			Tan-brown below 33.0'.		8		26 29 30
	35						40
	40		Red-brown fine to med.grained micaceous silty SAND. With trace white weathered feldspar grains (kaolinite).		9		30 39 38 26
	45						35 34
			Light brown w/trace fine gravel.				
	50				10	Random Backfill	
			Color change to red-brown.				
	55						29 54
			With trace of white weathered feldspar grains below 57.0'.		11		37 37
	60						25 29
	65						32
			Tan fine to med.silty sand w/some gravel.		12		41 30
607.3'	70				13		23 29
			Continued on sht 3				

3/4" SCH 40 PVC RISER

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 677.3' | **Hole No.** PF-201A

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 3 OF 3 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	BLOWS
607.3'	70 b	c	d	e	f	g	
			(SM) Continued. Tan, fine to med. grained silty SAND. With some gravel.		13	Random Backfill	35 28 21
	75		76.5'			17.0'	59
600.8'			(GM) Tan silty sandy gravel.		14		54 75
597.8'			Top of Rock 79.5'				
	80		(GRANITE GNEISS) Intensely wea., soft, tan to orange-brown, w/some white to light grey zones, fine to coarse grained, micaceous, foliated.	71.1% RQD 0.0%	Bentonite Seal	82.0'	Pull #1 NOTE: Scale change [illegible] 90.0'
	82					3/4" SCH 40 PVC RISER	
	84						Sand backfill
			85.1'				
592.2'			GRANITE GNEISS	92.3% RQD 65.0%			Pull 2
	86		86.4'				
590.9'			GRANITE GNEISS	96.3% RQD 48.0%			Pull #3
	88		89.1'				
588.2'			GRANITE GNEISS	100% RQD 82.0%			
	90					90.0' 2' Long Well Screen 92.0'	Pull #4
584.3'	93		Bottom of Boring 93.0'			NOTE: Scale change [illegible] 90.0'.	

Hole No. PF-201A

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 3 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT 4X5 1/2"dia.6"rock bit, 1 3/8" splitspoon,6"fish-tail
2. LOCATION (Coordinates or Station) Sta.11+00, 29' Upstream	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314
4. HOLE NO. (As shown on drawing title and file number) PF-201A	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 14; UNDISTURBED 0
5. NAME OF DRILLER C.D. Justiss	14. TOTAL NUMBER CORE BOXES 1
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER N/A
	16. DATE HOLE: STARTED 14 Dec 1983; COMPLETED 17 Dec 1983
7. THICKNESS OF OVERBURDEN 79.5'	17. ELEVATION TOP OF HOLE 677.3'
8. DEPTH DRILLED INTO ROCK 13.5'	18. TOTAL CORE RECOVERY FOR BORING 60.0' %
9. TOTAL DEPTH OF HOLE 93.0'	19. SIGNATURE OF INSPECTOR Thaddius J. Zielonka, Jr.

ELEVATION 677.3'	DEPTH 0'	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. JAR f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	BLOWS
			Riprap			NOTE: Riprap cored using 4X5 1/2" dia bit & starter barrel.	
	5						
668.8'	10		(SM) Light reddish-brown, fine-med.micaceous silty SAND. With trace of fine gravel.		1		15
					2		20
	15		Color change to light brown.				25
					3		18
			Light reddish-brown & fine grained w/no gravel below 15.0'.				20
							20
	20		Color change to red-brown.		4		25
							21
			Color change to tan-brown. 25.5'		5		23
651.8'	25						32
650.3'			No recovery.(Hit rock) 27.0'				64
			(SM) Reddish-brown fine grained micaceous silty SAND. With trace of med. sand.		6		24
647.3'	30						100/0.3
			Continued on sht 2				

NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.

BLOWS PER FOOT: Number required to drive 1 3/8"ID splitspoon w/ 140 lb. hammer falling 30".

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 677.3' **Hole No.** PF-201A

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 2 OF 3 SHEETS

ELEVATION 647.3'	DEPTH 30'	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	BLOWS
			(SM) Continued. Red-brown fine grained micaceous silty SAND.		7		26 25
			Tan-brown below 33.0'.		8		26 29 30 40
	35						
	40		Red-brown fine to med.grained micaceous silty sand w/trace of white wea.feldspar grains (kaolinite).		9		30 29 38 26 36 34
	45						
	50		Light brown w/trace of fine gravel.		10		[illegible] [illegible] 51 28
			Color change to red-brown.				
	55		With trace of white wea. feldspar grains below 57.0'.		11		54 37 37 25 28 32
	60						
	65		Tan fine to med.silty sand w/some gravel.		12		41 30
607.3'	70				13		21 29

Continued on sht 3

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 677.3' | **Hole No.** PF-201A

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 3 OF 3 SHEETS

ELEVATION 607.3'	DEPTH 70'	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	BLOWS
			(SM) Continued. Tan, fine to med. grained silty SAND. With some gravel.		13		35 28 21
	75		76.5'			NOTE: Scale change @ 80.0'	59
600.8'			(GM) Tan silty sandy GRAVEL.		14		54
597.8'			79.5'				75
	80		(GRANITE GNEISS) Intensely wea., soft, tan to orange-brown w/some white to light grey zones, fine to coarse grained, micaceous, foliated.	71.1% RQD 0.0%	Box 1	Pull #1 From 79.5' To 85.1' Run 5.6' Rec 0.4' C.L. 5.2'	
	82						
	84		(GRANITE GNEISS)			85.1'	
592.2'			(GRANITE GNEISS)	92.3% RQD 65.0%		Pull #2 From 85.1' To 86.4' Run 1.3' Rec 1.2' C.L. 0.1'	
	86						
590.9'				96.3% RQD 48.0%		Pull #3 From 86.4' To 89.1' Run 2.7' Rec 2.6' C.L. 0.1'	
	88						
588.2'			(GRANITE GNEISS)	100% RQD 82.0%		89.1' Pull #4 From 89.1' To 93.0' Run 3.9' Rec 3.9' C.L. 0.0'	
	90						
584.3'	93		Bottom of Boring 93.0'			NOTE: Scale change @ 90.0'	

Hole No. PC-205A

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 3 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT 6X7 3/4"dia, 6"fishtail
2. LOCATION (Coordinates or Station) 6+05, 30' Upstream	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314
4. HOLE NO. (As shown on drawing title and file number) PC-205A	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 0; UNDISTURBED 0
5. NAME OF DRILLER H. Brown	14. TOTAL NUMBER CORE BOXES 0
6. DIRECTION OF HOLE [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER N/A
7. THICKNESS OF OVERBURDEN 79.5'	16. DATE HOLE: STARTED 2 Feb 1984; COMPLETED 3 Feb 1984
8. DEPTH DRILLED INTO ROCK 1.5'	17. ELEVATION TOP OF HOLE 677.0'
9. TOTAL DEPTH OF HOLE 81.0'	18. TOTAL CORE RECOVERY FOR BORING N/A %
	19. SIGNATURE OF INSPECTOR Thaddius J. Zielonka, Jr.

ELEVATION 677.0'	DEPTH 0'	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	5		Riprap			
667.0'	10		10.0'			6" Hole Dia.
	15		Embankment.			3/4" SCH 40 PVC RISER
	20					
	25					
647.0'	30					

Continued on sht 2

NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 677.0'	Hole No. PC-205A
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 3 SHEETS

ELEVATION 647.0'	DEPTH 30'	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Embankment Continued.			
	35					
	40					
635.0'			42.0' (SC) Red-brown fine to med. grained micaceous clayey SAND.			
	45					Cement Bentonite Grout
629.0'			48.0' (SM) Brown fine to med.grained micaceous silty SAND. With minor clay.			3/4" SCH 40 PVC RISER
	50		Color change to reddish-brown.			
	55		Color change to light brown.			
	60		Color change to dark grey.			
			Dark grey and fine grained.			
	65		Color change to brown.			
608.0'			69.0' (ML) brown micaceous lean SILT.			
607.0'	70		Continued on sht 3			

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 677.0' | **Hole No.** PC-205A

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 3 OF 3 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
607.0'	70'	c	d	e	f	g
605.0'			(ML) Continued Brown micaceous lean SILT. 72.0'			Cement Bentonite Grout; 72.0'
	75		(SM) Dark grey fine grained, micaceous silty SAND.			Bentonite Seal; 76.0'; 3/4" SCH 40 PVC RISER
			Top of Rock 79.5'			Sand Backfill; 78.0'
597.5'	80		(GRANITE GNEISS)			80.0'; 2.0' Well screen
596.0'			Bottom of Boring 81.0'			

Hole No. PE-205A

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 2 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT 6x7 3/4"Dia & 6" Fishtail
2. LOCATION (Coordinates or Station) 6+10,30' upstream	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314
4. HOLE NO. (As shown on drawing title and file number) PE-205A	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 0; UNDISTURBED 0
5. NAME OF DRILLER H. Brown	14. TOTAL NUMBER CORE BOXES 0
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER N/A
	16. DATE HOLE: STARTED 6 Feb 1984; COMPLETED 8 Feb 1984
7. THICKNESS OF OVERBURDEN 50.0'	17. ELEVATION TOP OF HOLE 677.0'
8. DEPTH DRILLED INTO ROCK 0.0'	18. TOTAL CORE RECOVERY FOR BORING N/A %
9. TOTAL DEPTH OF HOLE 50.0'	19. SIGNATURE OF INSPECTOR Thaddius J. Zielonka, Jr.

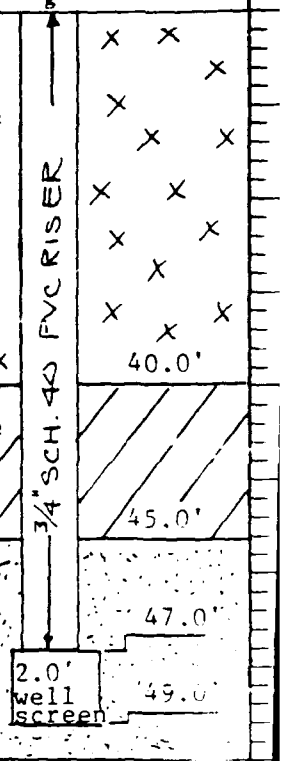
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
677.0'	0'		Riprap			Cement Bentonite Grout
	5					
			10.0'			
667.0'	10		Embankment			6" Hole Dia.
	15					3/4" SCH 40 PVC RISER
	20					
	25					
647.0'	30					

Continued on sht 2

NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 677.0'	Hole No. PE-205A
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 2 SHEETS

ELEVATION 647.0'	DEPTH 30'	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Embankment			Cement Bentonite Grout
	35					
	40		42.0'			Bentonite Seal
635.0'			(SC)Red-brown,fine to med. grained micaceous clayey SAND.			
	45					Sand Backfill
629.0'			(SM) Brown,fine to med.grained micaceous silty SAND. With minor clay.			2.0' well screen
627.0'	50		Bottom of Boring 50.0'			



Hole No. PF-205A

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 3 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT 4X5 1/2"dia. 6"rock bit& 6"fishtail
2. LOCATION (Coordinates or Station) 6+00, 30' Upstream	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314
4. HOLE NO. (As shown on drawing title and file number) PF-205A	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 7; UNDISTURBED 0
5. NAME OF DRILLER H. Brown	14. TOTAL NUMBER CORE BOXES 2
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER N/A
	16. DATE HOLE: STARTED 30 Jan 1984; COMPLETED 1 Feb 1984
7. THICKNESS OF OVERBURDEN 79.5'	17. ELEVATION TOP OF HOLE 677.0'
8. DEPTH DRILLED INTO ROCK 11.3'	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 90.8'	19. SIGNATURE OF INSPECTOR Thaddius J. Zielonka, Jr.

ELEVATION 677.0'	DEPTH 0'	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	5		Riprap			
667.0'	10		10.0'			6" Hole Dia.
	15		Embankment.			Cement Bentonite Grout
	20					3/4" SCH 40 PVC RISER
	25					
647.0'	30		Continued on sht 2 NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 677.0'	Hole No. PF-205A
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 3 SHEETS

ELEVATION 647.0'	DEPTH 30'	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Embankment Continued.			
	35					
	40		42.0'			
635.0'			(SC) Red-brown, fine to med. grained micaceous clayey SAND.			
	45		48.0'			
629.0'			(SM) Brown, fine to med. grained micaceous silty SAND. With minor clay.			
	50		Color change to reddish-brown.			Cement Bentonite Grout
	55		Color change to light brown.			3/4" SCH 40 PVC RISER
	60		Color change to dark grey.			
			Dark grey & fine grained.			
			Color change to brown.			
	65		69.0'			
608.0'			(ML) Brown micaceous lean SILT.			
607.0'	70		Continued on sht 3			

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 677.0 **Hole No.** PF-205A

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 3 OF 3 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
607.0'	70'	c	d	e	f	g
605.0'			(ML) Continued. Brown, micaceous lean SILT. 72.0'			Cement Bentonite Grout
	75		(SM) Dark grey fine grained micaceous silty SAND.			
597.5'			Top of Rock 79.5'			80.0'
	80					Bentonite Seal
	82					
	84		(GRANITE GNEISS)			Sand Backfill
	86					87.0'
	88					2.0' long well screen 89.0'
	90					
586.2'			Bottom of Boring 90.8'			

Hole No. PF-205A

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 3 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT 4X5 1/2"dia,6"rock bit & 6"fishtail
2. LOCATION (Coordinates or Station) 6+00,30' Upstream	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314
4. HOLE NO. (As shown on drawing title and file number) PF-205A	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 7; UNDISTURBED 0
5. NAME OF DRILLER H. Brown	14. TOTAL NUMBER CORE BOXES 2
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER N/A
	16. DATE HOLE: STARTED 30 Jan 1984; COMPLETED 1 Feb 1984
7. THICKNESS OF OVERBURDEN 79.5'	17. ELEVATION TOP OF HOLE 677.0'
8. DEPTH DRILLED INTO ROCK 11.3'	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 90.8'	19. SIGNATURE OF INSPECTOR Thaddius J. Zielonka, Jr.

ELEVATION 677.0'	DEPTH 0'	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	5		Riprap			NOTE: Cored riprap w/ 4X5 1/2"diamond bit Reamed hole w/6" rock bit.
667.0'	10		10.0'			
	15		Embankment.			NOTE: Fishtailed [illegible] 12.0'.
	20					
	25					
647.0'	30		Continued on sht 2 NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.			

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 677.0' **Hole No.** PF-205A

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 2 OF 3 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
647.0'	30'	c	d	e	f	g
			Embankment Continued.			
	35					
	40		42.0'			BLOWS
635.0'			(SC) Red-brown, fine to med. grained, micaceous clayey SAND.		1	10
	45		48.0'			40
629.0'			(SM) Brown, fine to med. grained micaceous silty SAND. With minor clay.		2	
	50		Color change to reddish-brown.			
	55		Color change to light brown.		3	40
	60		Color change to dark grey.			6
			Dark grey & fine grained.		4	9
	65		Color change to brown.			7
608.0'			69.0'			10
607.0'	70		(ML) Brown, micaceous lean SILT.		5	10
			Continued on sht 3			

BLOWS PER FOOT: Number required to drive 1 3/8" ID splitspoon 140 lb. hammer falling 30'.

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 677.0' **Hole No.** PF-205A

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 3 OF 3 SHEETS

ELEVATION 607.0'	DEPTH 670'	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	BLOWS
					5		
605.0'			(ML) Continued. Brown, micaceous, lean SILT. 72.0'				17
					6		18
			(SM) Dark grey, fine grained micaceous silty SAND.				36
	75						36
							35
			Top of Rock 79.5'			NOTE: Scale change @ 80.0'.	40
597.5'	80		(GRANITE GNEISS)				
					7		
							35
							100/0.8
	82					Pull #1 From 81.3' To 86.4' Run 5.1'	
	84						
	86						
	88					Pull #2 From 86.4' To 90.4' Run 3.9'	
	90						
586.2'			Bottom of Boring 90.8'				
	92						

Hole No. PC-208A

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 3 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT 4X5 1/2"dia,6"fishtail & 6"rock bit
2. LOCATION (Coordinates or Station) 16+05, 30' Upstream	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314
4. HOLE NO. (As shown on drawing title and file number) PC-208A	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 0; UNDISTURBED 0
5. NAME OF DRILLER H. Brown	14. TOTAL NUMBER CORE BOXES N/A
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER N/A
	16. DATE HOLE: STARTED 20 Jan 1984; COMPLETED 25 Jan 1984
7. THICKNESS OF OVERBURDEN 81.0'	17. ELEVATION TOP OF HOLE 677.0'
8. DEPTH DRILLED INTO ROCK 0.0'	18. TOTAL CORE RECOVERY FOR BORING N/A %
9. TOTAL DEPTH OF HOLE 81.0'	19. SIGNATURE OF INSPECTOR Thaddius J. Zielonka, Jr.

ELEVATION 677.0'	DEPTH 0'	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	5		Riprap.			Cement Bentonite Grout
667.0'	10		10.0'			6" Hole Dia.
	15		Embankment.			3/4" SCH 40 PVC RISER
	20					
	25					
647.0'	30		Continued on sht 2 NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 677.0'	Hole No. PC-208A
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 3 SHEETS

ELEVATION 647.0'	DEPTH 30'	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Embankment. Continued			
	35					
	40					
	45		48.0'			
629.0'			(SM) Red-brown fine to med. grained micaceous silty SAND.			Cement Bentonite Grout
	50		Color change to brown.			
	55		Color change to red-brown.			
	60		Brown & fine grained below 60.0'.			
	65					
607.0'	70		Continued on sht 3			

3/4" SCH 40 PVC RISER

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 677.0' | **Hole No.** PC-208A

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 3 OF 3 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
607.0'	670'	c	d	e	f	g
			(SM) Continued. Brown fine grained micaceous silty SAND.			Cement Bentonite Grout; Bentonite Seal; PVC RISER; 72.0'; 76.0'
			Dark grey to black.			
	75		Tan fine to med.grained.			Sand Backfill; 78.0'; 2.0' WELL SCREEN; 80.0'
			With fine & coarse gravel below 79.5'.			
	80					
596.0'			Bottom of Boring 81.0'			

Hole No. PE-208A

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 2 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT 4X5 1/2"dia.6" rock bit 6"fishtail
2. LOCATION (Coordinates or Station) 16+10, 30' Upstream	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314
4. HOLE NO. (As shown on drawing title and file number) PE-208A	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 0; UNDISTURBED 0
5. NAME OF DRILLER H. Brown	14. TOTAL NUMBER CORE BOXES N/A
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER N/A
	16. DATE HOLE: STARTED 25 Jan 1984; COMPLETED 26 Jan 1984
7. THICKNESS OF OVERBURDEN 56.0'	17. ELEVATION TOP OF HOLE 677.0'
8. DEPTH DRILLED INTO ROCK 0.0'	18. TOTAL CORE RECOVERY FOR BORING N/A %
9. TOTAL DEPTH OF HOLE 56.0'	19. SIGNATURE OF INSPECTOR Thaddius J. Zielonka, Jr.

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
677.0'	0'		Riprap.			Cement Bentonite Grout
	5					
			10.0'			6" Hole Dia.
667.0'	10		Embankment.			3/4" SCH 40 PVC RISER
	15					
	20					
	25					
647.0'	30		Continued on sht 2 NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.			

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 677.0' **Hole No.** PE-208A

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 2 OF 2 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
647.0'	30'	c	d	e	f	g
			Embankment Continued.			Cement Bentonite Crout
	35					
	40					
	45					46.0'
			48.0'			Bentonite Seal
629.0'			(SM) Red-brown fine to med. grained micaceous silty SAND.			
	50					52.0'
			Color change to brown.			53.0'
			Color change to red-brown.			Sand Backfill; 2.0' WELL SCREEN; 55.0'
	55					
621.0'			Bottom of Boring 56.0'			

3/4" SCH 40 PVC RISER

Hole No. PF-208A

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 3 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT 4X5 1/2", 6" fishtail & 6" rock bit.
2. LOCATION (Coordinates or Station) 16+00, 30' Upstream	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314
4. HOLE NO. (As shown on drawing title and file number) PF-208A	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 7; UNDISTURBED 0
5. NAME OF DRILLER H. Brown	14. TOTAL NUMBER CORE BOXES 1
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER N/A
7. THICKNESS OF OVERBURDEN 82.5'	16. DATE HOLE: STARTED 16 Jan 1984; COMPLETED 19 Jan 1984
8. DEPTH DRILLED INTO ROCK 12.5'	17. ELEVATION TOP OF HOLE 677.0'
9. TOTAL DEPTH OF HOLE 95.0'	18. TOTAL CORE RECOVERY FOR BORING N/A %
	19. SIGNATURE OF INSPECTOR Thaddius J. Zielonka, Jr.

ELEVATION 677.0'	DEPTH 0'	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Riprap.			Cement Bentonite Grout
	5					
			10.0'			6" Hole Dia.
667.0'	10		Embankment.			3/4" SCH 40 PVC RISER
	15					
	20					
	25					
647.0'	30		Continued on sht 2 NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 677.0'	Hole No. PF-208A
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 3 SHEETS

ELEVATION 647.0'	DEPTH 30'	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Embankment Continued			
	35					
	40					Cement Bentonite Grout
	45		48.0'			
629.0'			(SM) Red-brown fine to med. grained micaceous silty SAND.			
	50		Color change to brown.			
			Color change to red-brown.			
	55					3/4" SCH 40 PVC RISER
	60		Brown & fine grained below 60.0'.			
	65					
607.0'	70		Continued on sht 3			

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 677.0' **Hole No.** PF-208A

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 3 OF 3 SHEETS

ELEVATION 607.0'	DEPTH 70'	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			(SM) Continued. Brown, fine grained micaceous silty SAND.			Cement Bentonite Grout
			Dark grey to black.			
	75					
			Tan fine to med.grained.			
			With fine & coarse gravel.			
	80					
			Top of Rock 82.5'			
594.5'			(GRANITE GNEISS) Intensely wea., mottled brown, tan, & white, micaceous.			84.0'
	85					Bentonite Seal 88.0'
	90					3/4" SCH 40 PVC RISER
	92					92.0' 2.0' LONG WELL SCREEN
	94					Sand Backfill 94.0'
582.0'			Bottom of Boring 95.0'			

Hole No. PF-208A

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 3 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT 4X5 1/2"dia 6"fishtail & 6"rock bit
2. LOCATION (Coordinates or Station) 16+00, 30' Upstream	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314
4. HOLE NO. (As shown on drawing title and file number) PF-208A	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 7; UNDISTURBED 0
5. NAME OF DRILLER H. Brown	14. TOTAL NUMBER CORE BOXES 1
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER N/A
	16. DATE HOLE: STARTED 16 Jan 1984; COMPLETED 19 Jan 1984
7. THICKNESS OF OVERBURDEN 82.5'	17. ELEVATION TOP OF HOLE 677.0'
8. DEPTH DRILLED INTO ROCK 12.5'	18. TOTAL CORE RECOVERY FOR BORING N/A %
9. TOTAL DEPTH OF HOLE 95.0'	19. SIGNATURE OF INSPECTOR Thaddius J. Zielonka, Jr.

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
677.0'	0'		Riprap.			NOTE: Cored riprap w/ 4X5 1/2"dia. bit. Reamed w/6"rock bit.
	5					
			10.0'			
667.0'	10		Embankment.			NOTE: Fishtailed to 48.0'.
	15					
	20					
	25					
647.0'	30					

Continued on sht 2

NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 677.0'	Hole No. PF-208A
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 3 SHEETS

ELEVATION 647.0'	DEPTH 30'	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Embankment Continued.			
	35					
	40					
	45					
			48.0'			BLOWS
629.0'			(SM) Red-brown fine to med. grained micaceous silty SAND.		1	22
	50		Color change to brown.			25
			Color change to red-brown.		2	24 34 34 22
	55					
	60		Brown & fine grained below 60.0'.		3	23 34 34 14
	65				4	15 31 35
607.0'	70		Continued on sht 3			14

BLOWS PER FOOT: Number required to drive 1 3/8"ID splitspoon w/ 140 lb. hammer falling 30".

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 677.0'	Hole No. PF-208A
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 3 OF 3 SHEETS

ELEVATION 607.0'	DEPTH 670'	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	BLOWS
			(SM) Continued. Brown, fine grained micaceous silty SAND.				15
					5		36
			Dark grey to black.				32
	75						50
			Tan, fine to med. grained.		6		49
							49
	80		With fine & coarse gravel.				49
			Top of Rock 82.5'				78
594.5'					7	NOTE: Scale change @ 90.0'.	90
	85		(GRANITE GNEISS) Intensely wea., mottled brown, tan, & white, micaceous.				100
							100
							42
	90						
						Pull #1 From 90.0' To 95.0' Run 5.0' Rec N/A	
					Box 1		
	92						
	94						
582.0'							
			Bottom of Boring 95.0'				

REHABILITATION OF CLEMSON UPPER DIVERSION DAM

CONSTRUCTION FOUNDATION REPORT

APPENDIX C

Conrete Quality Control - Core Boring Logs

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TEST PANELS

CQC Boring Logs

Hole No. T-1-1

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 9 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT R Diamond
2. LOCATION (Coordinates or Station) 4+79 ℄	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314
4. HOLE NO. (As shown on drawing title and file number) T-1-1	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED N/A; UNDISTURBED N/A
5. NAME OF DRILLER C. D. Justiss	14. TOTAL NUMBER CORE BOXES 8
6. DIRECTION OF HOLE ☐ VERTICAL ☒ INCLINED 1 DEG. FROM VERT.	15. ELEVATION GROUND WATER N/A
	16. DATE HOLE: STARTED 19 Jan 84; COMPLETED 21 Jan 84
7. THICKNESS OF ~~OVERBURDEN~~ CONCRETE 79.37	17. ELEVATION TOP OF HOLE 675.0
8. DEPTH DRILLED INTO ROCK 3.78	18. TOTAL CORE RECOVERY FOR BORING 98.2 %
9. TOTAL DEPTH OF HOLE 84.50	19. SIGNATURE OF INSPECTOR Thaddeus A. Zielinski Jr.

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
675.0	0		CONCRETE Machine break @ 0.31.	95.0%		Pull 1 From 0.00 To 1.50 Run 1.50 Rec 1.33 CL 0.17 U.L. 0.07
	1		Machine break @ 1.09.			CD 1.40
	2		Machine breaks @ 1.79, 2.01, and 2.24.	100%	Box 1	Pull 2 From 1.50 To 2.[illegible] Run 1.40 Rec 1.[illegible] CG 0.05 U.L. 0.[illegible]
	3		Mechanical break @ 3.46. Machine break @ 3.73.	100%		CD 2.85 Pull 3 From 2.90 To 7.95 Run 5.05 Rec 4.80 CL 0.25 U.G. 0.03
			Machine break @ 5.43.			
669.0	6		Continued on Sheet #2.			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.0	Hole No. T-1-1
PROJECT Clinton Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 9 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
669.0a	b	c	d	e	f	g
			CONCRETE (Continued)	–		Pull 3 (Continued)
			Machine break @ 6.25.			
				100%		
			Mechanical break @ 6.85.			
	7					
			Low angle machine break from 7.16 to 7.26.		Box 1	
						CD 7.62
			Low angle break from 7.60 to 7.70 at end of pull.			7.95
	8					Pull 4
						From 7.95
						To 17.70
						Run 9.75
				99.6%		Rec 9.89
						CG 0.14
	9		High angle (approx. 60°) break from 9.02 to 9.40.			U.L. 0.04
					10.02	
	10		Mechanical break @ 10.02.			
	11					
					Box 2	
	12					
	13					
			Mechanical break @ 13.59.			
661.0	14		Continued on Sheet # 3.			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.0	Hole No. T-1-1
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 3 OF 9 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
661.0	14		CONCRETE (Continued)			Pull 4 (Continued)
	15		Mechanical break @ 15.07.	99.6%		
	16				Box 2	
			Mechanical break @ 16.72.			
	17					
			Low angle break from 17.43 to 17.58 at end of pull.			CD 17.55
						Pull 5 From 17.70 To 27.67 Run 9.97 Rec 9.75 CL 0.22 U.G. 0.05
	18					
	19			100%		
	20		Mechanical break @ 20.08.		20.08	
	21				Box 3	
653.0	22		Continued on Sheet # 4.			

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 675.0 | **Hole No.** T-1-1

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 4 OF 9 SHEETS

ELEVATION (a)	DEPTH (b)	LEGEND (c)	CLASSIFICATION OF MATERIALS (Description) (d)	% CORE RECOVERY (e)	BOX OR SAMPLE NO. (f)	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) (g)
653.0	22		CONCRETE (Continued)			Pull 5 (Continued)
	23		Mechanical break @ 22.95.	100%		
	24		Low angle break from 23.81 to 23.91.		Box 3	Note: Scale change at 24.00 feet.
	26					
			Machine break @ 27.14.			CD 27.25
						27
	28			100%		Pull 6 From 27.67 To 37.30 Run 9.63 Rec 10.00 CG 0.37 U.L. 0.00
	30					
			Mechanical break @ 30.88.		30.88	
	32					Note: Scale change at 32.00 feet.
			Low angle break from 32.46 to 32.58.		Box 4	
	33					
641.0	34		Continued on Sheet #5.			

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 675.0 | **Hole No.** T-1-1

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 5 OF 9 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
641.0a	34b	c	d	e	f	g
			CONCRETE (Continued)			Pull 6 (Continued)
			Low angle break from 34.57 to 34.67.	100 %		
	35					
					Box 4	
	37					CD 37.25 37.30
						Pull 7 From 37.30 To 47.35 Run 10.05 Rec 9.99 CL 0.06 U.L. 0.01
			Mechanical break @ 38.20.			
	39					
				99.9 %		
	41					
			Mechanical break @ 42.02.		42.02	
	43					
					Box 5	
	45					
			Mechanical break @ 45.67.			
	47					CD 47.25 47.35
						Pull 8 From 47.35 To 57.27
				100 %		
626.0	49		Continued on Sheet #6.			(Continued)

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.0	Hole No. T-1-1
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 6 OF 9 SHEETS

ELEVATION 626.0a	DEPTH 49b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CONCRETE (Continued) Mechanical break @ 49.15.			Pull 8 (Continued) From 47.35 To 57.27 Run 9.92 Rec 10.07 CG 0.15 U.G. 0.07
					Box 5	
	51			100%		
	53		Mechanical break @ 52.81 0.01-0.02' deep pits over 1/8 of core from 52.85 to 53.00.		52.81	
	55		Mechanical break @ 54.70.			
					Box 6	
			Mechanical break @ 56.50.			
	57					CD 57.25 57.2
						Pull 9 From 57.27 To 67.35 Run 10.08 Rec 10.07 CL 0.01 U.G. 0.10
	59					
			Mechanical break @ 60.05.	100%		
	61					Note: Scale change at 61.00 ft.
	62					
612.0	63		Continued on Sheet # 7.			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.0	Hole No. T-1-1
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 7 OF 9 SHEETS

ELEVATION 612.0a	DEPTH 63b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CONCRETE (Continued)		Box 6	Pull 9 (Continued)
					63.77	
	64		Mechanical breaks @ 63.77 and 64.22.			
				100%		
			Began to leave Panel T-1 concrete @ 64.70.			
	65		Machine break @ 65.00. Small 1/2" thick piece of concrete separated from main core by break around aggregate from 64.85 to 65.06.			
			Began recovery of Panel T-10 concrete @ 65.83.			
	66		Machine breaks in T-10 concrete @ 65.91 and 66.35.			
			Machine breaks in both T-1 + T-10 concrete @ 66.62.			
			Machine breaks in T-10 concrete @ 66.78 + 66.90.		Box 7	
	67					CD 67.22
						67.35
						Pull 10
						From 67.35
						To 70.35
	68		Machine break in T-10 concrete @ 68.04.			Run 3.00
			Machine break in T-1 concrete @ 68.08.	96.9%		Rec 2.84
						CL 0.16
						U.L. 0.09
			No recovery of T-1 concrete from 68.87 to 69.37.			
	69					
			Machine break in T-1 concrete @ 69.72.			
			Machine break in T-10 concrete @ 69.74.			
			Machine break in T-1 concrete @ 69.89.			
	70					CD 70.15
						70.35
				94.5%		Pull 11
						From 70.35
604.0	71					To 80.45 (Continued)
			Continued on Sheet #8.			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.0	Hole No. T-1-1
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 8 OF 9 SHEETS

ELEVATION 604.0 a	DEPTH 71 b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CONCRETE (Continued)			Pull 11 (Continued)
			Machine break in T-1 concrete @ 71.01.			From 70.35
			Recovery of T-1 concrete cnos @ 71.37.			To 80.45
			Machine breaks in T-10 concrete @ 71.48 + 71.99.			Run 10.10
				94.5%		Rec 8.98
	72					CL 1.12
					Box 7	U.L. 0.52
			Core totally in Panel T-10 starting @ 72.65.			
			Machine break @ 72.78.			
	73					
			Mechanical break @ 73.75.		73.75	
	74					
			1/2" deep pits on core from 74.85 to 75.85.			
	75					
			Machine break @ 75.67. Seam of sand + clay from 75.45 to 75.77.		Box 8	
	76					
			Machine break @ 76.55.			
	77					
			Mechanical break @ 77.41.			
	78					
596.0	79		Continued on Sheet #9.			

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 675.0 | **Hole No.** T-1-1

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 9 OF 9 SHEETS

ELEVATION (a)	DEPTH (b)	LEGEND (c)	CLASSIFICATION OF MATERIALS (Description) (d)	% CORE RECOVERY (e)	BOX OR SAMPLE NO. (f)	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) (g)
596.0	79		CONCRETE (Continued) Angular contact at bottom of concrete 79.37	94.5%		Pull 11 (Continued) Note: Approx. 1 ft. rod drop from 79.4-80.4.
516.6			CORE LOSS From bottom of concrete to 80.72.			CD 79.65
	80					80.45
594.3			80.72 GRANITE GNEISS Slightly weathered, salt-and-pepper color, slightly foliated.	82.1% RQD 49	Box 8	Pull 12 From 80.45 To 84.50 Run 4.05 Rec 3.80 CL 0.25 U.L. 0.83
	81					
	82					
	83		83.50-84.50 Highly weathered.			
	84					CD 84.28
590.5			Bottom of Hole 84.50			84.50

Hole No. T-1-2

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 9 SHEETS

1. PROJECT: Clemson Hoover Diversion Dam
2. LOCATION (Coordinates or Station): 4+82 ℄
3. DRILLING AGENCY: Savannah District
4. HOLE NO. (As shown on drawing title and file number): T-1-2
5. NAME OF DRILLER: C.D. Justice
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF ~~OVERBURDEN~~ CONCRETE
8. DEPTH DRILLED INTO ROCK
9. TOTAL DEPTH OF HOLE: 24.3
10. SIZE AND TYPE OF BIT: R Diamond
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 314
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED N/A; UNDISTURBED N/A
14. TOTAL NUMBER CORE BOXES: 8
15. ELEVATION GROUND WATER: N/A
16. DATE HOLE: STARTED 21 Jan 84; COMPLETED 23 Jan 84
17. ELEVATION TOP OF HOLE: 675.1
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: Thaddeus J. Zielonka Jr.

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
675.1	0		CONCRETE			Pull 1
			Machine break @ 0.67.	98.5 %		From 0.00
						To 1.55
						Run 1.55
						Rec 1.35
	1					CL 0.20
						U.L. 0.02
						CD 1.37 1.55
					Box 1	Pull 2
						From 1.55 To 2.77
	2			100 %		Run 1.22 Rec 1.43
						CG 0.21 U.G. 0.05
						CD 2.75 2.77
	3					Pull 3
			Machine breaks @ 3.16, 3.75, 4.18, + 4.67.			From 2.77
						To 7.85
				100 %		Run 5.08
						Rec 5.10
						CG 0.02
	5					U.L. 0.00
						Note: Scale change at 3.00 ft.
	7		Mechanical break @ 6.90.			
						CD 7.85 7.85
						Pull 4
				100 %		From 7.85
666.1	9		Continued on Sheet #2.			To 17.94 (Continued)

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.1	Hole No. T-1-2
PROJECT Clinton Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 9 SHEETS

ELEVATION 666.1 a	DEPTH 9 b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CONCRETE (Continued)			Pull 4 (Continued)
					Box 1	From 7.85
						To 17.94
						Run 10.09
			Mechanical break @ 10.49.		10.49	Rec 10.10
	11					CG 0.01
						U.G. 0.05
				100%		
	13					
			Mechanical break @ 14.28.			
	15				Box 2	
	17					
			Mechanical break @ 17.54.			
						CD 17.90 — 17.94
						Pull 5
	19					From 17.94
						To 28.00
						Run 10.06
						Rec 10.10
						CG 0.04
						U.L. 0.00
			Machine break @ 20.45.			
	21			100%		
			High angle break from 21.15 to 21.65.		21.65	
	22		Angular break from 21.75 to 22.10.		Box 3	
652.1	23		Continued on Sheet #3.			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.1	Hole No. T-1-2
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 3 OF 9 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
652.1	23		CONCRETE (Continued)			Pull 5 (Continued)
			Angular break from 23.05 to 23.32.			
	24		Angular break from 24.10 to 24.43.	100%		
	25		Mechanical break @ 25.45.			
	26		High angle break from 25.70 to 26.20.		Box 3	
	27					
	28					CD 28.00 23.00
						Pull 6 From 28.00 To 38.10 Run 10.10 Rec 10.05 CL 0.05 U.G. 0.05
	29			100%		
	30		Mechanical break @ 30.12.			
644.1	31		Continued on Sheet #4.			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.1	Hole No. T-1-2
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 4 OF 9 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
644.1	31		CONCRETE (Continued)			Pull 6 (Continued)
					Box 3	
			Mechanical break @ 31.69.		31.69	
	32		Angular break from 31.97 to 32.27.			
	33					
				100%		
	34		Machine break @ 34.02.			
					Box 4	
	35					
			Mechanical break @ 35.44.			
	36					
	37					
	38					CD 38.00 38.10
						Pull 7 From 38.10 To 48.03
636.1	39		Continued on Sheet #5.			(Continued)

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE: 675.1

Hole No. T-1-2

PROJECT: Clemson Upper Diversion Dam

INSTALLATION: Hartwell Lake

SHEET 5 OF 9 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
636.1a	39b	c	d	e	f	g
			CONCRETE (Continued)			Pull 7 (Continued) From 38.10 To 48.03 Run 9.93 Rec C U.
	40					
	41					
	42					
	43					
	44					
	45					
	46					
628.1	47		Continued on Sheet # 6.			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.1	Hole No. T-1-2
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 6 OF 9 SHEETS

ELEVATION 628.1a	DEPTH 47b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CONCRETE (Continued)			Pull 7 (Continued)
						CD 47.85 48.03
	48					Pull 8 From 48.03 To 57.93 Run 9.90 Rec C U.
	49					
	50					
	51					
	52					
	53					
	54					
620.1	55		Continued on Sheet # 7.			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.1	Hole No. T-1-2
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 7 OF 9 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	55		CONCRETE (Continued)			Pull 8 (Continued)
	56					
	57					
						CD 57.61
						57.93
	58					Pull 9 From 57.93 To 67.70 Run 9.77 Rec C U.
	59					
	60					
	62					
	64					
609.1	66		Continued on Sheet #8.			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.1	Hole No. T-1-2
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 8 OF 9 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
667.1	66		CONCRETE (Continued)			Pull 9 (Continued)
						67.70
	68					Pull 10 From 67.70 To Run Rec C U.
	70					
	72					
	74					
	76					
	78					
	80					
593.1	82		Continued on Sheet # 9.			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.1	Hole No. T-1-2
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 9 OF 9 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
593.1	82		GRANITE GNEISS (Continued)			
	84					
590.3			Bottom of Hole 84.8			84.8

Hole No. T-4-1

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 7 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT R Diamond
2. LOCATION (Coordinates or Station) 5+34 ℄	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 3/4
4. HOLE NO. (As shown on drawing title and file number) T-4-1	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED N/A; UNDISTURBED N/A
5. NAME OF DRILLER A. D. Justice	14. TOTAL NUMBER CORE BOXES 8
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER N/A
	16. DATE HOLE: STARTED 8 Jan 84; COMPLETED 12 Jan 84
7. THICKNESS OF ~~OVERBURDEN~~ CONCRETE 83.05	17. ELEVATION TOP OF HOLE 675.1
8. DEPTH DRILLED INTO ROCK 5.35	18. TOTAL CORE RECOVERY FOR BORING 99.2 %
9. TOTAL DEPTH OF HOLE 88.40	19. SIGNATURE OF INSPECTOR Thaddeus J. Zielenka Jr.

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0		CONCRETE	96.4%		Pull 1 From 0.00 To 1.50 Run 1.50 Rec 1.06 CL 0.44 U.L. 0.04 CD 1.10 1.50
	1			100%	Box 1	Pull 2 From 1.50 To 2.90 Run 1.40 Rec 1.25 CL 0.15 U.G. 0.05 CD 2.30 2.90
	2		Machine break @ 2.15.			
	3			99.6%		Pull 3 From 2.90 To 7.50 Run 4.60 Rec 4.88 CG 0.28 U.L. 0.32 Note: Scale change at 4.00 feet.
	4		Machine breaks @ 3.53 and 4.94.			
	5		Mechanical break @ 6.26.			
				100%		CD 7.20 7.50
666.1	8		Continued on Sheet #2.			Pull 4 (Continued)

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 675.1 | **Hole No.** T-4-1

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 2 OF 7 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
667.1			CONCRETE (Continued)			Pull 4 (Continued)
			Machine break @ 8.52.			From 7.50
						To 17.30
					Box 1	Run 9.80
						Rec 10.10
	10			100%		CG 0.30
						U.L. 0.00
					10.95	
			Mechanical break @ 10.95.			
	12					
			Machine break @ 12.35.			
			Machine break @ 13.70.			
	14					
			Mechanical break @ 14.65.		Box 2	
			Machine break @ 15.47.			
	16					
						CD 17.30 — 17.30
						Pull 5
	18					From 17.30
			Mechanical break @ 18.35.			To 27.40
			Machine break @ 18.72.			Run 10.10
				99.7%		Rec 9.92
						CL 0.18
						U.L. 0.03
	20					
			Machine break @ 20.78.			
	22		Mechanical break @ 22.09.		22.09	
					Box 3	
651.1	24		Continued on Sheet #3.			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.1	Hole No. T-4-1
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 3 OF 7 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CONCRETE (Continued)			Pull 5 (Continued)
				99.7%		
	26		Mechanical break @ 25.88.			
						CD 27.25 — 27.40
	28				Box 3	Pull 6 From 27.40 To 37.32 Run 9.92 Rec 10.04 CG 0.12 U.G. 0.07
			Mechanical break @ 29.61.	100%		
	30					
	32					
			Mechanical break @ 33.40.		33.40	
	34					
	36					
			Mechanical breaks @ 36.27 37.29, — 38.43.		Box 4	CD 37.22 — 37.32
	38			100%		Pull 7 From 37.32 To 47.32 Run 10.00 Rec 10.10 CG 0.10 U.L. 0.00
635.1	40		Mechanical break @ 39.27. Continued on Sheet # 4			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.1	Hole No. T-4-1
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 4 OF 7 SHEETS

ELEVATION (a)	DEPTH (b)	LEGEND (c)	CLASSIFICATION OF MATERIALS (Description) (d)	% CORE RECOVERY (e)	BOX OR SAMPLE NO. (f)	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) (g)
			CONCRETE (Continued)			Pull 7 (Continued)
			Mechanical break @ 40.97.			
	42				Box 4	
			Mechanical break @ 42.54.	100%		
	44					
			Mechanical break @ 44.70.		44.70	
	46					
						CD 47.32 47.32
						Pull 8 From 47.32 To 57.40 Run 10.08 Rec 10.00 CL 0.08 U.L. 0.01
	48		Mechanical break @ 48.26.			
				99.9%	Box 5	
	50					
	52		Mechanical break @ 51.93.			
	54					
			Mechanical break @ 55.57.		55.57 Box 6	
617.1	56		Continued on Sheet # 5.			

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 675.1 **Hole No.** T-4-1

PROJECT Clemson Upper Diversion Dam | INSTALLATION Hartwell Lake | SHEET 5 OF 7 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
619.1a	56b		CONCRETE (Continued)	99.9%		Pull 8 (Continued)
						CD 57.33 — 57.40
	58					Pull 9 From 57.40 To 67.40 Run 10.00 Rec 9.93 CL 0.07 U.G. 0.06
			Mechanical break @ 59.24.	100%		
	60				Box 6	
	62					
			Mechanical break @ 63.03.			
	64					
	66					
			Mechanical break @ 66.75.		66.75	
						CD 67.20 — 67.40
	68					Pull 10 From 67.40 To 77.30 Run 9.90 Rec 10.05 CG 0.15 U.L. 0.05
				99.5%	Box 7	
	70					
			Mechanical break @ 70.32.			
603.1	72		Continued on Sheet # 6.			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.1	Hole No. T-4-1
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 6 OF 7 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	72		CONCRETE (Continued)			Pull 10 (Continued)
			Mechanical break @ 73.72.			
	74			99.5%	Box 7	
	76					Note: Scale change at 76.00 ft.
	77				77.25	CD 77.30 77.30
				99.6%		Pull 11 From 77.30 To 82.42 Run 5.12 Rec 5.00 LL 0.12 U.L. 0.02
	78				Box 8	
			Mechanical break @ 79.57.			
	80					
	81		Mechanical break @ 80.75.			
			Machine break @ 81.57. Partial core loss from 81.57 to 82.00. Void may have been filled with sand.			
593.1	82		Continued on Sheet #7.			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.1	Hole No. T-4-1
PROJECT Clarence Hyde Diversion Dam	INSTALLATION Hartwell Lake	SHEET 7 OF 7 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CONCRETE (Continued) Partial core loss continues between pieces of concrete from 82.00 to 82.85. Machine break @ 82.70.	99.6%		Pull 11 (Continued) CD 82.32 82.42
	83		Bottom of Concrete 83.05	54.6%	Box 8	Pull 12 From 82.42 To 83.40 Run 0.98 Rec 0.59 CL 0.37 U.L. 0.49 CD 83.40 83.40
	84		GRANITE GNEISS Fine to medium grained, highly weathered to fresh, foliated with frequent horizontal partings.			Pull 13 From 83.40 To 88.40 Run 5.00 Rec 4.74 C.L 0.26 U.G. 0.33
	85			100% RQD 41		Note: Small amount of sand and slurry recovered on bottom of concrete.
	86					
	87					CD 87.81
	88		Bottom of Hole 88.40			88.40
586.7						

Hole No. T-5-1

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 6 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT R Diamond
2. LOCATION (Coordinates or Station) 5+90.5, ℄	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314
4. HOLE NO. (As shown on drawing title and file number) T-5-1	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED N/A; UNDISTURBED N/A
5. NAME OF DRILLER C. G. Tortice	14. TOTAL NUMBER CORE BOXES 8
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER N/A
	16. DATE HOLE: STARTED 6 Jan 84; COMPLETED 7 Jan 84
7. THICKNESS OF ~~OVERBURDEN~~ CONCRETE 82.57	17. ELEVATION TOP OF HOLE 675.0
8. DEPTH DRILLED INTO ROCK 3.45	18. TOTAL CORE RECOVERY FOR BORING 96.9 %
9. TOTAL DEPTH OF HOLE 86.50	19. SIGNATURE OF INSPECTOR Thaddeus J Zielenba Jr

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
675.0	0		CONCRETE	98.6%		Pull 1 From 0.00 To 1.40 Run 1.40 Rec 1.38 CL 0.02 CD 1.40 U.L. 0.02 1.40
	2			100%		Pull 2 From 1.40 To 2.90 Run 1.50 Rec 1.30 CL 0.20 CD 2.70 U.L. 0.00 2.90
	4		Mechanical break @ 3.32. Machine break @ 3.90.	99.7%	Box 1	Pull 3 From 2.90 To 7.90 Run 5.00 Rec 3.39 CL 1.61 U.L. 0.01
	6					CD 6.10 (Based on recovery.) 7.90
	8		Mechanical breaks @ 6.94 and 8.05.	100%		Pull 4 From 7.90 To 15.50 Run 7.60 Rec 4.93 CL 2.67 U.G. 0.03
	10		Mechanical break @ 10.63.		10.63 Box 2	CD 11.00
663.0	12		Continued on Sheet #2.			

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DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE: 675.0

Hole No. T-5-1

PROJECT: Clemson Upper Diversion Dam

INSTALLATION: Hartwell Lake

SHEET 2 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
663.0	12		CONCRETE (Continued)			Pull 4 (Continued)
	14		Mechanical break @ 14.20.		Box 2	
						15.50
	16			100%		Pull 5 From 15.50 To 20.50 Run 5.00 Rec 9.42 CG 4.42 U.G. 0.12
	18		Mechanical break @ 17.91.			
	20		Mechanical breaks @ 19.69 and 20.31.			CD 20.30
						Pull 6 From 20.50 To 30.50 Run 10.00 Rec 10.02 CG 0.02 U.G. 0.02
			Mechanical break @ 21.39.		21.39	
	22			100%		
	24				Box 3	
	26		Mechanical breaks @ 25.18, 26.37, and 27.95			
647.0	28		Continued on Sheet #3.			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.0	Hole No. T-5-1
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 3 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
647.0			CONCRETE (Continued)			Pull 6 (Continued)
			Mechanical breaks @ 28.96 and 30.00.	100%	Box 3	CD 30.30 30.50
	30					Pull 7 From 30.50 To 40.50 Run 10.00 Rec 10.08 CG 0.08 U.L. 0.02
			Mechanical breaks @ 31.20, 31.99, and 32.67.	99.8%	32.67	
	32					
	34					
	36				Box 4	
			Mechanical breaks @ 36.68 and 37.57.			
	38					
			Mechanical breaks @ 39.28 and 40.10.			
	40					CD 40.40 40.50
						Pull 8 From 40.50 To 50.50 Run 10.00 Rec. 9.93 CL 0.07 U.L. 0.07
	42			99.3%		
631.0	44		Mechanical break @ 43.81.		43.81 Box 5	
			Continued on Sheet # 4.			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.0	Hole No. T-5-1
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 4 OF 6 SHEETS

ELEVATION 631.0a	DEPTH 44b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CONCRETE (Continued)			Pull 8 (Continued)
	46			99.3%		
			Mechanical break @ 47.58.		Box 5	
	48					
	50					CD 50.40 50.50
						Pull 9 From 50.50 To 60.50 Run 10.00 Rec 10.05 CG 0.05 U.L. 0.05
			Mechanical break @ 51.39.	99.5%		
	52					
	54					
			Mechanical break @ 55.17.		55.17	
	56					
					Box 6	
	58					
			Mechanical break @ 58.85.			
615.0	60		Continued on Sheet #5.			

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 675.0 | **Hole No. T-5-1**

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 5 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
615.0	60		CONCRETE (Continued)	99.5%		Pull 9 (Continued) CD 60.50 — 60.50
						Pull 10 From 60.50 To 70.50 Run 10.00 Rec 10.02 CG 0.02 U.G. 0.02
	62		Mechanical break @ 62.53.	100%	Box 6	
	64					
	66		Mechanical break @ 66.27.		66.27	
	68					
			Mechanical breaks @ 68.87 and 70.02.			
	70				Box 7	CD 70.50 — 70.50
						Pull 11 From 70.50 To 80.50 Run 10.00 Rec 9.79 CL 0.21 U.L. 0.01
	72			99.9%		
			Mechanical break @ 73.67.			
	74					
597.0	76		Continued on Sheet #6.			

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 675.0 **Hole No.** T-5-1

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 6 OF 6 SHEETS

ELEVATION 599.0 a	DEPTH 76 b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CONCRETE (Continued)		Box 7	Pull 11 (Continued)
			Mechanical break @ 77.44.		77.44	
	78			99.9%		
	80					CD 80.30 — 80.50
						Pull 12
			Mechanical break @ 81.17.	90.8%	Box 8	From 80.50 To 83.00
						Run 2.50 Rec 2.27
						CL 0.23 U.L. 0.23
	82					Note: Scale change at 82.0 ft.
			Concrete/SC Contact.			
592.4			Red-brown fine to medium clayey sand at contact.			
			Bottom of concrete 82.57.			
592.2			Core Loss 82.57 - 82.80.			CD 82.80
	83		(SC) Red-brown fine to medium clayey sand w/ pieces of concrete			83.
591.95			GRANITE GNEISS (83.05-84.00) Greenish-gray, fine to coarse grained, intensely weathered			Pull 13
						From 83.00
						To 86.50
						Run 3.50
				32.4%		Rec 1.20
591.0	84		84.00			CL 2.30
			Core Loss.	RQD 0		U.L. 2.50
	85					
	86					
588.5			Bottom of Hole 86.50			86.50
	87					

Hole No. T-6-1

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 6 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT R Diamond
2. LOCATION (Coordinates or Station) 4+95.5 ℄	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314
4. HOLE NO. (As shown on drawing title and file number) T-6-1	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED N/A; UNDISTURBED N/A
5. NAME OF DRILLER C. D. Justiss	14. TOTAL NUMBER CORE BOXES 8
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER N/A
	16. DATE HOLE: STARTED 16 Jan 84; COMPLETED 18 Jan 84
7. THICKNESS OF ~~OVERBURDEN~~ CONCRETE 81.10	17. ELEVATION TOP OF HOLE 675.4
8. DEPTH DRILLED INTO ROCK 2.88	18. TOTAL CORE RECOVERY FOR BORING 98.9 %
9. TOTAL DEPTH OF HOLE 84.00	19. SIGNATURE OF INSPECTOR Thaddeus J. Zielonka Jr.

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CONCRETE			Pull 1 From 0.00 To 1.45 Run 1.45 Rec 1.40 CL 0.05 U.L. 0.05
	1		Machine break @ 0.70.	96.6%		CD 1.45 1.45
	2		Machine breaks @ 2.21 and 2.81.	100%	Box 1	Pull 2 From 1.45 To 2.81 Run 1.36 Rec 0.91 CL 0.33 U.G. 0.03 CD 2.40 2.81
	3		Mechanical break @ 3.46.	100%		Pull 3 From 2.81 To 7.45 Run 4.64 Rec 5.08 CG 0.44 U.G. 0.03 Note: Scale change at 3.00 ft.
	5					
	7		Mechanical break @ 7.05.			CD 7.45 7.45
				100%		Pull 4 From 7.45 To 17.54 (Continued)
666.4	9		Continued on Sheet # 2.			

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DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.4	Hole No. T-6-1
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CONCRETE (Continued)		Box 1	Pull 4 (Continued) From 7.45 To 17.54 Run 10.09 Rec 10.09 CL 0.00 U.G. 0.03
			Mechanical break @ 10.74.		10.74	
	11			100%		
	13					
			Mechanical break @ 14.51.		Box 2	
	15					
	17					CB 17.51 17.54
			Mechanical break @ 18.19.			Pull 5 From 17.54 To 27.65 Run 10.11 Rec 10.08 CL 0.03 U.L. 0.05
	19			99.5%		
	21		Mechanical break through 1½" dia. clay ball @ 21.31.		21.88	
			Mechanical breaks @ 21.88, 22.55, and 23.31.			
	23				Box 3	
650.4	25		Continued on Sheet # 3.			

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 675.4 **Hole No.** T-6-1

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 3 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
650.4 a	25 b		CONCRETE (Continued)			Pull 5 (Continued)
			Mechanical break @ 25.55.			
				99.5%		
	27					
						CD 27.64 27.65
					Box 3	Pull 6 From 27.65 To 37.74 Run 10.09 Rec 10.09 CL 0.00 U.G. 0.02
	29		Mechanical break @ 27.22.			
	31			100%		
	33		Mechanical break @ 32.76.		32.96	
	35					
			Mechanical break @ 35.65.		Box 4	
	37					
						CD 37.71 37.74
						Pull 7 From 37.74 To 47.82 Run 10.08 Rec 10.10 CG 0.02 U.G. 0.01
	39			100%		
			Mechanical break @ 40.31.			
634.4	41		Continued on Sheet # 4.			

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 675.4 | **Hole No.** T-6-1

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 4 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
634.4a	41b		CONCRETE (Continued)			Pull 7 (Continued)
					Box 4	
	43			100%	44.01	
			Mechanical break @ 44.01.			
	45					
			Mechanical break @ 46.28.			
	47					CD 47.80 — 47.82
					Box 5	Pull 8 From 47.82 To 57.90 Run 10.08 Rec 10.08 CL 0.00 U.L. 0.02
	49			99.8%		
	51		Mechanical break @ 51.42.			
	53					
	55		Mechanical break @ 55.17.		55.17	
			Mechanical break @ 56.43.		Box 6	
618.4	57		Continued on Sheet # 5.			

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 615.4 | **Hole No. T-6-1**

PROJECT: Clarence Upper Diversion Dam | INSTALLATION: Martinelli Lake | SHEET 5 OF 6 SHEETS

ELEVATION (a)	DEPTH (b)	LEGEND (c)	CLASSIFICATION OF MATERIALS (Description) (d)	% CORE RECOVERY (e)	BOX OR SAMPLE NO. (f)	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) (g)
			CONCRETE (Continued)	99.8%		Pull 8 (Continued)
						CG 57.90 — 57.90
						Pull 9
						From 57.90
	59		Mechanical breaks @ 58.92 and 60.11.			To 67.95
						Run 10.05
						Rec 10.07
						CG 0.02
						U.G. 0.02
	61				Box 6	
				100%		
	63		Mechanical breaks @ 62.57, 63.66, and 64.49.			
	65					
					66.25	
	67		Mechanical breaks @ 66.25 and 66.94.			
						CD 67.95 — 67.95
						Pull 10
						From 67.95
	69				Box 7	To 78.10
						Run 10.15
			Mechanical break @ 69.85.	99.1%		Rec 10.06
						CL 0.09
						U.L. 0.09
	71					
602.4	73		Machine break @ 72.75.			
			Continued on Sheet #6.			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.4	Hole No. T-6-1
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 6 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CONCRETE (Continued)			Pull 10 (Continued)
			—Mechanical break @ 73.50.			
					Box 7	
	75			99.1%		
	77		—Mechanical break @ 77.13.		77.13	
						CD 78.10 78.10
						Pull 11
						From 78.10
	79					To 81.40
						Run 3.30
						Rec 3.02
				94.4%		CL 0.28
						U.L. 0.12
	80					Note: Scale change @ 79.00 ft.
					Box 8	
			—Mechanical break @ 80.75.			
	81		Bottom of Concrete 81.10			
			0.02' of black rubber from 81.10 to 81.12.			—CD 81.30 81.40
			Core Loss from 81.12 to 81.30.			Pull 12
			Core loss from 81.30-81.40.			From 81.40
			GRANITE GNEISS			To 84.00
	82		Fresh, salt + pepper colored, slightly foliated, low dark mineral content.			Run 2.60
				95.3%		Rec 2.05
						CL 0.55
						U.L. 0.10
				RQD 91		
	83					
						—CD 83.45
591.4	84		Bottom of Hole 84.00 Ft.			84.00

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Hole No. T-7-1

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 5 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT P Diamond
2. LOCATION (Coordinates or Station) 5+80.5 ℄	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314
4. HOLE NO. (As shown on drawing title and file number) T-7-1	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED N/A; UNDISTURBED N/A
5. NAME OF DRILLER C. D. Justiss	14. TOTAL NUMBER CORE BOXES 6
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER N/A
	16. DATE HOLE: STARTED 21 Dec 83; COMPLETED 22 Dec 83
7. THICKNESS OF ~~OVERBURDEN~~ CONCRETE 62.2	17. ELEVATION TOP OF HOLE 675.0
8. DEPTH DRILLED INTO ROCK 0.0	18. TOTAL CORE RECOVERY FOR BORING 98.5 %
9. TOTAL DEPTH OF HOLE 62.2	19. SIGNATURE OF INSPECTOR Thaddeus J. Zielenka Jr.

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete 0.00 - 0.24 Broken up into 1-2" pieces [illegible] cemented aggregate. Good quality brick [illegible]	51.0 %		Pull 1 From 0.00 To 2.00 Run 2.00 Rec 1.02 CL 0.98 Note: 100% gray return 2.00
	2		Machine breaks @ 2.32 [illegible] 1.37, 1.57, [illegible]	100 %		Pull 2 Fr 2.00 To 2.90 Run 0.90 Rec 1.50 CG 0.60 2.90
	4		[illegible]	46.1 %	Box 1	Pull 3 From [illegible] To 3.00 Run 5.10 Rec 2.35 CL 2.75
	6					
	8		Mechanical breaks @ 7.69			8.00
				65.1 %		Pull 4 From 8.00 To [illegible] Run [illegible] Rec 4.70 CL 2.52 CD 9.80
			Mechanical breaks @ 10.64 and 11.59.		11.59 Box 2	
663.0			[illegible]			

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DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.0	Hole No. T-7-1
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 5 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
663.0	12		CONCRETE (Continued)			Pull 4 (Continued) Note: % Core recovery to end of Pull 4 based upon cut depths. Total U.L. to end of Pull 4 = 0.23. Total core recovery to end of Pull 4 = 97.7 %.
	14		Mechanical breaks @ 12.60, 13.59, and 15.52.			15.22
	16			100 %	Box 2	Pull 5 From 15.22 To 20.20 Run 4.98 Rec 10.35 CG 5.37 U.G. 0.15
	18		Mechanical breaks @ 18.21 and 19.44.			
	20					CO 20.00 20.[illegible]
	22			[illegible] %		Pull [illegible] From [illegible] To [illegible] Run 9.[illegible] Rec 9.92 CG 0.[illegible] U.G. 0.02
			Mechanical breaks @ 21.70, 23.17, and 24.06.		23.17	
	24				Box 3	
	26		Mechanical break @ 27.08.			
647.0	28		Continued on Sheet # 3			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.0	Hole No. T-7-1
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 3 OF 5 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
647.0	28		CONCRETE (Continued)			Pull 6 (Continued)
			Mechanical breaks @ 28.70, 29.15, and 30.74.			
	30					CD 29.30 30.00
				96.7%	Box 3	Pull 7 From 30.00 To 40.20 Run 10.20 Rec 9.77 CL 0.43 U.L. 0.33
	32					
	34				34.49	
			Mechanical breaks @ 34.49 and 35.62.			
	36					
	38		Mechanical break @ 38.39.		Box 4	
	40					CD 40.00 40.20
				100%		Pull 8 From 40.20 To 43.20 Run 9.70 Rec 9.72 CG 0.22 U.G. 0.12
	42		Mechanical breaks @ 41.03, 42.10, and 43.24.			
631.0	44		Continued on Sheet #4.			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.0	Hole No. T-7-1
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 4 OF 5 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CONCRETE (Continued)			Pull 8 (Continued)
			Mechanical breaks @ 44.19 and 46.03.		Box 4	
	46				46.03	
	48					
						CD 49.80 49.90
	50					Pull 9
						From 49.90
					Box	To 59.60
				100%	5	Run 9.70
						Rec 9.90
	52					CG 0.20
						U.G. 0.10
			Mechanical break @ 53.39.			
	54					
	56					
			Mechanical breaks @ 56.48 and 57.16.		57.16	Note: Began to exit concrete @ 57.06.
	58		Machine breaks @ 57.74, 58.29, 58.84, and 59.38.		Box 6	
			Flat surface of concrete coated w/ 1/8" - 5/16" of red-brown clay (slurry cake) from 57.06 to BOH. Dark gray fine-grained silty (cont)			CD 57.60 57.60
615.0	60					Pull 10
			Continued on Sheet # 5			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.0	Hole No. T-7-1
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 5 OF 5 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CONCRETE AND SILTY SAND (Cont.)			Pull 10 (Continued)
			sand recovered with concrete.	69.6%	Box 6	From 59.60 To 62.20
			Machine breaks @ 60.53 + 61.02			Run 2.60 Rec 1.74
			Core Loss 61.34 to 62.20			CL 0.86 U.L. 0.76
612.8	62		BOTTOM OF HOLE 62.20			END OF HOLE 62.20

Hole No. T-7-2

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Hartwell Lake	SHEET 1 OF 6 SHEETS

1. PROJECT: Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT: P Diamond
2. LOCATION (Coordinates or Station): 5 + 22 ℄	11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
3. DRILLING AGENCY: Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 314
4. HOLE NO. (As shown on drawing title and file number): T-7-2	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED N/A; UNDISTURBED N/A
5. NAME OF DRILLER: C. L. Justice, R. Justice	14. TOTAL NUMBER CORE BOXES: 8
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER: N/A
	16. DATE HOLE: STARTED 29 Dec 83; COMPLETED 5 Jan 84
7. THICKNESS OF ~~OVERBURDEN~~ CONCRETE: 83.90	17. ELEVATION TOP OF HOLE: 675.0
8. DEPTH DRILLED INTO ROCK: 5.60	18. TOTAL CORE RECOVERY FOR BORING: 98.2 %
9. TOTAL DEPTH OF HOLE: 89.70	19. SIGNATURE OF INSPECTOR: Thaddeus J. Zielinski Jr.

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			0.00 - 0.40 Core loss. 0.40 - 0.60 Uncemented aggregate and ½"-1½" pieces of concrete. 0.60 - 1.59 Good concrete. Machine break @ 1.17. 1.59 - 2.83 Core loss.	45.8%	Box 1	Pull 1 From 0.00 To 2.60 Run 2.60 Rec 1.19 CL 1.41 U.L. 1.41 CD 2.60 2.60
	2		Good concrete below 2.83.	35.6%		Pull 2 From 2.60 To 4.20 Run 1.60 Rec 1.37 CL 0.23 U.L. 0.23 CD 4.20 4.20
	4		Machine breaks @ 3.46 and 5.06.			Pull 3 From 4.20 To 9.30 Run 5.10 Rec 5.11 CG 0.01 U.G. 0.01
			Mechanical break @ 5.46.	100%		
	6		Machine break @ 6.95.			
	8					CD 9.30 9.30
	10			100%		Pull 4 From 9.30 To 19.30 Run 10.00 Rec 9.91 CL 0.09 U.G. 0.01
663.0	12		Mechanical break @ 11.22 Continued on Sheet # 2			

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 675.0 | **Hole No.** T-7-2

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 2 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
663.0 a			CONCRETE (Continued)		Box 1	Pull 4 (Continued)
					13.08	
	14		Mechanical breaks @ 13.08 + 14.45.	100%		
	16		Mechanical breaks @ 16.02 + 16.86.		Box 2	
	18					
						CD 19.20 — 19.30
						Pull 5 From 19.30 To 29.10 Run 9.80 Rec 7.31 CL 2.49 U.G. 0.01
	20		Mechanical break @ 20.64.	100%		
	22					
	24		Mechanical breaks @ 23.28, 23.93, + 24.61.			
					24.61	
	26				Box 3	CD 26.50
647.0	28		Continued on Sheet #3			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.0	Hole No. T-7-2
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 3 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CONCRETE (Continued)			Pull 5 (Continued)
			Mechanical break @ 28.18.			29.10
						Pull 6
				99.1%		From 29.10
	30				Box 3	To 34.10
			Mechanical break @ 30.62.			Run 5.00
						Rec 5.36
						CG 0.36
						U.L. 0.05
	32					CD 31.91 (Based on core recovery.)
	34					34.10
						Pull 7
						From 34.10
			Mechanical break @ 35.05.		35.05	To 40.50
						Run 6.40
						Rec 8.49
	36			100%		CG 2.09
						U.L. 0.00
	38					
			Mechanical break @ 38.73.		Box 4	
	40					
						CD 40.40 — 40.50
						Pull 8
						From 40.50
						To 50.50
	42			100%		Run 10.00
			Mechanical break @ 42.13.			Rec 70.10
						CG 0.10
						U.L. 0.00
631.0	44		Continued on Sheet # 4			

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 675.0 **Hole No.** T-7-2

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 4 OF 6 SHEETS

ELEVATION 631.0a	DEPTH 44b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CONCRETE (Continued)			Pull 8 (Continued)
					Box 4	
	46		Mechanical break @ 45.86.	100%	45.86	
	48					
			Mechanical breaks @ 48.80, 49.26, and 49.76.		Box 5	
	50					CD 50.50 — 50.50
						Pull 9 From 50.50 To 60.50 Run 10.00 Rec 8.71 CL 1.29 U.G. 0.01
	52		Mechanical break @ 52.74.	100%		
	54					
	56		Mechanical breaks @ 55.18 and 56.40.		56.40	
	58				Box 6	
						CD 59.20
615.0	60		Continued on Sheet # 5			

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE: 675.0

Hole No. T-7-2

PROJECT: Clemson Upper Diversion Dam

INSTALLATION: Hartwell Lake

SHEET 5 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CONCRETE (Continued) Mechanical break @ 60.09.			Pull 9 (Continued) 60.50
						Pull 10 From 60.50 To 69.20 Run 8.70 Rec 10.10 CG 1.40 U.G. 0.10
	62			100%		
	64		Mechanical break @ 63.86. Minor segregation of materials (lack of coarse aggregate) from 63.40 to 66.00.		Box 6	
	66					
	68		Mechanical breaks @ 66.91, 67.66, and 68.06.		67.66	
						CD 69.20 69.20
	70			100%	Box 7	Pull 11 From 69.20 To 79.30 Run 10.10 Rec 10.11 CG 0.01 U.G. 0.01
			Mechanical break @ 71.28.			
	72					
	74					
			Mechanical break @ 75.01.			
579.0	76		Continued on Sheet #6			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.0	Hole No. T-7-2
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 6 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CONCRETE (Continued)			Pull 11 (Continued)
				100%	Box 7	
	78					
			Mechanical break @ 78.80.		78.80	
						CD 79.30 79.30
						Pull 12 From 79.30 To 83.90 Run 4.60 Rec 4.55 CL 0.05 U.L. 0.05
	80			98.9%		
	82				Box 8	
			Mechanical break @ 82.41.			
			Bottom of Concrete 83.90			CD 83.90 83.90
	84		(SC) Red-brown fine to medium clayey sand from 83.70 to 84.10.	100% RQD 0		Pull 13 (83.90 to 84.40) Run 0.50 Rec. 0.50 84.40 CL 0.00 U.L. 0.00 CD 84.40
			(GRANITE GNEISS) Intensely weathered, fine to coarse grained, micaceous, foliated, numerous horizontal fractures (high fracture frequency).			Pull 14 From 84.40 To 89.70 Run 5.30 Rec 5.30 CL 0.00 U.L. 0.00
	86					
	88					
585.3			Bottom of Hole 89.70			CD 89.70 89.70
	90					

Hole No. T-10-1

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 7 SHEETS

1. PROJECT Clarkson Upper Diversion Dam	10. SIZE AND TYPE OF BIT R Diamond
2. LOCATION (Coordinates or Station) 4+73 ℄	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314
4. HOLE NO. (As shown on drawing title and file number) T-10-1	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED N/A; UNDISTURBED N/A
5. NAME OF DRILLER C. D. Justiss	14. TOTAL NUMBER CORE BOXES 8
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER N/A
7. THICKNESS OF ~~OVERBURDEN~~ CONCRETE 81.3'	16. DATE HOLE: STARTED 25 Jan 84; COMPLETED 26 Jan 84
8. DEPTH DRILLED INTO ROCK 3.2'	17. ELEVATION TOP OF HOLE 675.2
9. TOTAL DEPTH OF HOLE 25.5'	18. TOTAL CORE RECOVERY FOR BORING 98.4 %
	19. SIGNATURE OF INSPECTOR Theodore J. Zielenbach Jr

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0		CONCRETE			Pull 1 From 0.00 To 1.50 Run 1.50 Rec 1.46 CL 0.04 U.L. 0.04
			Machine break @ 0.78.	97.3%		
	1				Box 1	CD 1.50 1.50
						Pull 2 From 1.50 To 2.45 Run 0.95 Rec 0.92 CG 0.03 U.G. 0.03
	2			100%		CD 2.45 2.45
						Pull 3 From 2.45 To 7.52 Run 5.07 Rec 5.05 CL 0.02 U.G. 0.08
	3		Mechanical break @ 3.68.	99.6%		
	4					Note: Scale change @ 4.00 ft.
	6		Machine break @ 6.24.			
						CD 7.42 7.52
667.2	8		Continued on Sheet #2.	100%		Pull 4 (Continued)

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DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.2	Hole No. T-10-1
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 7 SHEETS

ELEVATION 6672a	DEPTH 8 b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CONCRETE (Continued)			Pull 4 (Continued)
						From 7.52
						To 17.52
					Box	Run 10.00
					1	Rec 10.11
	10					CG 0.11
						U.G. 0.03
			Mechanical break @ 11.12		11.12	
				100%		
	12					
	14					
			Mechanical break @ 14.88.			
					Box 2	
	16					
						CD 17.50 17.52
	18					Pull 5
			Mechanical break @ 18.44.			From 17.52
						To 27.60
						Run 10.08
						Rec 9.99
				100%		CL 0.09
	20					U.L. 0.00
	22		Mechanical break @ 22.14.		22.14	
					Box 3	
651.2	24		Continued on Sheet # 3.			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.2	Hole No. T-10-1
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 3 OF 7 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CONCRETE (Continued)			Pull 5 (Continued)
				100%		
	26		Mechanical break @ 25.92.			
					Box 3	CD 27.49 27.60
	28					Pull 6 From 27.60 To 37.30 Run 9.70 Rec 9.80 CG 0.10 U.L. 0.06
			Mechanical break @ 29.64.	100%		
	30					
			Machine break @ 31.13.			
	32					
			Mechanical break @ 33.37.		33.39	
	34					
	36				Box 4	
						CD 37.23 37.30
	38			98.3%		Pull 7 From 37.30 To 47.37 Run 10.07 Rec 9.90 CL 0.17 U.G. 0.03
			Machine break @ 39.52.			
635.2	40		Continued on Sheet # 4.			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.2	Hole No. T-10-1
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 4 OF 7 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
635.2a	40 b	c	d	e	f	g
			CONCRETE (Continued)			Pull 7 (Continued)
	42		Mechanical breaks @ 41.02 and 42.21.		Box 4	
				98.3%		
			Machine break @ 43.33.			
	44		Mechanical breaks @ 44.21, 44.62, and 44.97.		44.62	
	46					
						CD 47.10 — 47.37
	48		Mechanical break @ 48.30.		Box 5	Pull 8 From 47.37 To 57.20 Run 9.83 Rec 10.11 CG 0.28 U.G. 0.11
				100%		
	50		Mechanical break @ 50.27.			
	52		Mechanical break @ 52.10.			
	54					
619.2	56		Mechanical break @ 55.88.		55.88	
			Continued on Sheet #5.			

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 675.2 | **Hole No.** T-10-1

PROJECT: Clarizen Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 5 OF 7 SHEETS

ELEVATION 619.2a	DEPTH 56b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CONCRETE (Continued)	100%		Pull 8 (Continued)
						CD 57.10 — 57.20
						Pull 9 From 57.20 To 67.30 Run 10.10 Rec 10.10 CL 0.00 U.L. 0.10
	58					
			Mechanical break @ 59.48.			
	60			99.0%	Box 6	
			Mechanical break @ 61.67.			
	62					
			Mechanical break @ 63.20.			
	64		Machine breaks @ 63.72, 64.48, and 64.77.			
	66		Machine break @ 65.95.			
			Mechanical break @ 66.87.		66.87	
						CD 67.30 — 67.39
						Pull 10 From 67.30 To 77.37 Run 10.07 Rec 8.92 CL 1.15 U.L. 0.03
	68			99.7%	Box 7	
			Machine break @ 69.[illegible]5.			
	70		Mechanical break @ 70.60.			
603.2	72		Continued on Sheet #6.			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.2	Hole No. T-10-1
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 6 OF 7 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CONCRETE (Continued)			Pull 10 (Continued)
	74		Mechanical break @ 73.88.	99.7%	Box 7	
	76					CD 76.25
			Mechanical break @ 77.27.		77.27	77.37
	78		Machine break @ 78.45.	85.3%		Pull 11 From 77.37 To 82.80 Run 5.43 Rec 5.05 CL 0.38 U.L. 0.87 Note: Scale change at 78.00 ft.
	79					
	80		Machine break @ 80.15.		Box 8	
	81		Machine break @ 80.98.			
593.9			Bottom of Concrete 81.30			Note: Approx. 1 ft. rod drop @ 81.30.
	82		CORE LOSS 81.30 to 82.17			
593.0 592.85			(C) Red-brown fine-med. clayey silty			CD 82.17
			GRANITE GNEISS Fresh, light gray salt-and-pepper colored, slightly foliated.			82.80
592.3	83		Continued on Sheet #7.			Pull 12 (Continued)

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE: 675.2

Hole No. T-10-1

PROJECT: Clemson Upper Diversion Dam

INSTALLATION: Hartwell Lake

SHEET 7 OF 7 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
592.2	83		GRANITE GNEISS (Continued) Fresh, light gray salt-and-pepper colored, slightly foliated.	*95.6% RQD 89	Box 8	Pull 12 (Continued) From 82.80 To 85.50 Run 2.70 Rec 2.58 CL 0.12 Tape 82.82 *Note: % core recovery for Pull 12 based on run length. Material under panel apparently came up in hole during withdrawal of core barrel.
	84					
	85					
589.7			Bottom of Hole 85.50			85.50

PRODUCTION PANELS

CQC Boring Logs

Hole No. 3

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 2 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT HQ Diamond
2. LOCATION (Coordinates or Station) STA. 1+62	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Froehling and Robertson	12. MANUFACTURER'S DESIGNATION OF DRILL CME 55
4. HOLE NO. (As shown on drawing title and file number) 3	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED ; UNDISTURBED
5. NAME OF DRILLER Tommy Burnette	14. TOTAL NUMBER CORE BOXES 3
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER 654.8 (24hrs.)
	16. DATE HOLE: STARTED 6-15-84; COMPLETED 6-15-84
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE 675.3
8. DEPTH DRILLED INTO Concrete 26.1	18. TOTAL CORE RECOVERY FOR BORING 93 %
9. TOTAL DEPTH OF HOLE 29.3	19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
675.3	0		Angular machine break 0-0.1' Concrete	98	Box 1	Pull 1 From 0.0 to 4.3 Run 4.3 Rec 4.2 C.L. 0.1 Time 10:19-10:28 Note: 100% return drill water-gray color
	2					
671.0	4					Tape depth 4.2'
			Machine break 5.5'	102		Pull 2 From 4.3 to 9.3 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:32-10:39
	6					
	8					
666.0						Tape depth 9.3'
	10				10.8'	Pull 3 From 9.3 to 14.3 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:43-10:52
				100	Box 2	
	12		Machine break 12.1'			
661.3	14					

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DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.3	Hole No. 3
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 2 SHEETS

ELEVATION 661a3	DEPTH 14b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
661.0			Concrete (Continued)			Pull 3 (Continued) Tape depth 14.3'
	16			96	Box 2	Pull 4 From 14.3 to 19.3 Run 5.0 Rec 4.8 C.L. 0.2 Time 10:57-11:07 Note: Changed from bottom discharge to face discharge bit at depth 19.3'
	18		Machine break 18.1'			
656.0						Tape depth 19.1'
	20		Machine break 20.2'	102		Pull 5 From 19.3 to 24.3 Run 5.0 Rec 5.1 C.L. 0.0 Time 11:19-11:35
			Machine break 21.6'		21.6'	
	22					
			Machine break 22.8'		Box 3	
			Machine break 23.6'			
651.0	24					Tape depth 24.2'
			Machine break 25.8'	78		Pull 6 From 24.3 to 29.3 Run 5.0 Rec 3.1 C.L. 1.9 Time 11:41-12:01 Note: Decrease RPM for run; drill water color change at 26.0' from gray to light brown, then at 28.5' from light brown to gray
	26		Bottom of concrete 26.1' Clay bentonite-sand contact material 26.1'-26.9'			
	28		Highly weathered gneiss RQD=0% very poor rock quality			Tape depth 28.5'
646.0					29.3'	
	30		Bottom of hole 29.3'			Note: 6-15-84 water level after drilling 20.0'
						6-18-84 water level 24 hrs. after drilling 20.5'

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Hole No. 9

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 4 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT HQ Diamond
2. LOCATION (Coordinates or Station) STA. 3+21	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Froehling and Robertson	12. MANUFACTURER'S DESIGNATION OF DRILL CME 55
4. HOLE NO. (As shown on drawing title and file number) 9	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED: — UNDISTURBED: —
5. NAME OF DRILLER Tommy Burnette	14. TOTAL NUMBER CORE BOXES 6
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER 656.5 (24hrs.)
	16. DATE HOLE — STARTED 6-15-84 — COMPLETED 6-18-84
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE 674.7'
8. DEPTH DRILLED INTO ~~ROCK~~ Concrete 55.2	18. TOTAL CORE RECOVERY FOR BORING 98 %
9. TOTAL DEPTH OF HOLE 59.2	19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
674.7	0		Loose aggregate zone 0.0'-1.0'	100	Box 1	Pull 1 From 0.0 to 4.2 Run 4.2 Rec 4.2 C.L. 0.0 Time 1:17-1:23 Note: 100% return drill water-gray color
			Concrete			
	2		Machine break 2.2'			
			Poorly cemented aggregate zone (0-3/4" deep) 3.0'-7.8'			
670.5	4					Tape depth 4.2'
			Machine break 5.3'	100		Pull 2 From 4.2 to 9.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:30-1:41
	6					
	8					
665.5			Poorly cemented aggregate zone (0-3/8" deep) 8.7'-10.7'			Tape depth 9.2'
	10		Machine break 10.2'	98	10.9'	Pull 3 From 9.2 to 14.2 Run 5.0 Rec 4.9 C.L. 0.1 Time 1:46-1:55
					Box 2	
	12		Poorly cemented aggregate zone (0-3/4" deep) 12.5'-16.3'			
			Machine break 13.0'			
660.7	14					

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DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 674.7	Hole No. 9
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 4 SHEETS

ELEVATION 660a7	DEPTH 14b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
660.5			Poorly cemented aggregate zone (0-3/4" deep) 12.5'-16.3'		Box 2	Pull 3 (Continued) Tape depth 14.1' Pull 4 From 14.2 to 19.2 Run 5.0 Rec 5.1 C.L. 0.0 Time 2:02-2:14
			Machine break 15.7'			
	16			102		
			Machine break 17.8'			
	18					
655.5						Tape depth 19.2'
						Pull 5 From 19.2 to 24.2 Run 5.0 Rec 4.9 C.L. 0.1 Time 2:22-2:34
	20			98		
			Machine break 21.2'		21.2'	
	22					
650.5	24					Tape depth 24.1'
						Pull 6 From 24.2 to 29.2 Run 5.0 Rec 5.2 C.L. 0.0 Time 2:42-2:52
			Machine break 24.9'			
	26			104		
			Machine break 26.9'			
	28					
645.5						Tape depth 29.2'
						Pull 7 From 29.2 to 34.2 Run 5.0 Rec 4.9 C.L. 0.1 Time 9:30-9:43
	30			98		
			C-63		31.4'	
642.7	32				Box 4	

Continued on sheet #3

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 674.7	Hole No. 9
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 3 OF 4 SHEETS

ELEVATION 642a7	DEPTH 32b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)			Pull 7 (Continued)
			Machine break 33.3'		Box 4	
640.5	34					Tape depth 34.0'
				102		Pull 8 From 34.2 to 39.2 Run 5.0 Rec 5.1 C.L. 0.0 Time 9:49-10:00
	36		Machine break 36.3'			
	38		Machine break 38.0'			
635.5						Tape depth 39.2'
				98		Pull 9 From 39.2 to 44.2 Run 5.0 Rec 4.9 C.L. 0.1 Time 10:06-10:21
	40					
	42				42.3'	
					Box 5	
630.5	44					Tape depth 44.1'
				102		Pull 10 From 44.2 to 49.2 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:26-10:44
	46		Machine break 45.8'			
	48		Machine break 47.8'			
625.5			0-64			Tape depth 49.2'
						Pull 11 From 49.2 to 54.2
624.7	50					

Continued on sheet #4

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 674.7	Hole No. 9
PROJECT: Clemson Upper Diversion Dam	INSTALLATION: Hartwell Lake	SHEET 4 OF 4 SHEETS

ELEVATION 624a.7	DEPTH 50b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Machine break 50.1'		Box 5	Pull 11 (Continued)
			Concrete (Continued)			Run 5.0
						Rec 4.9
						C.L. 0.1
				98		Time 11:03-11:24
	52		Machine break 52.3'			Note: changed from bottom discharge bit at depth 49.2', water color change from gray to tan at depth 54.0'
			Machine break 52.8'		52.8'	
			Machine break 53.6'			
620.5	54					Tape depth 54.1'
			Machine break 54.8'		Box 6	Pull 12
			Bottom of concrete 55.2'			From 54.2 to 59.2
			Clay bentonite-sand contact material 55.2'-56.7'			Run 5.0
						Rec 4.1
	56			82		C.L. 0.9
			Slightly weathered gniess 56.7'-59.2' RQD=92%, excellent rock quality			Time 11:31-11:46
						Note: water color change from tan to gray at depth 57.0'
						Cored material stuck in barrel used water hose to flush material out of barrel
	58					
615.5					59.2'	Tape depth 59.2'
			Bottom of hole 59.2'			
	60					Note: 6-18-84 water level after drilling 13.5'
						6-19-84 water level 24hrs. after drilling 18.2'

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Hole No. 26A

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 6 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT HQ Diamond
2. LOCATION (Coordinates or Station) STA. 8+90	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Froehling and Robertson	12. MANUFACTURER'S DESIGNATION OF DRILL CME 55
4. HOLE NO. (As shown on drawing title and file number) 26A	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED ; UNDISTURBED
5. NAME OF DRILLER Tommy Burnette	14. TOTAL NUMBER CORE BOXES 9
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER 639.5 (24 hrs.)
	16. DATE HOLE: STARTED 6-6-84; COMPLETED 6-7-84
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE 675.0'
8. DEPTH DRILLED INTO ~~ROCK~~ Concrete 83.5	18. TOTAL CORE RECOVERY FOR BORING 99 %
9. TOTAL DEPTH OF HOLE 89.2	19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
675.0	0		Concrete Clay bentonite seam 0.5'-0.7'	95	Box 1	Pull 1 From 0.0 to 4.2 Run 4.2 Rec 4.0 C.L. 0.2 Time 9:40-9:54 Note: 100% return drill water-gray color Tape depth 4.2'
	2					
670.8	4		Machine break 4.8'	100		Pull 2 From 4.2 to 9.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:18-11:26 Tape depth 9.2'
	6					
	8					
665.8				100		Pull 3 From 9.2 to 14.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:29-11:37
	10		Occasional aggregate voids (0"-3/8" deep) 11.0'-12.8'		11.1' Box 2	
	12		C-66			
661.0	14					

Continued on sheet #2

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.0	Hole No. 26A
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 6 SHEETS

ELEVATION 661a.0	DEPTH 14b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
660.8			Concrete (Continued)		Box 2	Pull 3 (Continued) Tape depth 14.2'
	16			100		Pull 4 From 14.2 to 19.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:42-11:51
			Machine break 16.7'			
	18					
655.8						Tape depth 19.2'
	20			100		Pull 5 From 19.2 to 24.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:56-12:00 12:35-12:43 Note: 35 minute downtime for lunch.
					21.5'	
	22					
			Machine break 23.1'		Box 3	
	24					Tape depth 24.2'
650.8						
	26			96		Pull 6 From 24.2 to 29.2 Run 5.0 Rec 4.8 C.L. 0.2 Time 12:48-12:57
			Machine break 27.3'			
	28					
645.8						Tape depth 29.0'
	30			100		Pull 7 From 29.2 to 34.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:10-2:20
			C-67			
643.0	32		Continued on sheet #3			

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 675.0 | **Hole No.** 26A

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 3 OF 6 SHEETS

ELEVATION (a)	DEPTH (b)	LEGEND (c)	CLASSIFICATION OF MATERIALS (Description) (d)	% CORE RECOVERY (e)	BOX OR SAMPLE NO. (f)	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) (g)
643.0	32		Concrete (Continued)		32.3'	Pull 7 (Continued)
			Machine break 32.3'			
640.8	34				Box 4	Tape depth 34.0'
				102		Pull 8 From 34.2 to 39.2 Run 5.0 Rec 5.1 C.L. 0.0 Time 2:26-2:36
	36					
			Machine break 37.7'			
	38					
635.8						Tape depth 39.1'
				102		Pull 9 From 39.2 to 44.2 Run 5.0 Rec 5.1 C.L. 0.0 Time 2:42-2:57
	40					
	42					
			Machine break 42.5'			
					43.1'	
630.8	44				Box 5	Tape depth 44.2'
				98		Pull 10 From 44.2 to 49.2 Run 5.0 Rec 4.9 C.L. 0.1 Time 9:22-9:44 Note: 5 minute down time to refill water tank
	46					
	48		Machine break 48.2'			
625.8			C-68			Tape depth 49.1
						Pull 11
625.0	50		Continued on sheet #4			

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 675.0 | **Hole No.** 26A

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 4 OF 6 SHEETS

ELEVATION (a)	DEPTH (b)	LEGEND (c)	CLASSIFICATION OF MATERIALS (Description) (d)	% CORE RECOVERY (e)	BOX OR SAMPLE NO. (f)	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) (g)
625.0	50		Concrete (Continued)		Box 5	Pull 11 (Continued) From 49.2 to 54.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:51-10:03
	52		Machine break 51.8'	100		
620.8	54		Machine break 54.3'		54.2'	Tape depth 54.1'
				102	Box 6	Pull 12 From 54.2 to 59.2 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:11-10:27
	56		Machine break 56.6'			
	58					
615.8						Tape depth 59.2'
	60			100		Pull 13 From 59.2 to 64.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:35-10:50
	62		Machine break 62.3'			
			Segregated aggregate 63.3'-63.8'			
610.8	64					Tape depth 64.2'
				96	64.9' Box 7	Pull 14 From 64.2 to 69.2 Run 5.0 Rec 4.8 C.L. 0.2 Time 10:59-11:16
	66			C-69		
			Machine break 67.7'			
607.0	68		Continued on sheet #5			

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 675.0 | **Hole No.** 26A

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 5 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
607a.0	68b					
			Concrete (Continued)		Box 7	Pull 14 (Continued)
605.8						Tape depth 69.0'
	70			104		Pull 15 From 69.2 to 74.2 Run 5.0 Rec 5.2 C.L. 0.0 Time 11:27-11:46
	72					
600.8	74					Tape depth 74.2'
					75.6'	Pull 16 From 74.2 to 79.2 Run 5.0 Rec 4.8 C.L. 0.2 Time 11:55-12:41 Note: 35 minute break in drilling for lunch
	76			96	Box 8	
	78					
595.8						Tape depth 79.0'
	80			98		Pull 17 From 79.2 to 84.2 Run 5.0 Rec 4.9 C.L. 0.1 Time 1:12-1:24 Note: Changed to facedischarge bit at depth 79.2'
			Machine break 80.8'			
	82		Concrete panel-earth dike interface (0-1¼" deep)81.6'-83.5' Machine break 82.1'			
			Machine break 83.2' Bottom of concrete 83.5' Highly weathered gneiss 83.5'-89.2' Very poor rock quality RQD=0%			
590.8	84					Tape depth 84.0'
				96		Pull 18 From 84.2 to 89.2 Run 5.0 Rec 4.8 C.L. 0.2
589.0	86		Continued on sheet #6		86.0'	

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.0	Hole No. 26A
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 6 OF 6 SHEETS

ELEVATION 589.0	DEPTH 88	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Highly weathered gneiss		Box 9	Pull 18 (Continued) Time 1:34-1:41 Note: 100% return drill water-green color. Material in inner barrel too tight to remove by gravity-washed out gneiss from inner barrel
	88					
585.8					89.2'	Tape depth 89.0'
			Bottom of hole 89.2'			
	90					Note: 6-7-84 water level after drilling 25.4'
						6-8-84 water level 24hrs. after drilling 35.5'

Hole No. 26

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 4 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT HQ Diamond
2. LOCATION (Coordinates or Station) STA. 8+94	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Froehling and Robertson	12. MANUFACTURER'S DESIGNATION OF DRILL CME 55
4. HOLE NO. (As shown on drawing title and file number) 26	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED: — UNDISTURBED: —
5. NAME OF DRILLER Tommy Burnette	14. TOTAL NUMBER CORE BOXES 6
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER Not measurable
	16. DATE HOLE — STARTED 6-4-84 — COMPLETED 6-5-84
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE 674.5
8. DEPTH DRILLED INTO ~~ROCK~~ Concrete 58.6	18. TOTAL CORE RECOVERY FOR BORING 100%
9. TOTAL DEPTH OF HOLE 58.6	19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
674.5	0		Loose aggregate 0-0.3' Poorly cemented aggregate 0.3-9.6'	92	Box 1	Pull 1 From 0.0 to 3.6 Run 3.6 Rec 3.3 C.L. 0.3 Time 1:51-2:06 Note: 4 minute down-time to check water tank
	2		Angular machine break 1.8'-2.1'			
670.9			Machine break 3.8'			Tape depth 3.6'
	4		Concrete	102		Pull 2 From 3.6 to 8.6 Run 5.0 Rec 5.1 C.L. 0.0 Time 9:19-9:25
	6					
			Machine break 7.5'			
	8					
665.9						Tape depth 8.6'
	10			98	10.9' Box 2	Pull 3 From 8.6 to 13.6 Run 5.0 Rec 4.9 C.L. 0.1 Time 9:33-9:40
	12		C-72			
660.9						Tape depth 13.5'
660.5	14					Pull 4

Continued on sheet #2

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 674.5	Hole No. 26
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 4 SHEETS

ELEVATION 660.5	DEPTH 14b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)		Box 2	Pull 4 (Continued) From 13.6 to 18.6 Run 5.0 Rec 5.2 C.L. 0.0 Time 9:48-9:56 Note: 100% return drill water-gray color.
	16			104		
	18					
655.9						Tape depth 18.7'
						Pull 5 From 18.6 to 23.6 Run 5.0 Rec 4.9 C.L. 0.1 Time 10:02-10:26 Note: 10 minute downtime to refill water tank
	20			98		
	22				22.0'	
650.9					Box 3	Tape depth 23.5'
						Pull 6 From 23.6 to 28.6 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:31-10:42
	24			102		
	26		Machine break 27.0'			
	28					
645.9						Tape depth 28.6'
						Pull 7 From 28.6 to 33.6 Run 5.0 Rec 4.8 C.L. 0.2 Time 10:49-10:59
	30			96		
642.5	32					

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Continued on sheet #3

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 674.5 **Hole No.** 26

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 3 OF 4 SHEETS

ELEVATION 642a.5	DEPTH 32b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)		32.8'	Pull 7 (Continued)
640.9						Tape depth 33.4'
	34			104	Box 4	Pull 8 From 33.6 to 38.6 Run 5.0 Rec 5.2 C.L. 0.0 Time 11:06-11:20
	36		Machine break 36.4'			
	38					
635.9						Tape depth 38.6'
	40			100		Pull 9 From 38.6 to 43.6 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:46-11:58 Note: Changed bits at depth 38.6' to decrease drill time
			Machine break 40.8'			
	42		Machine break 42.3'			
630.5					43.6'	Tape depth 43.6'
	44			98	Box 5	Pull 10 From 43.6 to 48.6 Run 5.0 Rec 4.9 C.L. 0.1 Time 12:41-12:50
	46					
	48					
625.9						Tape depth 48.6'
			C-74			Pull 11 From 48.6 to 53.6 Run 5.0
624.5	50					

Continued on sheet #4

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 674.5	Hole No. 26
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 4 OF 4 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
624.5	50	c	d	e	f	g
			Concrete (Continued)	102	Box 5	Pull 11 (Continued) Rec 5.1 C.L. 0.0 Time 12:58-1:06
	52		Machine break 51.9'			
620.9			Aggregate voids (0-3/8" deep) 53.6'-55.6'			Tape depth 53.6'
	54				54.7'	Pull 12 From 53.6 to 58.6 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:13-1:20
	56		Concrete panel-earth dike interface (0-½" deep) 55.6'-58.6'	100	Box 6	Note: 100% return drill water, gray color then light brown color at 56.0' depth
	58		Machine break 57.7'			
615.9						Tape depth 57.9'
			Bottom of hole 58.6'			6-5-84- water level not measurable due to standing water around hole after drilling 6-6-84 water level not measureable due to standing water around hole 24 hours.

Hole No. 30

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 6 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT HQ Diamond
2. LOCATION (Coordinates or Station) Sta. 9+85	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Froehling and Robertson	12. MANUFACTURER'S DESIGNATION OF DRILL CME55
4. HOLE NO. (As shown on drawing title and file number) 30	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED ; UNDISTURBED
5. NAME OF DRILLER T. Burnette (J. Donnahoo on 5-24)	14. TOTAL NUMBER CORE BOXES 8
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER 630.2 (24hrs.)
	16. DATE HOLE: STARTED 5-23-84; COMPLETED 5-25-84
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE 674.7
8. DEPTH DRILLED INTO Concrete 81.6ft.	18. TOTAL CORE RECOVERY FOR BORING 94 %
9. TOTAL DEPTH OF HOLE 87.1	19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
674.7	0		Poorly cemented aggregate seam .2'-.4' Concrete			Pull 1 From 0.0 to 2.1 Run 2.1 Rec. 1.9 C.L. 0.2 Time 1:55-2:02
			Poorly cemented aggregate zone 1.5'-2.1' (0-½" deep)	90	Box 1	
672.6	2					Note: 100% return drill water-gray color Tape depth 1.9'
	4		Machine break 4.4'	104		Pull 2 From 2.1 to 7.1 Run 5.0 Rec. 5.2 C.L. 0.0 Time 2:15-2:24
	6		Poorly cemented aggregate zone 6.7'-9.4' (0-3/8" deep)			Tape depth 7.1'
667.6						Pull 3 From 7.1 to 12.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:28-2:35
	8			100		
	10				10.9'	
					Box 2	
662.6	12					Tape depth 12.1'
			C-76	98		Pull 4 From 12.1 to 17.1 Run 5.0 Rec 4.9 C.L. 0.1
660.7	14					

Continued on sheet #2

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 674.7	Hole No. 30
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 6 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
660.7	14	c	d	e	f	g
			Concrete (Continued)		Box 2	Pull 4 (Continued) Time 2:38-2:45
	16			98		
657.6						Tape depth 17.0'
	18		Aggregate void (½" deep) 18.2'	102		Pull 5 From 17.1 to 22.1 Run 5.0 Rec 5.1 C.L. 0.0 Time 2:50-2:56
	20					
652.6	22				21.9'	Tape depth 22.1'
	24			98	Box 3	Pull 6 From 22.1 to 27.1 Run 5.0 Rec 4.9 C.L. 0.1 Time 3:01-3:07
	26					
647.6						Tape depth 27.0'
	28			98		Pull 7 From 27.1 to 32.1 Run 5.0 Rec 4.9 C.L. 0.1 Time 3:14-3:20
	30		Poorly cemented aggregate zone (0-3/8" deep) 30.7'-33.8' C-77			
642.7	32					

Continued on sheet #3

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 674.7 | **Hole No.** 30

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 3 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
642.7	32				32.1	Pull 7 (Continued) Tape depth 32.0'
642.6			Poorly cemented aggregate zone (0-3/8" deep) 30.7'-33.8'		Box 4	Pull 8 From 32.1 to 37.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:27-9:32
	34		Concrete (Continued)	100		
	36					
637.6						Tape depth 37.0'
	38			104		Pull 9 From 37.1 to 42.1 Run 5.0 Rec 5.2 C.L. 0.0 Time 9:41-9:48
	40					
632.6	42				42.1	Tape depth 42.2
	44			100	Box 5	Pull 10 From 42.1 to 47.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:57-10:02
	46		Machine break 46.0'			
627.6						Tape depth 47.2'
	48			100		Pull 11 From 47.1 to 52.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:09-10:17
624.7	50					

Continued on sheet #4

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 674.7 | **Hole No.** 30

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 4 OF 6 SHEETS

ELEVATION 624.7	DEPTH 50	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)			Pull 11 (Continued)
					Box 5	
622.6	52				52.1'	Tape depth 52.1'
						Pull 12 From 52.1 to 57.1 Run 5.0 Rec 4.9 C.L. 0.1
	54			98		Time 10:32-10:42
					Box 6	
	56					
617.6						Tape depth 57.1'
			Machine breaks 57.4, 57.5, 57.7, 58.0, and			Pull 13 From 57.1 to 59.
	58		58.3 (due to water line malfunction)	102		Run 2.5 Rec 2.6 C.L. 0.0 Time 10:52-10:58 Note: water line
	60					malfunction while drilling pull partial run and continued drilling to complete 5' run
				100		Tape depth 59.2'
612.6	62				62.1'	Pull 14 From 59.6 to 62.1 Run 2.5 Rec 2.5 C.L. 0.0 Time 9:32-9:36
						Tape depth 62.2'
	64					Pull 15 From 62.1 to 67.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:45-9:50
				100	Box 7	
	66		Machine break 66.3'			
607.6			C-79			Tape depth 67.1
						Pull 16 From 67.1 to 72.1
606.7	68					

Continued on sheet #5

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 674.7 | **Hole No.** 30

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 5 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
606.7	68		Concrete (Continued)			
				100	Box 7	Pull 16 (Continued) Run 5.0 Rec 5.0 C.L. 0.0 Time 9:56-10:02
	70					
602.6	72				72.1'	Tape depth 72.1'
				100	Box 8	Pull 17 From 72.1 to 77.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:06-10:15
	74					
	76					
597.6						Tape depth 77.1'
	78		Aggregate voids (0-½" deep) 78.5'-79.4'	90		Pull 18 From 77.1 to 82.1 Run 5.0 Rec 4.5 C.L. 0.5 Time 10:22-10:28 Note: change in drill water color from gray to brown at 80' depth. Tool drop .5' at bottom of run
			Clay bentonite seam 78.1'			
	80		Aggregate voids (0-1" deep) 80.1-81.4			
			Clay bentonite seam 80.3'			
			Bottom of concrete, 81.6'			Tape depth 82.0'
592.6	82					Pull 19 From 82.1 to 87.1 Run 5.0 Rec 0.0 C.L. 5.0 Time 11:11-11:17
				0		
	84					
588.7	86					

C-80

Continued on sheet #6

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 674.7 **Hole No.** 30

PROJECT Clemson Upper Diversion Dam INSTALLATION Hartwell Lake SHEET 6 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)		Box 8 87.1'	Pull 19 (Continued)
587.6						Tape depth 87.0'
			Bottom of hole 87.1'			Note: May 25,1984 water level after completion of drilling- 37.0'. May 29,1984 water level 24hrs. after drilling 44.5'

Hole No. 30A

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 4 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT HQ Diamond
2. LOCATION (Coordinates or Station) STA. 9+95	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Froehling and Robertson	12. MANUFACTURER'S DESIGNATION OF DRILL CME 55
4. HOLE NO. (As shown on drawing title and file number) 30-A	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED ; UNDISTURBED
5. NAME OF DRILLER T. Burnette (J. Donnahoo 5-29-84)	14. TOTAL NUMBER CORE BOXES 6
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER 627.4 (24 hrs.)
	16. DATE HOLE: STARTED 5-25-84; COMPLETED 5-29-84
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE 675.1
8. DEPTH DRILLED INTO ~~ROCK~~ Concrete 50.0	18. TOTAL CORE RECOVERY FOR BORING 97 %
9. TOTAL DEPTH OF HOLE 57.7	19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
675.1	0		Concrete	93	Box 1	Pull 1 From 0.0 to 2.7 Run 2.7 Rec 2.5 C.L. 0.2 Time 1:48-1:55
672.4	2					Tape depth 2.6'
	4		Occasional aggregate voids 4.4'-5.8'	104		Pull 2 From 2.7 to 7.7 Run 5.0 Rec 5.2 C.L. 0.0 Time 9:29-9:40 Note: 100% return drill water- gray color
	6					
667.4						Tape depth 7.7'
	8		Occasional aggregate voids 8.3'-8.6'	98		Pull 3 From 7.7 to 12.7 Run 5.0 Rec 4.9 C.L. 0.1 Time 9:46-9:52
	10				11.0'	
	12				Box 2	
662.4			C-82			Tape depth 12.6'
						Pull 4 From 12.7 to 17.7 Run 5.0
661.1	14					

Continued on sheet #2

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.1	Hole No. 30A
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 4 SHEETS

ELEVATION 661a 1	DEPTH 14b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)	102	Box 2	Pull 4 (Continued) Rec 5.1 C.L. 0.0 Time 10:00-10:07
	16					
657.4						Tape depth 17.6'
	18			96		Pull 5 From 17.7 to 22.7 Run 5.0 Rec 4.8 C.L. 0.2 Time 10:15-10:24
	20					
	22				22.0'	
652.4						Tape depth 22
				104	Box 3	Pull 6 From 22.7 to 27.7 Run 5.0 Rec 5.2 C.L. 0.0 Time 10:31-10:40
	24					
	26					
647.4						Tape depth 27.7'
	28			96		Pull 7 From 27.7 to 32.7 Run 5.0 Rec 4.8 C.L. 0.2 Time 10:47-10:58
	30					
			C-83			
643.1	32					

Continued on sheet #3

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 675.1 **Hole No.** 30A

PROJECT Clemson Upper Diversion Dam INSTALLATION Hartwell Lake SHEET 3 OF 4 SHEETS

ELEVATION 643a1	DEPTH 32b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
642.4			Concrete (Continued)		Box 3	Pull 7 (Continued) Tape depth 32.5'
					32.2'	Pull 8 From 32.7 to 37.7 Run 5.0 Rec 5.2 C.L. 0.0 Time 11:04-11:15
	34			104	Box 4	
	36					
637.4						Tape depth 37.7'
	38					Pull 9 From 37.7 to 42.7 Run 5.0 Rec 4.9 C.L. 0.1 Time 11:22-11:33
				98		
	40					
	42					
632.4						Tape depth 42.6'
					43.6'	Pull 10 From 42.7 to 47.7 Run 5.0 Rec 5.1 C.L. 0.0 Time 12:31-12:46
	44			102	Box 5	
	46		Machine break 46.3'			
627.4						Tape depth 47.7'
	48					Pull 11 From 47.7 to 52.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 12:53-1:05
			C-84	100		
625.1	50					

Continued on sheet #4

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 675.1 **Hole No.** 30A

PROJECT Clemson Upper Diversion Dam | INSTALLATION Hartwell Lake | SHEET 4 OF 4 SHEETS

ELEVATION 625a1	DEPTH 50b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete panel, earth fill interface (0- 2 " deep) 50.0'-57.7'		Box 5	Pull 11 (Continued) Note: 100% return drill water, gray color then brown color at approx. depth 49.0'
			Machine break 51.3'			
	52					
622.4						Tape depth 52.7'
						Pull 12 From 52.7 to 57.7 Run 5.0 Rec 3.0 C.L. 2.0 Time 1:15-1:23
			Machine break 53.9'	60		
	54				54.5'	
					Box 6	
	56					
617.4					57.7'	Tape depth 56.3'
	58		Bottom of hole 57.7'			
						Note: 5-29-84 water level after drilling 33.5'
						5-31-84 water level 24hrs. after drilling 47.7'

Hole No. 30B

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 4 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT HQ Diamond
2. LOCATION (Coordinates or Station) STA. 9+92	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Froehling and Robertson	12. MANUFACTURER'S DESIGNATION OF DRILL CME 55
4. HOLE NO. (As shown on drawing title and file number) 30B	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED ; UNDISTURBED
5. NAME OF DRILLER Tommy Burnette	14. TOTAL NUMBER CORE BOXES 7
6. DIRECTION OF HOLE [X] VERTICAL [ ] INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER 646.4 (24hrs.)
	16. DATE HOLE: STARTED 5/31/84; COMPLETED 6/1/84
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE 675.1
8. DEPTH DRILLED INTO Concrete 67.5	18. TOTAL CORE RECOVERY FOR BORING 100 %
9. TOTAL DEPTH OF HOLE 67.5	19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
675.1	0		Segregated aggregate zone 0.0-1.8'	88	Box 1	Pull 1 From 0.0 to 2.5 Run 2.5 Rec 2.3 C.L.0.2 Time 2:10-2:17
672.6	2		Concrete			Tape depth 2.3'
	4		Poorly cemented aggregate (0-¼" deep) 4.1'-6.1'	104		Pull 2 From 2.5 to 7.5 Run 5.0 Rec 5.2 C.L. 0.0 Time 2:23-2:30 Note: 100% return drill water-gray color
667.6	6					Tape depth 7.5'
	8			98		Pull 3 From 7.5 to 12.5 Run 5.0 Rec 4.9 C.L. 0.0 Time 2:35-2:42
	10		Aggregate void (½" deep) 9.9' Poorly cemented aggregate zone (o-¼" deep) 10.1'-11.5'		11.2'	
662.6	12		Poorly cemented aggregate zone 12.6'-18.5' (0-1½" deep) C-86		Box 2	Tape depth 12.5' Pull 4 From 12.6 to 17.5 Run 5.0
661.1	14					

Continued on sheet #2

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 675.1 **Hole No.** 308

PROJECT Clemson Upper Diversion Dam | INSTALLATION Hartwell Lake | SHEET 2 OF 4 SHEETS

ELEVATION 661.1	DEPTH 14b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Poorly cemented aggregate zone (0-1½" deep) 12.6'-18.5'	100	Box 2	Pull 4 (Continued) Rec 5.0 C.L. 0.0 Time 2:51-3:04 Note: 5 minute down time to refill water tank
	16					
657.6						Tape depth 17.3'
	18		Poorly cemented aggregate zone (0-½" deep) 18.5'-21.1'	104		Pull 5 From 17.5 to 22.5 Run 5.0 Rec 5.2 C.L. 0.0 Time 3:10-3:18
	20					
	22				22.3'	
652.6						Tape depth 22.5'
			Segregated aggregate zone 23.5'-25.0'	100	Box 3	Pull 6 From 22.5 to 27.5 Run 5.0 Rec 5.0 C.L. 0.0 Time 3:24-3:31
	24					
			Poorly cemented aggregate zone (0-½" deep) 25.0'-30.0'			
	26					
647.6			Segregate aggregate zone 27.5'-31.5'			Tape depth 27.5'
	28			100		Pull 7 From 27.5 to 32.5 Run 5.0 Rec 5.0 C.L. 0.0 Time 3:37-3:43
	30					
			Poorly cemented aggregate zone (0-½" deep) 31.0'-32.0' C-87			
643.1	32					

Continued on sheet #3

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 675.1 | **Hole No.** 30B

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 3 OF 4 SHEETS

ELEVATION 643.1	DEPTH 32b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
642.6			Concrete (Continued)		32.5	Pull 7 (Continued) Tape depth 32.5'
			Segregated aggregate zone 32.5'-33.3'	100	Box 4	Pull 8 From 32.5 to 37.5 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:47-9:57 Note: 100% return of drill water gray color
	34					
	36					
637.6						Tape depth 37.5'
	38			98		Pull 9 From 37.5 to 42.5 Run 5.0 Rec 4.9 C.L. 0.1 Time 10:06-10:14
	40					
	42					
632.6						Tape depth 42.4'
				102	43.4' Box 5	Pull 10 From 42.5 to 47.5 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:24-10:33
	44					
	46					
627.6						Tape depth 47.5'
	48			100		Pull 11 From 47.5 to 52.5 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:38-10:45
625.1	50					

C-88

Continued on sheet #4

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.1	Hole No. 30B
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 4 OF 4 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
625.1	50		Concrete (Continued) Segregated aggregate zone 50.5'-54.5'			Pull 11 (Continued)
			Machine break 51.4'			
	52				Box 5	Tape depth 52.5'
622.6						Pull 12 From 52.5 to 57.5 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:51-10:58
	54			100	54.5'	
					Box 6	
			Machine break 55.9'			
	56					
617.6						Tape depth 57.5'
	58					Pull 13 From 57.5 to 62.5 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:04-11:13
				100		
	60					
	62					Tape depth 62.5'
612.6						Pull 14 From 62.5 to 67.5 Run 5.0 Rec 4.9 C.L. 0.1 Time 11:20-11:27 Note: 100% return of drill water gray color then brown at depth 65.0'
	64			98		
					65.5'	
	66		Concrete panel-earth dike interface (0-½" deep) 65.8'-67.5'	C-89	Box 7	
			Machine break 66.9'			
					67.5'	Tape depth 67.4'
607.6			Bottom of hole 67.5'			Note: 6-1-84 water level after drilling 25.0'. 6-4-84 water level after 24hrs

Hole No. 30C

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 4 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT HQ Diamond
2. LOCATION (Coordinates or Station) STA. 9+93	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Froehling and Robertson	12. MANUFACTURER'S DESIGNATION OF DRILL CME 55
4. HOLE NO. (As shown on drawing title and file number) 30C	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED ; UNDISTURBED
5. NAME OF DRILLER Tommy Burnette	14. TOTAL NUMBER CORE BOXES 6
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER 634.1 (24hrs)
	16. DATE HOLE: STARTED 6-1-84; COMPLETED 6-4-84
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE 675.1
8. DEPTH DRILLED INTO Concrete 62.4	18. TOTAL CORE RECOVERY FOR BORING 100 %
9. TOTAL DEPTH OF HOLE 62.4	19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
675.1	0		Concrete	96	Box 1	Pull 1 From 0.0 to 2.4 Run 2.4 Rec 2.3 C.L. 0.1 Time 1:58-2:06 Tape depth 2.3'
672.7	2			98		Pull 2 From 2.4 to 7.4 Run 5.0 Rec 4.9 C.L. 0.1 Time 2:11-2:18 Note: 100% return of drill water, gray color
	4					
	6					
667.7						Tape depth 7.3'
	8		Segregated aggregate zone 8.2'-8.8'	104		Pull 3 From 7.4 to 12.4 Run 5.0 Rec 5.2 C.L. 0.0 Time 2:22-2:30
	10				11.0'	
662.7	12				Box 2	Tape depth 12.4'
				C-90		Pull 4 From 12.4 to 17.4 Run 5.0
661.1	14					

Continued on sheet #2

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 675.1 | **Hole No.** 30C

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 2 OF 4 SHEETS

ELEVATION (a)	DEPTH (b)	LEGEND (c)	CLASSIFICATION OF MATERIALS (Description) (d)	% CORE RECOVERY (e)	BOX OR SAMPLE NO. (f)	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) (g)
661.1			Concrete (Continued)		Box 2	Pull 4 (Continued) Rec 4.9 C.L. 0.1 Time 2:40-2:48 Note: Changed bits at depth 12.4' to decrease drill time
	16			98		Tape depth 17.3'
657.1						Pull 5 From 17.4 to 22.4 Run 5.0 Rec 5.2 C.L. 0.0 Time 9:32-9:40
	18			104		
	20					
					21.9'	
	22					Tape depth 22.5
652.7					Box 3	Pull 6 From 22.4 to 27.4 Run 5.0 Rec 4.9 C.L. 0.1 Time 9:46-9:54
	24			98		
	26					
						Tape depth 27.4'
647.7						Pull 7 From 27.4 to 32.4 Run 5.0 Rec 5.1 C.L. 0.0 Time 9:59-10:06
	28			102		
	30					
			Machine break 30.9'	C-91		
643.1	32					

Continued on sheet #3

DRILLING LOG -(Cont Sheet) | ELEVATION TOP OF HOLE 675.1 | **Hole No.** 30C

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 3 OF 4 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
643.1	32	c	d	e	f	g
642.7			Concrete (Continued)		32.4'	Pull 7 (Continued) Tape depth 32.5'
	34			98	Box 4	Pull 8 From 32.4 to 37.4 Run 5.0 Rec 4.9 C.L. 0.1 Time 10:12-10:21
	36					
637.7						Tape depth 37.4'
	38			102		Pull 9 From 37.4 to 42.4 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:28-10:38
	40					
	42					
632.4						Tape depth 42.5'
	44			98	43.7' Box 5	Pull 10 From 42.4 to 47.4 Run 5.0 Rec 4.9 C.L. 0.1 Time 10:45-10:54
	46					
627.4						Tape depth 47.4'
	48			102 C-92		Pull 11 From 47.4 to 52.4 Run 5.0 Rec 5.1 C.L. 0.0 Time 11:01-11:12
625.1	50					

Continued on sheet #4

DRILLING LOG - (Cont Sheet)	ELEVATION TOP OF HOLE 675.1	Hole No. 30C
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 4 OF 4 SHEETS

ELEVATION 6-25a.1	DEPTH 50b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)			Pull 11 (Continued)
					Box 5	
	52					
622.4						Tape depth 52.5'
						Pull 12 From 52.4 to 57.4 Run 5.0 Rec 4.8 C.L. 0.2 Time 11:31-11:43 Note: Changed from bottom discharge to face discharge bit at depth 52.4'
	54			96	54.7'	
	56					
					Box 6	
617.4						Tape depth 57.4'
	58					Pull 13 From 57.4 to 62.4 Run 5.0 Rec 4.9 C.L. 0.1 Time 11:49-11:58 Note: 100% return drill water gray color then brown at depth 59.0'
			Machine break 58.7' Concrete panel-earth dike interface 58.7'-62.4' (0"-1" deep)	98		
	60		Machine break 60.2' Machine break 60.5' Machine break 61.0' Machine break 61.5' Machine break 61.8'			
	62					
612.4					62.4'	Tape depth 62.3'
			Bottom of hole 62.4'			Note: 6-4-84 water level after drilling 18.8' 6-5-84 water level 24hrs. after drilling 41.0'
				C-93		

Hole No. 30D

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 5 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT HQ Diamond
2. LOCATION (Coordinates or Station) STA. 9+87	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Froehling and Robertson	12. MANUFACTURER'S DESIGNATION OF DRILL CME 55
4. HOLE NO. (As shown on drawing title and file number) 30D	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED: — UNDISTURBED: —
5. NAME OF DRILLER Tommy Burnette	14. TOTAL NUMBER CORE BOXES 8
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER Not measurable
	16. DATE HOLE — STARTED 6-18-84 — COMPLETED 6-20-84
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE 674.7
8. DEPTH DRILLED INTO ROCK Concrete 80.7	18. TOTAL CORE RECOVERY FOR BORING 100 %
9. TOTAL DEPTH OF HOLE 80.7	19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
674.7	0		Loose aggregate zone 0.0'-0.2'		Box 1	Pull 1 From 0.0 to 4.0 Run 4.0 Rec 4.0 C.L. 0.0 Time 2:05-2:16 Note: 100% return drill water-gray color
			Concrete			
			Machine break 1.5'	100		
	2					
670.7	4		Poorly cemented aggregate zone (0-3/8" deep) 4.0'-4.5'			Tape depth 4.0'
			Machine break 5.4'	98		Pull 2 From 4.0 to 9.0 Run 5.0 Rec 4.9 C.L. 0.1 Time 2:23-2:32
	6					
			Machine break 6.7'			
	8					
			Machine break 8.4'			
665.7						Tape depth 8.9'
	10		Machine break 10.0'	100		Pull 3 From 9.0 to 14.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:21-9:33
					11.2	
	12		Segregated aggregate zone 12.4'-13.1'	C-94	Box 2	
660.7	14					Tape depth 13.9'
			Continued on sheet #2			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 674.7	Hole No. 30D
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 5 SHEETS

ELEVATION 660a7	DEPTH 14b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)		Box 2	Pull 4 From 14.0 to 19.0 Run 5.0 Rec 5.0
				100		C.L. 0.0 Time 9:39-9:52
	16		Machine break 16.3'			
	18		Aggregate void (½" deep) 18.2'			
655.7			Poorly cemented aggregate zone (0-3/8" deep) 18.9'-19.5'			Tape depth 18.9'
						Pull 5 From 19.0 to 24.0 Run 5.0 Rec 5.1
	20		Machine break 20.0'	102		C.L. 0.0 Time 9:59-10:12
	22				22.0'	
					Box 3	
			Machine break 23.6'			
650.7	24		Poorly cemented aggregate zone (0-3/8" deep) 23.6'-24.0'			Tape depth 24.0'
						Pull 6 From 24.0 to 29.0 Run 5.0 Rec 5.0
				100		C.L. 0.0 Time 10:19-10:30
	26		Poorly cemented aggregate zone (0-3/8" deep) 26.5'-27.5'			
			Machine break 27.6'			
	28					
645.7						Tape depth 29.0'
						Pull 7 From 29.0 to 34.0 Run 5.0 Rec 4.9
	30		C-95	98		C.L. 0.1 Time 10:35-10:44
642.7	32					

Continued on sheet #3

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 674.7	Hole No. 30D
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 3 OF 5 SHEETS

ELEVATION 642a.7	DEPTH 32b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Machine break 32.1'		Box 3 32.8	Pull 7 (Continued)
			Concrete (Continued)			
640.7	34					Tape depth 33.9'
					Box 4	Pull 8 From 34.0 to 39.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:51-11:02
				100		
	36					
			Machine break 37.1'			
	38					
635.7						Tape depth 38.9'
						Pull 9 From 39.0 to 44.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:09-11:20
	40			100		
	42					
			Machine break 43.4'		43.4	
630.7	44				Box 5	Tape depth 43.9' Pull 10 From 44.0 to 49.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:27-11:38
				100		
	46		Segregated aggregate zone 45.9'-46.8'			
			Machine break 46.8'			
	48					
			Machine break 48.5'			
625.7			C-96			Tape depth 48.9' Pull 11 From 49.0 to 54.0
624.7	50					

Continued on sheet #4

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 674.7	Hole No. 30D
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 4 OF 5 SHEETS

ELEVATION 624a.7	DEPTH 50b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Machine break 50.1'			Pull 11 (Continued)
			Concrete (Continued)	100	Box 5	Run 5.0 Rec 5.0 C.L. 0.0 Time 11:47-11:59
	52		Machine break 51.9'			
620.7	54				54.0'	Tape depth 53.9'
				102	Box 6	Pull 12 From 54.0 to 59.0 Run 5.0 Rec 5.1 C.L. 0.0 Time 12:57-1:08
	56					
	58		Machine break 57.9'			
615.7						Tape depth 59.0'
				100		Pull 13 From 59.0 to 64. Run 5.0 Rec 5.0 C.L. 0.0 Time 1:16-1:30
	60		Machine break 60.0'			
	62					
			Machine break 63.1'			
610.7	64					Tape depth 64.0'
				100	64.8' Box 7	Pull 14 From 64.0 to 69.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:40-1:51 2:00-2:05 Note: 9 minute down time to check drill rig engine problems
	66					
			C-97			
			Machine break 67.7'			
606.7	68					

Continued on sheet #5

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 674.7	Hole No. 30D
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 5 OF 5 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
606.7			Concrete (Continued)			Pull 14 (Continued)
						Tape depth 69.0'
605.7						Pull 15
						From 69.0 to 74.0
						Run 5.0
	70				Box 7	Rec 5.0
						C.L. 0.0
				100		Time 2:16-2:36
	72					
						Tape depth 74.0'
600.7	74					Pull 16
						From 74.0 to 79.0
						Run 5.0
				98		Rec 4.9
					75.7'	C.L. 0.1
						Time 9:12-9:23
	76		Machine break 76.3'			Note: drill water color change from gray to tan at depth 78.0'
			Loose aggregate-clay bentonite intrusion zone 76.3'-79.7'			
	78					
						Tape depth 78.9'
595.7						Pull 17
						From 79.0 to 80.7
						Run 1.7
	80		Machine break 80.2'			Rec 1.8
			Concrete panel-earth dike interface (0-½" deep) 80.2'-80.7"	106	80.7'	C.L. 0.0
			Bottom of concrete 80.7'			Time 9:41-9:45
						Note: drill water color change from tan to gray at depth 80 '
	82		Bottom of hole 80.7'			Tape depth 80.6'
						Note: 6-20-84 water level after drilling 12.5' 6-21-84 water level at 24hrs. not measurable due to drill water overflow from hole #30E

Hole No. 30E

DRILLING LOG	DIVISION South Atlantic	INSTALLATIO Hartwell Lake	SHEET 1 OF 5 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT HQ Diamond
2. LOCATION (Coordinates or Station) STA. 9+83	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Froehling and Robertson	12. MANUFACTURER'S DESIGNATION OF DRILL CME 55
4. HOLE NO. (As shown on drawing title and file number) 30E	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED: — UNDISTURBED: —
5. NAME OF DRILLER Tommy Burnette	14. TOTAL NUMBER CORE BOXES 7
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER Not measurable
	16. DATE HOLE — STARTED 6-20-84 — COMPLETED 6-21-84
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE 674.7
8. DEPTH DRILLED INTO ~~ROCK~~ Concrete 69.0	18. TOTAL CORE RECOVERY FOR BORING 100 %
9. TOTAL DEPTH OF HOLE 69.0	19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)

ELEVATION 674a. 7	DEPTH 0 b	LEGEND	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete			Pull 1
			Segregate aggregate zone 0.7'-2.2'			From 0.0 to 4.0
						Run 4.0
				92	Box 1	Rec 3.7
						C.L. 0.3
	2		Machine break 2.2'			Time 1:04-1:14
						Note: 100% return drill water-gray color
						Tape depth 3.7'
670.7	4		Machine break 4.3'			Pull 2
						From 4.0 to 9.0
						Run 5.0
						Rec 5.0
				100		C.L. 0.0
						Time 1:22-1:34
	6		Machine break 6.2'			Note: Changed from Longyear to Truco bottom discharge bit at depth 4.0'
			Poorly cemented aggregate (0-3/4" deep) 6.2'-13.8'			
			Machine break 7.2'			
	8		Machine break 7.9'			
			Machine break 8.2'			
						Tape depth 8.7'
665.7						Pull 3
						From 9.0 to 14.0
	10		Machine break 10.0'			Run 5.0
				102		Rec 5.1
						C.L. 0.0
					10.7'	Time 1:40-1:55
					Box 2	
	12					
			Machine break 12.9'			
			C-99			
660.7	14					Tape depth 13.8'

Continued on sheet #2

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 674.7	Hole No. 30E
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 5 SHEETS

ELEVATION 660a7	DEPTH 14b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Poorly cemented aggregate zone (0-3/8" deep) 14.2'-16.1'		Box 2	Pull 4 From 14.0 to 19.0 Run 5.0 Rec 5.1 C.L. 0.0 Time 2:00-2:16
			Machine break 15.1'			
	16		Concrete (Continued)	102		
	18		Machine break 18.0'			
655.7						Tape depth 18.9'
						Pull 5 From 19.0 to 24.0 Run 5.0 Rec 4.9 C.L. 0.1 Time 2:22-2:42
	20			98		
			Machine break 21.1'			
					21.6'	
	22		Machine break 22.3'			
					Box 3	
650.7	24					Tape depth 23.8'
						Pull 6 From 24.0 to 29.0 Run 5.0 Rec 5.1 C.L. 0.0 Time 9:19-9:42
			Machine break 24.6'			
			Machine break 25.3'			
	26		Machine break 26.2'	102		
			Machine break 27.6' Machine break 27.9' Machine break 28.1' Machine break 28.3' Machine break 28.5'			
	28					
645.7						Tape depth 28.9'
						Pull 7 From 29.0 to 34.0 Run 5.0 Rec 5.2 C.L. 0.0 Time 9:55-10:15
	30			104		
			Machine break 31.3'			
			C-100			
642.7	32					
			Continued on sheet #3			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 674.7	Hole No. 30E
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 3 OF 5 SHEETS

ELEVATION 642.7	DEPTH 32b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Machine break 32.0'		32.6'	Pull 7 (Continued)
			Machine break 32.9'			
			Concrete (Continued)			
640.7	34					Tape depth 34.0'
					Box 4	Pull 8 From 34.0 to 39.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:24-10:41
	36			100		
			Machine break 36.7'			
	38					
635.7						Tape depth 39.0'
						Pull 9 From 39.0 to 44.0 Run 5.0 Rec 4.8 C.L. 0.2 Time 10:44-11:06
	40					
			Poorly cemented aggregate zone (0-3/4" deep) 41.3'-42.7'	96		
	42		Machine break 41.9'			
			Machine break 43.4'		43.4'	
630.7	44					Tape depth 43.8'
			Machine break 44.6'			Pull 10 From 44.0 to 49.0 Run 5.0 Rec 5.2 C.L. 0.0 Time 11:15-11:35 Note: check drilling rig carburator for malfuntion at depth 49.0'
			Machine break 44.9'		Box 5	
			Machine break 45.3'			
			Machine break 45.7'	104		
	46					
			Machine break 46.9'			
			Machine break 47.2'			
	48		Machine break 48.0'			
			Machine break 48.4'			
625.7						Tape depth 49.0'
			C-101			Pull 11 From 49.0 to 54.0
624.7	50					

Continued on sheet #4

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 674.7	Hole No. 30E
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 4 OF 5 SHEETS

ELEVATION 624a7	DEPTH 50b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)	98	Box 5	Pull 11 (Continued) Run 5.0 Rec 4.9 C.L. 0.1 Time 11:44-12:01
	52					
			Machine break 53.3'			
					54.0'	Tape depth 53.9'
620.7	54			100	Box 6	Pull 12 From 54.0 to 59.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 12:45-1:01
	56					
			Machine break 56.5'			
	58					
						Tape depth 58.9'
615.7				102		Pull 13 From 59.0 to 54.0 Run 5.0 Rec 5.1 C.L. 0.0 Time 1:08-1:23
	60					
			Machine break 60.5'			
	62					
						Tape depth 64.0'
610.7	64				64.7'	Pull 14 From 64.0 to 69.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:30-1:50 Note: drill water color change from gray to tan at depth 68.0'
	66		Machine break 66.0'	100	Box 7	
			Machine break 66.8'			
			Concrete panel-earth dike interface (0-½" deep) 67.5'-69.0'	C-102		
606.7	68					
			Continued on sheet #5			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 674.7	Hole No. 30E
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 5 OF 5 SHEETS

ELEVATION 606a 7	DEPTH 68b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
605.7			Concrete panel-earth dike interface (0-½" deep) 67.5'-69.5' Machine break 68.5'		Box 7 69.0'	Pull 14 (Continued) Tape depth 69.0'
	70		Bottom of hole 69.0'			Note: 6-21-84 water level after drilling 17.8'
						6-25-84 water level not measurable due to overflow from adjacent drill hole

C-103

Hole No. 30F

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1 OF 5 SHEETS
	South Atlantic	Hartwell Lake	

1. PROJECT: Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT: HQ Diamond
2. LOCATION (Coordinates or Station): STA. 9+81	11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
3. DRILLING AGENCY: Froehling and Robertson	12. MANUFACTURER'S DESIGNATION OF DRILL: CME 55
4. HOLE NO. (As shown on drawing title and file number): 30F	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED: ; UNDISTURBED:
5. NAME OF DRILLER: Tommy Burnette	14. TOTAL NUMBER CORE BOXES: 7
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER: 625.0 (24hrs.)
	16. DATE HOLE: STARTED 6-21-84; COMPLETED 6-25-84
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE: 675.0
8. DEPTH DRILLED INTO ~~ROCK~~: Concrete 72.4'	18. TOTAL CORE RECOVERY FOR BORING: 98 %
9. TOTAL DEPTH OF HOLE: 74.1'	19. SIGNATURE OF INSPECTOR: Nancy Rector (Engineer)

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
675.0	0		Segregated aggregate zone 0.0'-0.4'			Pull 1 From 0.0 to 4.2 Run 4.2 Rec 4.0 C.L. 0.2 Time 2:56-3:05 Note: use Longyear diamond drill bit
			Concrete	95	Box 1	
	2					
			Machine break 3.0'			
			Poorly cemented and segregated aggregate zone 3.0'-4.0'			
670.8	4					Tape depth 4.0'
						Pull 2 From 4.2 to 9.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 3:09-3:18
				100		
	6					
			Poorly cemented segregated and loose aggregate zone 6.6'-9.0'			
	8					
665.8			Poorly cemented aggregate zone (0-3/8" deep) 9.0'-14.0'		9.2'	Tape depth 9.0'
						Pull 3 From 9.2 to 14.1 Run 4.9 Rec 4.9 C.L. 0.1 Time 9:32-9:41 Note: 100% return drill water gray color. Moved rig jack up .1' reduced first run of day to 4.9'
	10		Machine break 10.4'	100	Box 2	
	12		C-104			
661.0	14					
			Continued on sheet #2			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.0	Hole No. 30F
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 5 SHEETS

ELEVATION 661a.0	DEPTH 14b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
660.9			Poorly cemented aggregate zone (0-3/8" deep) 14.0'-23.3'			Pull 3 (Continued) Tape depth 14.0'
					Box 2	Pull 4 From 14.1 to 19.1 Run 5.0 Rec 5.3 C.L. 0.0 Time 9:46-9:56
	16			106		
	18					
655.9						Tape depth 19.1'
					19.7'	Pull 5 From 19.1 to 24.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:01-10:12
	20			100		
					Box 3	
	22					
650.9	24		Concrete (Continued)			Tape depth 24.1'
						Pull 6 From 24.1 to 29.1 Run 5.0 Rec 4.9 C.L. 0.1 Time 10:16-10:27
	26			98		
	28		Machine break 28.0'			
645.9						Tape deepth 29.0'
						Pull 7 From 29.2 to 34.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:33-10:44
	30				30.5'	
			C-105	100	Box 4	
643.0	32					
			Continued on sheet #3			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.0	Hole No. 30F
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 3 OF 5 SHEETS

ELEVATION 643a0	DEPTH 32b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete			Pull 7 (Continued)
640.9	34				Box 4	Tape depth 34.0'
						Pull 8 From 34.1 to 39.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:49-11:04
			Machine break 35.4'	100		
	36					
	38					
635.9						Tape depth 39.0'
						Pull 9 From 39.1 to 44.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:09-11:29
	40			100		
					41.4'	
	42				Box 5	
			Machine break 43.9'			
630.9	44					Tape depth 44.0'
			Segregated aggregate zone 44.5'-52.0'			Pull 10 From 44.1 to 49.1 Run 5.0 Rec 5.2 C.L. 0.0 Time 11:36-11:51
	46		Machine break 46.0'	104		
	48					
			C-106			Tape depth 49.1'
625.9						Pull 11 From 49.1 to 54.1
625.0	50					
			Continued on sheet #4			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.0	Hole No. 30F
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 4 OF 5 SHEETS

ELEVATION 625a.0	DEPTH 50b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Segregated aggregate zone 44.5'-52.0'	100	Box 5	Pull 11 (Continued) Run 5.0 Rec 5.0 C.L. 0.0 Time 12:46-1:03
			Machine break 51.6'		51.6'	
	52		Concrete (Continued)		Box 6	
620.9	54					Tape depth 54.1'
				100		Pull 12 From 54.1 to 59.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:10-1:25
	56					
	58					
615.9						Tape depth 59.1'
				100		Pull 13 From 59.1 to 64.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:32-1:46
	60					
	62				62.2'	
					Box 7	
610.9	64					Tape depth 64.1'
			Poorly cemented aggregate zone 64.5'-64.9' (0-½" deep) Clay bentonite seam 64.9'	98		Pull 14 From 64.1 to 69.1 Run 5.0 Rec 4.9 C.L. 0.1 Time 1:52-2:04 Note: drill water color change from gray to light brown at depth 57.0'
	66		Concrete panel-earth dike interface (0-1" deep) 66.7'-72.4' Machine break 67.3'	C-107		
607.0	68					

Continued on sheet #5

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 675.0 | **Hole No.** 30F

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 5 OF 5 SHEETS

ELEVATION 607a.0	DEPTH 68b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
605.9			Concrete panel-earth dike interface (0-1" deep) 66.7'-72.4'		Box 7	Pull 14 (Continued)
			Machine break 69.2'			Tape depth 68.8'
	70		Machine break 70.0'	68		Pull 15 From 69.1 to 74.1 Run 5.0 Rec 3.4 C.L. 1.6 Time 2:13-2:28 Note: drill water color change from light brown to gray at depth 69.5';then brown at depth 70.5'
			Machine break 70.4'			
			Machine break 70.7'			
			Machine break 71.4'			
	72		Machine break 72.2'			
600.9	74					Tape depth 73.9'
			Bottom of hole 74.1'			Note: 6-25-84 water level after drilling 48.0'
	76					6-26-84 water level 24hrs. after drilling 50.0'

C-108

Hole No. 30G

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 6 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT HQ Diamond
2. LOCATION (Coordinates or Station) STA. 9+89	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Froehling and Robertson	12. MANUFACTURER'S DESIGNATION OF DRILL CME 55
4. HOLE NO. (As shown on drawing title and file number) 30G	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED
5. NAME OF DRILLER Tommy Burnette	14. TOTAL NUMBER CORE BOXES 8
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER 625.4 (24hrs.)
	16. DATE HOLE: STARTED 6-26-84; COMPLETED 6-27-84
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE 674.7'
8. DEPTH DRILLED INTO ~~ROCK~~ Concrete 81.7	18. TOTAL CORE RECOVERY FOR BORING 91 %
9. TOTAL DEPTH OF HOLE 89.3	19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
674.7	0		Poorly cemented aggregate (0-3/8" deep) 0.0'-2.0'	98	Box 1	Pull 1 From 0.0 to 4.3 Run 4.3 Rec 4.2 C.L. 0.1 Time 10:45-10:56 Note: 100% return drill water-gray color
	2		Concrete			
			Machine break 3.8'			
670.4	4					Tape depth 4.3'
				98		Pull 2 From 4.3 to 9.3 Run 5.0 Rec 4.9 C.L. 0.1 Time 11:00-11:07
	6		Machine break 6.7'			
	8					
665.4						Tape depth 9.2'
	10			98	11.1'	Pull 3 From 9.3 to 14.3 Run 5.0 Rec 4.9 C.L. 0.1 Time 11:11-11:20
	12				Box 2	
			Machine break 12.9'	C-109		
660.7	14					
			Continued on sheet #2			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 674.7	Hole No. 30G
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
660.7	14					Pull 3 (Continued)
			Concrete (Continued)			Tape depth 14.1'
					Box 2	Pull 4 From 14.3 to 19.3 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:24-11:34
	16			100		
	18		Machine break 18.2'			
655.4						Tape depth 19.0'
						Pull 5 From 19.3 to 24.3 Run 5.0 Rec 5.0 C.L. 0.0 Time 12:27-12:51 Note: changed bits at depth 19.3' to decrease drilling time.
	20			100		
					21.5'	
	22		Machine break 22.0'			
			Machine break 23.5'			
	24				Box 3	
650.4						Tape depth 24.0'
						Pull 6 From 24.3 to 29.3 Run 5.0 Rec 5.2 C.L. 0.0 Time 1:04-1:16 Note: changed bits at depth 24.3' to decrease drilling time.
	26			104		
	28					
645.4						Tape depth 29.2'
						Pull 7 From 29.3 to 34.3 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:21-1:33
	30			100		
			C-110			
642.7	32					

Continued on sheet #3

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 674.7	Hole No. 30G
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 3 OF 6 SHEETS

ELEVATION 642a.7	DEPTH 32b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)		32.3'	Pull 7 (Continued)
			Machine break 33.2'		Box 4	
640.4	34					Tape depth 34.2'
	36			98		Pull 8 From 34.3 to 39.3 Run 5.0 Rec 4.9 C.L. 0.1 Time 1:40-1:52
	38		Machine break 37.9'			
635.4						Tape depth 39.0'
	40			102		Pull 9 From 39.3 to 44.3 Run 5.0 Rec 5.1 C.L. 0.0 Time 1:57-2:10
	42				42.8'	
630.4	44				Box 5	Tape depth 44.2'
	46		Poorly cemented aggregate (0-3/8" deep) 45.0'-45.7'	100		Pull 10 From 44.3 to 49.3 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:15-2:28
	48		Machine break 47.5'			
			C-111			Tape depth 49.2'
624.7	50					Pull 11
			Continued on sheet #4			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 674.7	Hole No. 30G
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 4 OF 6 SHEETS

ELEVATION 624.7	DEPTH 50	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)	100	Box 5	Pull 11 (Continued) From 49.3 to 54.3 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:36-2:48
	52					
					53.7'	
620.4	54					Tape depth 54.2
				100	Box 6	Pull 12 From 54.3 to 59.3 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:09-9:25
	56					
	58					
615.4						Tape depth 59.2'
	60			100		Pull 13 From 59.3 to 64.3 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:39-9:52
	62					
			Machine break 63.2'			
610.4	64				64.3'	Tape depth 64.2'
	66		C-112	104	Box 7	Pull 14 From 64.3 to 69.3 Run 5.0 Rec 5.2 C.L. 0.0 Time 9:58-10:13
606.7	68					

Continued on sheet #5

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 674.7	Hole No. 30G
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 5 OF 6 SHEETS

ELEVATION 606a.7	DEPTH 68b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)		Box 7	Pull 14 (Continued)
605.4						Tape depth 69.4'
	70		Machine break 70.7'	100		Pull 15 From 69.3 to 74.3 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:43-10:57 Note: changed from bottom discharge to face discharge bit at depth 69.3'
	72		Machine break 72.1'			
			Machine break 73.0'			
600.4	74					Tape depth 74.4'
					75.1'	Pull 16 From 74.3 to 79.3 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:04-11:17
	76			100	Box 8	
			Machine break 77.3'			
	78					
			Machine break 79.0'			
595.4						Tape depth 79.4'
	80		Concrete panel-earth dike interface (0-3/4" deep) 80.7'-81.7' Bottom of concrete 81.7'	46		Pull 17 From 79.3 to 84.3 Run 5.0 Rec 2.3 C.L. 2.7 Time 11:24-11:35 Note: drill water color change from gray to brown sandy water at depth 83.0 Tape depth 81.2' (before wash)
	82					
590.4	84					Tape depth 84.2
			C-113			Pull 18 From 84.3 to 89.3 Run 5.0
588.7	86					

Continued on sheet #6

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 674.7	Hole No. 30G
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 6 OF 6 SHEETS

ELEVATION 588a 7	DEPTH 86b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
				0	Box 8	Pull 18 (Continued) Rec 0.0 C.L. 5.0 Time 12:09-12:15 Note: unable to retrieve material left in barrel after pull 17- removed inner barrel and washed all meterial left in outer barrel out of barrel before drilling for pull 18
	88					
585.4					89.3'	Tape depth 89.0'
			Bottom of hole 89.3'			
	90					Note: 6-27-84 water level after drilling 39.7'
						6-28-84 water level 24 hrs. after drilling 49.3'

C-14

Hole No. 30H

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 5 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT HQ Diamond
2. LOCATION (Coordinates or Station) STA. 9+82	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Froehling and Robertson	12. MANUFACTURER'S DESIGNATION OF DRILL CME 55
4. HOLE NO. (As shown on drawing title and file number) 30H	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED ; UNDISTURBED
5. NAME OF DRILLER Tommy Burnette	14. TOTAL NUMBER CORE BOXES 8
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER 628.0' (24hrs.)
	16. DATE HOLE: STARTED 6-27-84; COMPLETED 6-28-84
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE 675.0'
8. DEPTH DRILLED INTO Concrete 81.6	18. TOTAL CORE RECOVERY FOR BORING 99 %
9. TOTAL DEPTH OF HOLE 83.7	19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
675.0	0		Segregated concrete zone 0.0'-1.7' Machine break 0.7' Machine break 1.2' Poorly cemented aggregate zone (0-1" deep) and aggregate voids 1.9'-3.3' Machine break 3.3'	97	Box 1	Pull 1 From 0.0 to 3.7 Run 3.7 Rec 3.6 C.L. 0.1 Time 2:27-2:37 Tape depth 3.5'
671.3	2					
	4		Concrete Poorly cemented aggregate zone (0-½" deep) 4.0'-7.9' Machine break 4.4'	102		Pull 2 From 3.7 to 8.7 Run 5.0 Rec 5.1 C.L. 0.0 Time 2:41-2:50 Note: 100% return drill water-gray color Tape depth 8.7'
	6					
	8		Machine break 7.9' Segregated aggregate zone 7.9'-9.1' Poorly cemented aggregate zone (0-3/8" deep) 8.9'-17.7'			
666.3						
	10			94	10.9'	Pull 3 From 8.7 to 13.7 Run 5.0 Rec 4.8 C.L. 0.2 Time 2:54-3:01 Tape depth 13.5'
	12				Box 2	
661.3			C-115			
661.0	14					Pull 4

Continued on sheet #2

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.0	Hole No. 30H
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 5 SHEETS

ELEVATION 661a 0	DEPTH 14b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Poorly cemented aggregate zone (0-3/8" deep) 8.9'-17.7'	100	Box 2	Pull 4 (Continued) From 13.7 to 18.7 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:46-9:57 Note: install new Longyear bit at depth 13.7'
	16					
			Machine break 17.3'			
	18		Concrete (Continued)			
656.3						Tape depth 18.5'
				104		Pull 5 From 18.7 to 23.7 Run 5.0 Rec 5.2 C.L. 0.0 Time 10:02-10:10
	20					
					21.7'	
	22				Box 3	
651.3						Tape depth 23.7'
	24			96		Pull 6 From 23.7 to 28.7 Run 5.0 Rec 4.8 C.L. 0.2 Time 10:15-10:23
			Poorly cemented aggregate zone (0-3/8" deep) 25.0'-28.2'			
	26					
			Machine break 27.3'			
	28					
646.3						Tape depth 28.5'
				102		Pull 7 From 28.7 to 33.7 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:27-10:36
	30					
			C-116			
643.0	32					

Continued on sheet #3

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 675.0 | **Hole No.** 30H

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 3 OF 5 SHEETS

ELEVATION 643a 0	DEPTH 32b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)		32.5'	Pull 7 (Continued)
641.3						Tape depth 33.6'
	34			100	Box 4	Pull 8 From 33.7 to 38.7 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:45-10:56
	36					
	38					
636.3						Tape depth 38.6'
	40			100		Pull 9 From 38.7 to 43.7 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:01-11:13
			Machine break 41.8'			
	42				43.3'	
631.3						Tape depth 43.6'
	44		Poorly cemented aggregate zone (0-3/4" deep) 45.0'-46.6'	102	Box 5	Pull 10 From 43.7 to 48.7 Run 5.0 Rec 5.1 C.L. 0.0 Time 11:19-11:31
	46		Machine break 45.9'			
	48		Segregated aggregate zone 48.1'-49.3'			
626.3						Tape depth 48.7'
			C-117			Pull 11 From 48.7 to 53.7 Run 5.0
625.0	50					

Continued on sheet #4

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.0	Hole No. 30H
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 4 OF 5 SHEETS

ELEVATION 625.0	DEPTH 50	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)	100	Box 5	Pull 11 (Continued) Rec 5.0 C.L. 0.0 Time 11:39-11:52
			Machine break 51.4' Segregated aggregate zone 51.4'-53.1'			
	52					
621.3					53.7'	Tape depth 53.7'
	54			100	Box 6	Pull 12 From 53.7 to 58.7 Run 5.0 Rec 5.0 C.L. 0.0 Time 12:29-12:37 12:39-12:42 Note: 2 minute down time to move water hose and allow crane passage.
	56					
	58					
616.3						Tape depth 58.7
				98		Pull 13 From 58.7 to 63.7 Run 5.0 Rec 4.9 C.L. 0.1 Time 12:49-1:00
	60					
	62					
			Machine break 63.2'			
611.3						Tape depth 63.6'
	64				64.6'	Pull 14 From 63.7 to 68.7 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:07-1:19
			Machine break 64.8'	100	Box 7	
	66					
607.0	68					

C-118

Continued on sheet #5

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.0	Hole No. 30H
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 5 OF 5 SHEETS

ELEVATION 607a 0	DEPTH 68b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
606.3			Concrete (Continued)		Box 7	Pull 14 (Continued) Tape depth 68.6'
	70		Machine break 69.6'	102		Pull 15 From 68.7 to 73.7 Run 5.0 Rec 5.1 C.L. 0.0 Time 1:49-2:00 Note: changed from bottom discharge to face discharge bit at depth 68.7'
	72		Machine break 71.6'			
			Machine break 72.5'			
601.3						Tape depth 73.7'
	74		Machine break 74.7'	98	75.2' Box 8	Pull 16 From 73.7 to 78.7 Run 5.0 Rec 4.9 C.L. 0.1 Time 2:09-2:18
	76		Machine break 77.0'			
	78		Machine break 77.9'			
596.3						Tape depth 78.6'
	80		Machine break 79.6' Concrete panel-earthen dike interface (0-1" deep) 79.9'-81.6'	84		Pull 17 From 78.7 to 83.7 Run 5.0 Rec 4.2 C.L. 0.8 Time 2:26-2:34 Note: drill water color change from gray to brown at depth 83.0'
	82		Bottom of concrete 81.6' Highly weathered gray-white gneiss, RQD=0% very poor rock quality 81.6'-83.7'			
591.3					83.7'	Tape depth 83.7'
	84		Bottom of hole 83.7'			Note: 7-2-84 water level 24hrs. after drilling 47.0' depth.

C-119

Hole No. 39

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 3 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT HQ Diamond
2. LOCATION (Coordinates or Station) STA. 12+12	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Froehling and Robertson	12. MANUFACTURER'S DESIGNATION OF DRILL CME 55
4. HOLE NO. (As shown on drawing title and file number) 39	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED: — UNDISTURBED: —
5. NAME OF DRILLER Tommy Burnette	14. TOTAL NUMBER CORE BOXES 4
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER 669.8 (24hrs.)
	16. DATE HOLE — STARTED 6-8-84 — COMPLETED 6-13-84
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE 674.8
8. DEPTH DRILLED INTO ~~ROCK~~ Concrete 39.2	18. TOTAL CORE RECOVERY FOR BORING 100 %
9. TOTAL DEPTH OF HOLE 39.2	19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
674.8	0		Pooly cemented aggregate and loose aggregate zone 0.0'-1.1'			Pull 1 From 0.0 to 4.2 Run 4.2
			Concrete	100	Box 1	Rec 4.2 C.L. 0.0 Time 9:46-9:55 Note: 100% return drill water-gray color
	2					
670.6	4					Tape depth 4.4'
			Machine break 5.1'			Pull 2 From 4.2 to 9.2 Run 5.0 Rec 5.0 C.L. 0.0
	6			100		Time 10:01-10:08
	8					
665.6						Tape depth 9.2'
	10			98	10.8'	Pull 3 From 9.2 to 14.2 Run 5.0 Rec 4.9 C.L. 0.1 Time 10:12-10:18
	12		Poorly cemented aggregate zone (o-½" deep) 11.7'-18.5' Machine break 12.2' C-120		Box 2	
660.8	14					
			Continued on sheet #2			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 674.8	Hole No. 39
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 3 SHEETS

ELEVATION 660a 8	DEPTH 14b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
660.6						Pull 3 (Continued)
			Poorly cemented aggregate (0-½" deep) 11.7'-18.5'		Box 2	Pull 4 From 14.2 to 19.2 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:25-10:32
			Machine break 15.9'			
	16			102		
	18					
655.6						Tape depth 19.2'
						Pull 5 From 19.2 to 24.2 Run 5.0 Rec 4.9 C.L. 0.1 Time 10:37-10:45
	20			98		
					21.4'	
	22				Box 3	
650.6	24					Tape depth 24.1'
						Pull 6 From 24.2 to 29.2 Run 5.0 Rec 5.2 C.L. 0.0 Time 10:49-10:57
	26			104		
			Machine break 27.6'			
	28					
645.6					29.2'	Tape depth 29.3'
					Box 4	Pull 7 From 29.2 to 34.2 Run 5.0 Rec 4.9 C.L. 0.1 Time 9:50-10:09
	30			98		
			C-121			
642.8	32					

Continued on sheet #3

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 674.8	Hole No. 39
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 3 OF 3 SHEETS

ELEVATION 642a.8	DEPTH 32b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)			Pull 7 (Continued) Note: 7 minute downtime to refill water tank
			Machine break 33.3' Concrete panel-earth dike interface (0-3/4" deep) 33.3'-39.2'		Box 4	
640.6	34					Tape depth 34.2'
				102		Pull 8 From 34.2 to 39.2 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:14-10:19 Note: 100% return drill water-gray color then brown at 33.0- depth
	36		Machine break 36.0'			
			Machine break 37.8'			
	38					
635.6					39.2	Tape depth 39.3'
			Bottom of hole 39.2'			Note: 6-12-84 water level measured after drilling 12.5 6-14-84 water level at 24hrs. 5.0'
	40					

Hole No. 39A

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 3 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT HQ Diamond
2. LOCATION (Coordinates or Station) STA. 12+11	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Froehling and Robertson	12. MANUFACTURER'S DESIGNATION OF DRILL CME 55
4. HOLE NO. (As shown on drawing title and file number) 39A	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED: — UNDISTURBED: —
5. NAME OF DRILLER Tommy Burnette	14. TOTAL NUMBER CORE BOXES 4
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER 657.8 (24hrs.)
	16. DATE HOLE — STARTED 6-13-84 — COMPLETED 6-13-84
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE 675.1
8. DEPTH DRILLED INTO ~~ROCK~~ Concrete 39.1	18. TOTAL CORE RECOVERY FOR BORING 99 %
9. TOTAL DEPTH OF HOLE 39.1	19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
675.1	0		Segregated aggregate zone 0.0-1.1'			Pull 1 From 0.0 to 4.2
			Machine break 0.7'	100	Box 1	Run 4.2 Rec 4.2 C.L. 0.0
	2		Concrete			
670.9	4					Tape depth 4.2'
				98		Pull 2 From 4.2 to 9.1 Run 4.9 Rec 4.8 C.L. 0.1 Time 11:52-11:59 Note: adjusted drilling jack up 0.1'- Run length changed
	6					
	8		Poorly cemented aggregate (0-3/8" deep) 8.5'-9.7'			
666.0						Tape depth 9.1'
				102		Pull 3 From 9.1 to 14.1 Run 5.0 Rec 5.1 C.L. 0.0
	10		Machine break 10.4'		10.4 Box 2	
	12		C-123			
661.1	14					

Continued on sheet #2

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 675.1 **Hole No.** 39A

PROJECT Clemson Upper Diversion Dam | INSTALLATION Hartwell Lake | SHEET 2 OF 3 SHEETS

ELEVATION 661a.1	DEPTH 14b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)			Pull 3 (Continued) Tape depth 14.1'
	16			100	Box 2	Pull 4 From 14.1 to 19.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 12:38-12:44 Note: 100% return drill water-gray color
			Machine break 17.5'			
	18					
656.0						Tape depth 19.1'
	20			100	21.1'	Pull 5 From 19.1 to 24.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 12:50-12:56
	22		Machine break 22.4'		Box 3	
651.0	24					Tape depth 24.1'
	26			100		Pull 6 From 24.1 to 29.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:02-1:08
			Machine break 27.6'			
	28					
646.0						Tape depth 29.1
	30		Machine break 30.0'	100		Pull 7 From 29.1 to 34.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:13-1:19
			Machine break 31.3'	C-124		
643.1	32				32.0'	

Continued on sheet #3

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 675.1 **Hole No.** 39A

PROJECT Clemson Upper Diversion Dam | INSTALLATION Hartwell Lake | SHEET 3 OF 3 SHEETS

ELEVATION 643a1	DEPTH 32b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)		Box 4	Pull 7 (Continued)
						Tape depth 34.1'
641.0	34					Pull 8 From 34.1 to 39.1 Run 5.0 Rec 4.8 C.L. 0.2 Time 1:26-1:32 Note: 100% return drill water-gray color then brown at 36.0' depth
			Machine break 35.5'			
	36					
			Machine break 36.7' Concrete panel-earth dike interface (0-3/4" deep) 36.8'-39.1'			
	38		Machine break 37.8'			
						Tape depth 39.0'
636.0						
			Bottom of hole 39.1'			Note: 6-13-84 water level at end of drilling 27.5' 6-14-84 water level at 24hrs. 17.3'
	40					

Hole No. 39B

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1 OF 4 SHEETS
	South Atlantic	Hartwell Lake	

1. PROJECT: Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT: HQ Diamond
2. LOCATION (Coordinates or Station): STA. 12+11	11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
3. DRILLING AGENCY: Froehling and Robertson	12. MANUFACTURER'S DESIGNATION OF DRILL: CME 55
4. HOLE NO. (As shown on drawing title and file number): 39B	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED: ; UNDISTURBED:
5. NAME OF DRILLER: Tommy Burnette	14. TOTAL NUMBER CORE BOXES: 6
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER: 654.6 (24hrs.)
	16. DATE HOLE: STARTED 6-13-84; COMPLETED 6-14-84
7. THICKNESS OF OVERBURDEN:	17. ELEVATION TOP OF HOLE: 675.1
8. DEPTH DRILLED INTO [redacted]: Concrete 57.5	18. TOTAL CORE RECOVERY FOR BORING: 98 %
9. TOTAL DEPTH OF HOLE: 59.5	19. SIGNATURE OF INSPECTOR: Nancy Rector (Engineer)

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
675.1	0		Machine break 0.2'			Pull 1
			Machine break 0.5'			From 0.0 to 4.5
			Segregated aggregate zone 0.0'-1.0'			Run 4.5
			Poorly cemented aggregate zone (0"-½" deep) 1.0'-2.2'	96	Box 1	Rec 4.3
	2					C.L. 0.2
			Concrete			Time 2:10-2:21
						Note: 100% return drill water-gray color
	4					
670.6						Tape depth 4.3'
						Pull 2
						From 4.5 to 8.6
						Run 4.1
	6					Rec 4.3
						C.L. 0.0
			Machine break 6.5'	105		Time 2:29-2:35
						Note: pump malfunction stop rig with .9' left on 5' run
	8					
666.5			Poorly cemented aggregate zone (0"-3/8" deep) 8.6'-9.0'			Tape depth 8.7'
						Pull 3
				100		From 8.6 to 9.5
665.6			Poorly cemented aggregate zone (0"-½" deep) 9.5'-12.0'			Run 0.9
	10					Rec 0.9
						C.L. 0.0
						Time 9:34-9:37
					10.7'	Tape depth 9.5'
					Box 2	Pull 4
						From 9.5 to 14.5
	12			96		Run 5.0
						Rec 4.8
						C.L. 0.2
						Time 9:41-9:48
661.1	14					
			Continued on sheet #2			

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 675.1 **Hole No.** 39B

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 2 OF 4 SHEETS

ELEVATION 661±1	DEPTH 14b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
660.6			Poorly cemented aggregate zone (0"-½" deep) 14.0'-24.7'			Pull 4 (Continued) Tape depth 14.3'
	16			102	Box 2	Pull 5 From 14.5 to 19.5 Run 5.0 Rec 5.1 C.L. 0.0 Time 9:53-10:00 Note: 100% return drill water-gray color
			Machine break 17.7'			
	18					
655.6						Tape depth 19.4'
	20		Machine break 20.4'	102	21.3'	Pull 6 From 19.5 to 24.5 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:03-10:11
	22					
			Machine break 23.6'			
	24					
650.6						Tape depth 24.5'
	26			96	Box 3	Pull 7 From 24.5 to 29.5 Run 5.0 Rec 4.8 C.L. 0.2 Time 10:16-10:25
			Machine break 26.7' Poorly cemented aggregate zone (0"-3/8" deep) 26.4'-27.1'			
	28					
645.6						Tape depth 29.3'
	30			104		Pull 8 From 29.5 to 34.5 Run 5.0 Rec 5.2 C.L. 0.0 Time 10:35-10:45
			C-127			
643.1	32				31.9'	
			Continued on sheet #3			

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 675.1 **Hole No.** 39B

PROJECT Clemson Upper Diversion Dam INSTALLATION Hartwell Lake SHEET 3 OF 4 SHEETS

ELEVATION 643a 1	DEPTH 32b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)			Pull 8 (Continued)
			Machine break 33.4'		Box 4	
	34					Tape depth 34.5'
640.6						Pull 9 From 34.5 to 39.5 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:53-11:01
	36			100		
			Machine break 37.8'			
	38					
			Machine break 39.0'			
635.6						Tape depth 39.5'
	40					Pull 10 From 39.5 to 44.5 Run 5.0 Rec 4.8 C.L. 0.2 Time 11:09-11:19
				96		
	42				42.6'	
			Machine break 43.2'		Box 5	
	44		Machine break 44.2' Machine break 44.4			
630.6						Tape depth 44.3'
						Pull 11 From 44.5 to 49.5 Run 5.0 Rec 5.1 C.L. 0.0 Time 11:26-11:36
	46			102		
			Machine break 47.7'			
	48					
			C-128			
625.6						Tape depth 49.4'
625.1	50					Pull 12

Continued on sheet #4

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 675.1 **Hole No.** 39B

PROJECT Clemson Upper Diversion Dam | INSTALLATION Hartwell Lake | SHEET 4 OF 4 SHEETS

ELEVATION 625a.1	DEPTH 50b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)	102	Box 5	Pull 12 (Continued) From 49.5 to 54.5 Run 5.0 Rec 5.1 C.L. 0.0 Time 11:43-11:54 Note: drill water color change from gray to brown at depth 54.0'
	52		Machine break 52.9'		52.9'	
	54		Concrete panel-earth dike interface (0"-2") 53.7'-57.5'		Box 6	
620.6						Tape depth 54.5'
						Pull 13 From 54.5 to 59.5 Run 5.0 Rec 4.0 C.L. 1.0 Time 12:42-12:53
	56		Machine break 56.2'	80		
	58		Dark brown silty sand with organics and wood chips 57.5'-59.5'			
615.6					59.5'	Tape depth 59.2'
	60		Bottom of hole 59.5'			Note: 6-14-84 water level after drilling 16.5'
						6-15-84 water level 24hrs. after drilling 20.5'

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Hole No. 39C

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 2 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT HQ Diamond
2. LOCATION (Coordinates or Station) STA. 12+11	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Froehling and Robertson	12. MANUFACTURER'S DESIGNATION OF DRILL CME 55
4. HOLE NO. (As shown on drawing title and file number) 39C	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED: — UNDISTURBED: —
5. NAME OF DRILLER Tommy Burnette	14. TOTAL NUMBER CORE BOXES 2
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER 663.6 (24hrs.)
	16. DATE HOLE — STARTED 6-14-84 — COMPLETED 6-14-84
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE 675.1
8. DEPTH DRILLED INTO ROCK Concrete 14.6	18. TOTAL CORE RECOVERY FOR BORING 94 %
9. TOTAL DEPTH OF HOLE 14.6	19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
675.1	0		Segregated aggregate zone 0.0-0.6'		Box 1	Pull 1 From 0.0 to 4.6 Run 4.6 Rec 4.5 C.L. 0.1 Time 1:30-1:43 Note: 100% return drill water, gray color
			Concrete			
	2					
				98		
	4					
670.5						Tape depth 4.6'
			Machine break 5.5'			Pull 2 From 4.6 to 9.6 Run 5.0 Rec 4.7 C.L. 0.3 Time 1:47-1:58
	6					
			Machine break 6.9'	94		
	8					
665.5			Concrete panel-earth dike interface (0-1" deep) 9.6'-14.6'			Tape depth 9.3'
	10		Machine break 10.2'			Pull 3 From 9.6 to 14.6 Run 5.0 Rec 4.5 C.L. 0.5 Time 2:04-2:15 Note: drill water color change from gray to brown at 12.0' depth
			Machine break 11.3'	90	11.0'	
	12				Box 2	
			Machine break 12.7'			
			Machine break 13.0'	C-130		
			Machine break 13.5'			
661.1	14					
			Continued on sheet #2			

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 675.1 **Hole No.** 39C

PROJECT Clemson Upper Diversion Dam | INSTALLATION Hartwell Lake | SHEET 2 OF 2 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
661a 1	14b	c	d	e	f	g
660.5			Concrete panel-earth dike interface (0-1" deep) 9.6'-14.6'		Box 2 14.6	Pull 3 (Continued) Tape depth 14.0'
			Bottom of hole 14.6'			Note: 6-14-84 water level after drilling 8.5'
						6-15-84 water level 24hrs. after drilling 11.5'

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Hole No. 39D

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 3 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT HQ Diamond
2. LOCATION (Coordinates or Station) STA. 12+20	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Froehling and Robertson	12. MANUFACTURER'S DESIGNATION OF DRILL CME 55
4. HOLE NO. (As shown on drawing title and file number) 39D	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED: — UNDISTURBED: —
5. NAME OF DRILLER Tommy Burnette	14. TOTAL NUMBER CORE BOXES 4
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER 660.1 (24hrs.)
	16. DATE HOLE — STARTED 7-2-84 — COMPLETED 7-2-84
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE 675.1
8. DEPTH DRILLED INTO ~~ROCK~~ Concrete 34.3	18. TOTAL CORE RECOVERY FOR BORING 100 %
9. TOTAL DEPTH OF HOLE 34.3	19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)

ELEVATION 675.1	DEPTH 0 b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Segregated aggregate zone 0.0'-1.0'		Box 1	Pull 1 From 0.0 to 4.3 Run 4.3 Rec 4.1 C.L. 0.2 Time 10:13-10:24 Note: 100% return drill water-gray color
			Concrete	95		
	2		Machine break 2.6'			
670.8	4		Poorly cemented aggregate zone (0-3/8" deep) 4.1'-9.3'			Tape depth 4.2'
			Machine break 4.9'			Pull 2 From 4.3 to 9.3 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:28-10:37
			Machine break 5.9'	102		
	6					
			Machine break 7.6'			
	8					
665.8			Poorly cemented aggregate zone (0-1" deep) 9.3'-14.0'			Tape depth 9.3'
	10					Pull 3 From 9.3 to 14.3 Run 5.0 Rec 4.9 C.L. 0.1 Time 10:42-10:51
			Machine break 10.7'	98	10.7 Box 2	
	12		C-132			
661.1	14					
			Continued on sheet #2			

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 675.1 **Hole No.** 39D

PROJECT Clemson Upper Diversion Dam | INSTALLATION Hartwell Lake | SHEET 2 OF 3 SHEETS

ELEVATION 661.1	DEPTH 14b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
660.8			Machine break 14.0 Machine break 14.2' Poorly cemented aggregate zone (0-½" deep) 14.0'-15.3' Machine break 15.0'			Pull 3 (Continued) Tape depth 14.1' Pull 4 From 14.3 to 19.3 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:59-11:08
	16		Machine break 16.4'	102		
			Concrete (Continued)		Box 2	
	18		Machine break 18.4'			
655.8						Tape depth 19.3'
	20			102		Pull 5 From 19.3 to 24.3 Run 5.0 Rec 5.1 C.L. 0.0 Time 11:14-11:22
	22		Machine break 23.2'			
650.8	24					Tape depth 24.3'
			Machine break 25.1'	100		Pull 6 From 24.3 to 29.3 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:28-11:39
	26		Machine break 26.3'		26.5'	
	28		Machine break 28.0'		Box 3	
645.8						Tape depth 29.3'
	30		Machine break 30.5'	100	C-133	Pull 7 From 29.3 to 34.3 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:44-11:55
			Machine break 31.7'			
643.1	32					

Continued on sheet #3

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 675.1 **Hole No.** 39D

PROJECT Clemson Upper Diversion Dam | INSTALLATION Hartwell Lake | SHEET 3 OF 3 SHEETS

ELEVATION 643a 1	DEPTH 32b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)		32.2'	Pull 7 (Continued)
			Machine break 32.7'			Note: drill water color change from gray to light brown at depth 33.0'
			Concrete panel-earthen dike interface (0-3/8" deep) 33.1'-34.3'		Box 4	
640.1	34		Machine break 33.9'		34.3'	Tape depth 34.3'
			Bottom of hole 34.3'			
	36					Note: 7-2-84 water level after drilling at 14.8'
						7-3-84 water level 24hrs after drilling at 15.0'

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Hole No. 39E

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 5 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT HO Diamond
2. LOCATION (Coordinates or Station) STA. 12+10	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Froehling and Robertson	12. MANUFACTURER'S DESIGNATION OF DRILL CME 55
4. HOLE NO. (As shown on drawing title and file number) 39E	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED
5. NAME OF DRILLER Tommy Burnette	14. TOTAL NUMBER CORE BOXES 8
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG FROM VERT.	15. ELEVATION GROUND WATER 671.5' (24hrs)
	16. DATE HOLE: STARTED 7-10-84; COMPLETED 7-11-84
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE 675.0'
8. DEPTH DRILLED INTO ~~ROCK~~ Concrete 82.3'	18. TOTAL CORE RECOVERY FOR BORING 98.3 %
9. TOTAL DEPTH OF HOLE 83.7'	19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
675.0	0		Segregated aggregate zone 0.0-0.6' Concrete		Box 1	Pull 1 From 0.0 to 3.8 Run 3.8 Rec 3.9 C.L. 0.0 Time 11:46-12:01 Note: 3 inch down stream offset from centerline of panel
			Machine break 1.7'	103		
	2		Poorly cemented aggregate zone (0-1" deep) 2.4'-11.8'			
			Machine break 2.9'			
671.2						Tape depth 3.9'
	4					Pull 2 From 3.8 to 8.8 Run 5.0 Rec 4.8 C.L. 0.2 Time 12:37-12:46 Note: 100% return drill water-gray color
			Machine break 4.9'	96		
	6					
			Machine break 7.5'			
	8					
666.2			Machine break 8.6'			Tape depth 8.7'
			Machine break 9.0'			Pull 3 From 8.8 to 13.8 Run 5.0 Rec 5.1 C.L. 0.0 Time 12:51-1:02
	10			102		
					10.7'	
					Box 2	
	12					
661.2						Tape depth 13.8'
661.0	14					Pull 4

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Continued on sheet #2

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 675.0 **Hole No.** 39E

PROJECT Clemson Upper Diversion Dam | INSTALLATION Hartwell Lake | SHEET 2 OF 5 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
661.0	14		Concrete (Continued) Occasional aggregate voids (0-3/8" deep) 14.2'-15.4' Machine break 14.7' Poorly cemented aggregate zone (0-3/8" deep) 15.6'-18.2' Machine break 16.6' Machine break 17.2' Machine break 17.9'	102	Box 2	Pull 4 (Continued) From 13.8 to 18.8 Run 5.0 Rec 5.1 C.L. 0.0 Time 1:07-1:20
656.2	16, 18					Tape depth 18.9'
			Poorly cemented aggregate zone (0-½" deep) 19.7'-23.6' Machine break 20.0' Machine break 21.0' Machine break 21.5'	98	21.5' Box 3	Pull 5 From 18.8 to 23.8 Run 5.0 Rec 4.9 C.L. 0.1 Time 1:29-1:46
651.2	20, 22		Machine break 23.0'			Tape depth 23.8'
	24, 26		Machine break 24.4' Machine break 26.6' Machine break 27.3'	100		Pull 6 From 23.8 to 28.8 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:54-2:08
646.2	28		Machine break 28.2'			Tape depth 28.8'
	30		Machine break 29.8' Machine break 31.4'	100	C-136	Pull 7 From 28.8 to 33.8 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:18-2:32
643.0	32					

Continued on sheet #3

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 675.0 **Hole No.** 39E

PROJECT -Clemson Upper Diversion Dam | INSTALLATION Hartwell Lake | SHEET 3 OF 5 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
643.0			Concrete (Continued)		32.5'	Pull 7 (Continued)
			Machine break 32.5'			
			Machine break 33.1'			
			Machine break 33.6'			
641.2					Box 4	Tape depth 33.8'
	34					Pull 8 From 33.8 to 38.8 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:42-2:53
			Machine break 35.2'	100		
			Machine break 35.6'			
	36		Poorly cemented aggregate (0-3/8" deep) 36.3'-40.0'			
			Machine break 36.8'			
			Machine break 37.6'			
	38					
636.2			Machine break 38.6'			Tape depth 38.8'
						Pull 9 From 38.8 to 43.8 Run 5.0 Rec 5.0 C.L. 0.0 Time 8:26-8:43
	40			100		
	42		Poorly cemented aggregate zone (0-3/8" deep) 42.1'-43.1'			
					43.3'	
631.2						Tape depth 43.8'
	44				Box 5	Pull 10 From 43.8 to 48.8 Run 5.0 Rec 5.1 C.L. 0.0 Time 8:49-9:01
			Machine break 45.2'			
	46		Machine break 45.9'	102		
			Machine break 46.8'			
	48		Machine break 48.1'			
			Machine break 48.6'			
626.2						Tape depth 48.9'
			C-137			Pull 11 From 48.8 to 53.8 Run 5.0
625.0	50					

Continued on sheet #4

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.0	Hole No. 39E
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 4 OF 5 SHEETS

ELEVATION 625a.0	DEPTH 50b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)	100	Box 5	Pull 11 (Continued) Rec 5.0 C.L. 0.0 Time 9:09-9:22
	52					
			Machine break 52.9'			
621.2					53.8'	Tape depth 53.9'
	54			98	Box 6	Pull 12 From 53.8 to 58.8 Run 5.0 Rec 4.9 C.L. 0.1 Time 9:29-9:43
	56					
	58					
616.2						Tape depth 58.8'
	60			104		Pull 13 From 58.8 to 63.8 Run 5.0 Rec 5.2 C.L. 0.0 Time 9:50-10:03
	62					
611.2						Tape depth 64.0'
	64				64.5'	Pull 14 From 63.8 to 68.8 Run 5.0 Rec 4.8 C.L. 0.2 Time 10:10-10:21
	66			96	Box 7	
607.0	68					

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Continued on sheet #5

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 675.0 **Hole No.** 39E

PROJECT Clemson Upper Diversion Dam | INSTALLATION Hartwell Lake | SHEET 5 OF 5 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
607.0	68	c	d	e	f	g
			Concrete (Continued)			Pull 14 (Continued)
606.2						Tape depth 68.8'
					Box 7	Pull 15 From 68.8 to 73.8 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:30-10:41
	70					
			Machine break 71.3'	100		
	72					
601.2						Tape depth 73.8'
	74					Pull 16 From 73.8 to 78.8 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:48-11:02
					75.5'	
	76			100	Box 8	
			Machine break 76.9'			
	78					
596.2			Concrete panel-earthen dike interface (0-1" deep) 78.8'-82.3'			Tape depth 78.3'
			Machine break 79.8'			Pull 17 From 78.8 to 83.8 Run 5.0 Rec 3.5 C.L. 1.5 Time 11:40-11:47 Note: changed from bottom discharge to face discharge bit at depth 78.8'
	80					
			Machine break 80.8'			
			Machine break 81.5'	70		
	82		Machine break 82.1'			
591.2					83.8'	Tape depth 82.7'
	84		Bottom of hole 83.7'			Note: 7-11-84 water level after drill not measurable due to standing water around hole 7-12-84 water level 24hrs after drill at 3.5' depth

C-139

Hole No. 42

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 6 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT HQ Diamond
2. LOCATION (Coordinates or Station) Sta. 12+75	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Froehling and Robertson Inc.	12. MANUFACTURER'S DESIGNATION OF DRILL CME55
4. HOLE NO. (As shown on drawing title and file number) 42	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED: — UNDISTURBED: —
5. NAME OF DRILLER Tommy Burnette	14. TOTAL NUMBER CORE BOXES 9
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER N/A
	16. DATE HOLE — STARTED 4-30-84 — COMPLETED 5-1-84
	17. ELEVATION TOP OF HOLE 674.2
7. THICKNESS OF OVERBURDEN	18. TOTAL CORE RECOVERY FOR BORING 94 %
8. DEPTH DRILLED INTO Concrete 86.2	19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)
9. TOTAL DEPTH OF HOLE 92.2	

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
674.2	0		Concrete			
			Machine break-0.4			Pull 1
			Machine break-1.0	100	Box 1	From 0.0 to 2.2
						Run 2.2
						Rec 2.2
						C.L. 0.0
			Machine break-2.0			Time 8:25-8:40
672.0	2					Tape depth 2.2'
						Pull 2
						From 2.2 to 7.2
						Run 5.0
						Rec 2.9
	4			58		C.L. 2.1
						Time 8:57-9:16
						Note: 100% return drill water, gray color. Changed drill bit at 2.2' depth
	6		Segregated aggregate zone 6.3'-7.7'			Tape depth 5.0'
667.0			Machine break-7.3'			Pull 3
						From 7.2 to 10.2
						Run 3.0
						Rec 5.2
	8			173		C.L. 0.0
						Time 9:32-9:36
						Note: Changed back to previous drill bit at 7.2' depth to increase recovery
664.0	10		Machine break-10.0		10.2	Tape depth 10.4'
						Pull 4
				95	Box 2	From 10.2 to 12.2
						Run 2.0
						Rec 1.9
662.0	12		Machine break-12.0			C.L. 0.1
						Time 9:42-9:46
			C-140			Tape depth 12.3'
				100		Pull 5
						From 12.2 to 17.2
660.2	14					Run 5.0
			Continued sheet #2			

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 674.2 **Hole No.** 42

PROJECT Clemson Upper Diversion Dam | INSTALLATION Hartwell Lake | SHEET 2 OF 6 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
660.2	14	c	d	e	f	g
			Concrete (Continued)		Box 2	Pull 5 (Continued) Rec 5.0 C.L. 0.0 Time 9:52-10:01
	16					
657.0						Tape depth 17.3'
	18			100		Pull 6 From 17.2 to 22.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:06-10:14
	20					
			Machine break-20.6		21.1'	
652.0	22				Box 3	Tape depth 22.3'
				100		Pull 7 From 22.2 to 27.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:20-10:30
	24					
	26					
647.0						Tape depth 27.3'
	28			100		Pull 8 From 27.2 to 32.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:35-10:45
	30					
			Machine break-30.9 C-141			
642.2	32				31.9'	
			Continued sheet #3			

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 674.2 | **Hole No.** 42

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 3 OF 6 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
642.2	32	c	d	e	f	g
642.0			Concrete (Continued)			Pull 8 (Continued) Tape depth 32.2'
	34		Loosely cemented aggregate zone 32.9'-36.6' (0-½" deep)	100	Box 4	Pull 9 From 32.2 to 37.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:51-11:02
	36					
637.0			Loosely cemented aggregate zone 37.2'-39.2' (0-½" deep)			Tape depth 37.2'
	38			102		Pull 10 From 37.2 to 42.2 Run 5.0 Rec 5.1 C.L. 0.0 Time 11:09-11:20
	40					
	42				42.3'	Tape depth 42.3'
632.0			Occasional aggregate voids (0-3/8" deep) 42.3'-43.3'			Pull 11 From 42.2 to 47.2 Run 5.0 Rec 4.9 C.L. 0.1 Time 11:29-11:41
	44			98	Box 5	
	46		Segregated aggregate zone 46.2'-48.0'			
627.0						Tape depth 47.2'
	48			100		Pull 12 From 47.2 to 52.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 12:37-12:51
			C-42			
624.2	50					

Continued sheet #4

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 674.2 | **Hole No.** 42

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 4 OF 6 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
624.2	50 b	c	d	e	f	g
			Concrete (Continued)			Pull 12 (Continued)
						Tape depth 52.2'
622.0	52					Pull 13 From 52.2 to 57.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 12:57-1:11
					53.3'	
	54			100	Box 6	
	56					
617.0						Tape depth 57.2'
						Pull 14 From 57.2 to 62.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:16-1:32
	58			100		
	60					
612.0	62					Tape depth 62.2'
						Pull 15 From 62.2 to 67.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:39-1:55
	64			100	64.2'	
					Box 7	
	66					
607.0			C-143			Tape depth 67.2'
						Pull 16
606.2	68					

Continued sheet #5

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 674.2	Hole No. 42
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 5 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
606.2	68		Concrete (Continued) Segregated aggregate zone 68.8'-70.8'		Box 7	Pull 16 (Continued) From 67.2 to 72.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:03-2:18
	70			100		
602.0	72					Tape depth 72.2'
						Pull 17 From 72.2 to 77.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:25-2:38
	74			100		
					75.2	
	76				Box 8	
597.0						Tape depth 77.2'
						Pull 18 From 77.2 to 82.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 8:18-8:32
	78			100		
	80					Tape depth 82.2'
						Pull 19 From 82.2 to 87.2 Run 5.0 Rec 4.4 C.L. 0.6 Time 8:41-8:56
592.0	82			88		
			Poorly cemented aggregate zone (0-3/8"deep) 82.8'-83.4'			Note: 100% return drill water, gray color brown color beginning depth 84.0'
	84		Concrete panel, earth interface (0-1"deep) 83.5'-86.2'	C-144		
			Machine break-85.5			
588.2	86					

Continued sheet #6

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 674.2 | **Hole No.** 42

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 6 OF 6 SHEETS

ELEVATION 588a.2	DEPTH 86b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. 86f.1	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Bottom of concrete 86.2' sand-clay bentonite contact material 86.2'-86.6'			Pull 19 (Continued)
587.0					Box 9	
	88					Pull 20 From 87.2 to 92.2 Run 5.0 Rec 0.0 C.L. 5.0 Time 9:01-9:11
				0		
	90					
582.0	92			92.2'		Tape depth 89.8'
			Bottom of hole-92.2'			Note: standing water around open hole end of drilling, water table depth not applicable
	94					

C-145

Hole No. 53

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 6 SHEETS

1. PROJECT: Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT: HQ Diamond
2. LOCATION (Coordinates or Station): Sta 15+53	11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
3. DRILLING AGENCY: Froehling and Robertson Inc.	12. MANUFACTURER'S DESIGNATION OF DRILL: CME 55
4. HOLE NO. (As shown on drawing title and file number): 53	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED: ; UNDISTURBED:
5. NAME OF DRILLER: Tommy Burnette	14. TOTAL NUMBER CORE BOXES: 9
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER: 634.8 (24hrs.)
	16. DATE HOLE: STARTED 4-25-84; COMPLETED 4-26-84
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE: 675.3
8. DEPTH DRILLED INTO: Concrete 90.3 ft.	18. TOTAL CORE RECOVERY FOR BORING: 96 %
9. TOTAL DEPTH OF HOLE: 98.0 ft.	19. SIGNATURE OF INSPECTOR: Nancy Rector (Engineer)

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
675.3	0		Concrete			Pull 1
			Loose aggregate-clay seam .5'-.7'			From 0.0 to 3.0
			Poorly cemented aggregate zone .7'-2.0' (0-½" deep)	93	Box 1	Run 3.0
						Rec 2.8
	2					C.L. 0.2
						Time 11:02-11:10
						Note: 100% return drill water-gray color-brown @ depth .5'-.7'
672.3						
672.0			Occasional aggregate voids 3.3'-4.4'	100		Tape depth 2.9'
	4					Pull 2
						From 3.0 to 3.3
						Run 0.3
				100		Rec 0.3
						C.L. 0.0
	6					Time 11:15-11:19
						Note: Drill tool stopped;pull drill bit and barrel
667.3	8		Machine break-7.9'			Pull 3
						From 3.3 to 8.0
						Run 4.7
						Rec 4.7
						C.L. 0.0
						Time 11:29-11:40
						Tape depth 8.0'
	10					Pull 4
				102		From 8.0 to 13.0
						Run 5.0
					11.2'	Rec 5.1
						C.L. 0.0
						Time 12:28-12:38
	12					
662.3			Machine break-12.8'			Tape depth 13.0'
			C-146		Box 2	Pull 5
661.3	14		Continued sheet #2			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.3	Hole No. 53
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 6 SHEETS

ELEVATION 661.3	DEPTH 14 b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)		Box 2	Pull 5 (Continued) From 13.0 to 18.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 12:43-12:53
			Machine break-15.3			
	16			100		
657.3	18					Tape depth 18.0'
						Pull 6 From 18.0 to 23.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 12:58-1:08
			Occasional aggregate voids 19.5'-22.4'	100		
	20					
	22				21.9'	
			Machine break-22.8			
652.3						Tape depth 23.0'
						Pull 7 From 23.0 to 28.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:14-1:25
	24			100	Box 3	
	26					
647.3	28					Tape depth 28.0'
						Pull 8 From 28.0 to 33.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:35-1:47
	30			100		
			Machine break-30.5			
			C-147			
643.3	32					
			Continued sheet #3			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.3	Hole No. 53
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 3 OF 6 SHEETS

ELEVATION 643.3	DEPTH 32	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)		32.6'	Pull 8 (Continued)
642.3						Tape depth 33.0'
	34			100	Box 4	Pull 9 From 33.0 to 38.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:51-2:06
	36					
637.3	38					Tape depth 38.0'
	40			100		Pull 10 From 38.0 to 43.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:11-2:26
	42					
632.3						Tape depth 43.0'
	44			96	43.5' Box 5	Pull 11 From 43.0 to 48.0 Run 5.0 Rec 4.8 C.L. 0.2 Time 2:33-2:47
	46					
627.3	48					Tape depth 47.9'
			C-148	104		Pull 12 From 48.0 to 53.0 Run 5.0 Rec 5.2 C.L. 0.0
625.3	50		Continued sheet #4			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.3	Hole No. 53
PROJECT Clemson Upper Division Dam	INSTALLATION Hartwell Lake	SHEET 4 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
625.3	50		Poorly cemented aggregate zone (0-½" deep) 50.1'-50.5'			Pull 12 (Continued) Time 2:54-3:08
			Concrete (Continued)		Box 5	
	52					
622.3					53.0'	Tape depth 53.0'
				100		Pull 13 From 53.0 to 58.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 8:25-8:44
	54				Box 6	
	56					
617.3	58					Tape depth 58.0'
				100		Pull 14 From 58.0 to 63.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 8:53-9:10
	60					
	62					
612.3						Tape depth 63.0'
					64.0'	Pull 15 From 63.0 to 68.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:18-9:37
	64			100	Box 7	
	66					
			C-149			
607.3	68					Tape depth 68.0'

Continued sheet #5

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 675.3 | **Hole No.** 53

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 5 OF 6 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
607.3	68	c	d	e	f	g
			Concrete (Continued)		Box 7	Pull 16 From 68.0 to 73.0 Run 5.0 Rec 4.9 C.L. 0.1 Time 9:46-10:06
	70			98		
	72					
602.3						Tape depth 72.9'
						Pull 17 From 73.0 to 78.0 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:34-10:45
	74				75.0'	
				102	Box 8	Note: Changed drill bits at depth 73.0'
	76					
						Tape depth 78.0'
597.3	78					Pull 18 From 78.0 to 83.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:56-11:08
	80		Machine break-80.1	100		
	82					
592.3						Tape depth 83.0'
						Pull 19 From 83.0 to 88.0 Run 5.0 Rec 4.8 C.L. 0.2 Time 11:16-11:31
	84			96		
			C-150		85.9'	
589.3	86		Continued sheet #6			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.3	Hole No. 53
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 6 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
589.3	86		Concrete (Continued)		Box 9	Pull 19 (Continued)
587.3	88					Tape depth 87.9
				78		Pull 20 From 88.0 to 93.0 Run 5.0 Rec 3.9 C.L. 1.1 Time 11:41-11:59
	90		30° Machine break 89.8'-90.0' 45° Sloping bottom of concrete 90.0'-90.3'			Note: Drill water 100% return gray color, then brown color at depth 91.0' fine sand in water
	92		Brown-gray-white fine to medium grained micaceous silty sand			Tape depth 92.5'
582.3			-grades coarser grained sand, weathered rock fragments			Pull 21 From 93.0 to 98.0 Run 5.0 Rec 2.4 C.L. 2.6 Time 1:57-2:11
	94		Gray-white coarse-medium-fine grained sand, with stratified brown clay layers	48		
	96					
577.3	98				98.0'	Tape depth 98.0'
			Bottom of hole-98.0'			Note: 4-26-84 water level after drilling 39.0 ft. 4-27-84 water level at 24 hrs., 40.5'

Hole No. 57

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 5 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT HQ Diamond
2. LOCATION (Coordinates or Station) Sta. 16+63	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Froehling and Robertson, Inc.	12. MANUFACTURER'S DESIGNATION OF DRILL CME 55
4. HOLE NO. (As shown on drawing title and file number) 57	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED N/A — UNDISTURBED N/A
5. NAME OF DRILLER Tommy Burnette	14. TOTAL NUMBER CORE BOXES 8
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER 628.6 (24 hours)
	16. DATE HOLE — STARTED 4-18-84 — COMPLETED 4-19-84
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE 675.9
8. DEPTH DRILLED INTO Concrete 73.6	18. TOTAL CORE RECOVERY FOR BORING 96 %
9. TOTAL DEPTH OF HOLE 83.4	19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
675.9	0		Concrete			
				100		Pull 1 From 0.0 to 3.4 Run 3.4 Rec 3.4 C.L. 0.0 Time 1:46-2:08
	2		Machine break-1.8'		Box 1	
			Machine break-3.0'			Note: 100% drill water return-gray color
672.5						
	4		Machine break-4.5'			Pull 2 From 3.4 to 8.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:16-2:29
			Machine break-5.4'	100		
	6					
	8					
667.5						
						Pull 3 From 8.4 to 13.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:30-2:46
	10			100	10.6	
	12				Box 2	
662.5			C-152			Tape depth- 13.5'
661.9	14					Pull 4
			Continued Sheet #2			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.9	Hole No. 57
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 5 SHEETS

ELEVATION 661a.9	DEPTH 14b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)			Pull 4 (Continued)
						From 13.4 to 18.4
						Run 5.0
				100		Rec 5.0
						C.L. 0.0
	16				Box 2	Time 2:56-3:10
			Machine break-17.0'			
	18					
657.5						Tape depth 18.5
						Pull 5
						From 18.4 to 23.4
			Machine break-19.7'			Run 5.0
	20					Rec 5.0
						C.L. 0.0
				100		Time 3:17-3:34
					21.6'	
	22		Honeycomb pocket (½" deep) 21.9'-22.0'			
652.5						Tape depth 23.4
						Pull 6
	24					From 23.4 to 28.4
					Box 3	Run 5.0
						Rec 4.0
						C.L. 0.1
				98		Time 8:12-8:38
	26					
	28					
647.5						Tape depth 28.4'
						Pull 7
						From 28.4 to 33.4
						Run 5.0
						Rec 5.0
	30			100		C.L. 0.0
						Time 8:43-9:02
			C-153			
643.9	32					
			Continued Sheet #3			

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 675.9 | **Hole No.** 57

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 3 OF 5 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
643.9	32 b	c	d	e	f	g
					32.2'	
643.7			Concrete (Continued)			Pull 7 (Continued)
						Tape depth 33.4'
642.5					Box 4	Pull 8 From 33.4 to 38.4 Run 5.0 Rec 5.1 C.L. 0.0 Time 9:08-9:24
	34					
			Machine break-35.1'	102		
	36					
	38		Machine break-38.0'			
637.5						Tape depth 38.4'
						Pull 9 From 38.4 to 43.4 Run 5.0 Rec 4.9 C.L. 0.1 Time 9:33-9:52
	40			98		
	42					
					43.1'	
632.5						Tape depth 43.4'
						Pull 10 From 43.4' to 48.4 Run 5.0 Rec 5.1 C.L. 0.0 Time 9:58-10:13
	44			102	Box 5	
	46		Machine break-45.9'			
	48					
627.5						Tape depth 48.4'
			C-154			Pull 11 From 48.4 to 53.4 Run 5.0 Rec 5.0
625.9	50					

Continued sheet #4

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 675.9 **Hole No.** 57

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 4 OF 5 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
625.9	50	c	d	e	f	g
			Concrete (Continued)			Pull 11 (Continued)
					Box 5	C.L. 0.0
				100		Time 10:20-10:35
	52					
622.5						Tape depth 53.4'
					53.8'	Pull 12
	54					From 53.4 to 58.4
						Run 5.0
						Rec 5.0
					Box 6	C.L. 0.0
				100		Time 12:07-12:23
	56					
	58					
617.5						Tape depth 58.4'
						Pull 13
						From 58.4 to 63.4
						Run 5.0
	60					Rec 5.0
						C.L. 0.0
				100		Time 12:30-12:49
	62		Machine break-62.2'			
612.5						Tape depth 63.4'
						Pull 14
	64					From 63.4 to 68.4
						Run 5.0
					64.9'	Rec 4.9
				98	Box 7	C.L. 0.1
						Time 12:56-1:10
	66					
			2-55			
607.9	68					
			Continued sheet #5			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.9	Hole No. 57
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 5 OF 5 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
607.5			Concrete (Continued)			Pull 14 (Continued) Tape depth 68.3'
	70			102	Box 7	Pull 15 From 68.4 to 73.4 Run 5.0 Rec 5.1 C.L. 0.0 Time 1:30-1:42
	72		Machine break-72.1'			
602.5			Concrete panel-earth interface (0 -2"deep) 73.6'-83.4'			Tape depth 73.4
	74			90	75.7'	Pull 16 From 73.4 to 78.4 Run 5.0 Rec 4.5 C.L. 0.5 Time 1:50-2:02 Note: 100% return drill water-brown color. Drill out of panel at 73.6'
	76					
597.5	78				Box 8	Tape depth 78.2'
	80			38		Pull 17 From 78.4 to 83.4 Run 5.0 Rec 1.9 C.L. 3.1 Time 2:17-2:30 Note: 100% return drill water-brown color
	82					
592.5						Tape depth 82.8'
	84		Bottom of hole-83.4'			Note: 4-23-84 water level at 24 hours 47.3'

C-156

Hole No. 57-A

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 6 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT HQ Diamond
2. LOCATION (Coordinates or Station) STA. 16+64	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Froehling and Robertson	12. MANUFACTURER'S DESIGNATION OF DRILL CME 55
4. HOLE NO. (As shown on drawing title and file number) 57-A	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED N/A — UNDISTURBED N/A
5. NAME OF DRILLER Tommy Burnette	14. TOTAL NUMBER CORE BOXES 9
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER 637.4 (24 hrs.)
	16. DATE HOLE — STARTED 4/23/84 — COMPLETED 4/25/84
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE 675.9
8. DEPTH DRILLED INTO Concrete 90.8'	18. TOTAL CORE RECOVERY FOR BORING 94 %
9. TOTAL DEPTH OF HOLE 98.4	19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)

ELEVATION 675.9	DEPTH 0 b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Machine break-0.4'			Pull 1
			Machine break-0.6'			From 0.0 to 3.4
			Concrete	12		Run 3.4
						Rec 0.4
						C.L. 3.0
	2				Box 1	Time 11:05-11:30
			Machine break-2.6'			Note: Chisel 0.2 into conc.-100% return drill water, gray color
672.5			Machine break-3.4'			Tape depth 0.8'
	4					Pull 2
			Machine break-4.9'			From 3.4 to 6.2
						Run 2.8
			Machine break-5.7'	196		Rec 5.5
						C.L. 0.0
	6					Time 11:51-12:00
669.7						Tape depth 6.1'
			Machine break-7.3'			Pull 3
			Machine break-7.7'			From 6.2 to 8.4
				91		Run 2.2
	8					Rec 2.0
667.5						C.L. 0.2
						Time 1:15-1:22
						Tape depth 8.2'
	10					Pull 4
						From 8.4 to 13.4
						Run 5.0
					10.9'	Rec 5.2
				104		C.L. 0.0
					Box 2	Time 1:40-1:50
	12					Note: Change drill bit to reduce machine breaks
			C-157			
662.5						Tape depth 13.4
						Pull 5
661.9	14					
			Continued Sheet #2			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.9	Hole No. 57-A
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 2 OF 6 SHEETS

ELEVATION 661.9	DEPTH 14	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)			
	16			100	Box 2	Pull 5 (Continued) From 13.4 to 18.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:54-2:06
657.5	18					Tape depth 18.4'
	20			100		Pull 6 From 18.4 to 23.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:10-2:20
	22		Machine break-22.1		22.1'	
652.5						Tape depth 23.4'
	24			100	Box 3	Pull 7 From 23.4 to 28.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:25-2:34
	26		Machine break-26.4			
647.5	28					Tape depth 28.4'
	30			98		Pull 8 From 28.4 to 33.4 Run 5.0 Rec 4.9 C.L. 0.1 Time 2:40-2:52
643.9	32					

C-158

Continued Sheet #3

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.9	Hole No. 57-A
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 3 OF 6 SHEETS

ELEVATION 643.9	DEPTH 32 b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)		Box 3 33.0'	Pull 8 (Continued)
642.5						Tape depth 33.3'
	34			100	Box 4	Pull 9 From 33.4 to 38.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:56-3:10
	35					
	38					
637.5						Tape depth 38.3'
	40			102		Pull 10 From 38.4 to 43 4 Run 5.0 Rec 5.1 C.L. 0.0 Time 3:21-3:32
			Machine break 41.7			
	42					
632.5					43.4'	Tape depth 43.4'
	44			100	Box 5	Pull 11 From 43.4 to 48.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:00-9:15
	46					
	48					
627.5						Tape depth 48.4
			C-159			Pull 12
625.9	50		Continued sheet #4			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.9	Hole No. 57-A
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 6 OF 4 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
625.9	50	c	d	e	f	g
			Concrete (Continued)	98	Box 5	Pull 12 (Continued) From 48.4 to 53.4 Run 5.0 Rec 4.9 C.L. 0.1 Time 9:21-9:34
	52					
622.5						Tape depth 53.3'
	54			102	54.5'	Pull 13 From 53.4 to 58.4 Run 5.0 Rec 5.1 C.L. 0.0 Time 9:40-9:54
	56		Machine break-56.3		Box 6	
	58					
617.5						Tape depth 58.4
	60			100		Pull 14 From 58.4 to 63.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:01-10:13
	62		Machine break-62.1			
612.5						Tape depth 63.4'
	64			100	65.4'	Pull 15 From 63.4 to 68.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:19-10:32
	66				Box 7	
607.9	68		Continued sheet #5			

C-160

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.9	Hole No. 57-A
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 5 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Pull 15 (Continued)
607.5			Concrete (Continued)			Tape depth 68.4'
					Box 7	Pull 16 From 68.4 to 73.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:41-10:54
	70			100		
	72					
602.5						Tape depth 73.4'
	74			100		Pull 17 From 73.4 to 78.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:02-11:16
	76				76.4'	
	78		Machine break-77.9			
597.5					Box 8	Tape depth 78.4'
				100		Pull 18 From 78.4 to 83.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:24-11:40
	80					
	82					
592.5						Tape depth 83.4'
	84		C-161	100		Pull 19 From 83.4 to 88.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:48-1200
			Honeycomb(½"deep)85.1'			
589.9	86		Poorly cemented aggregate zone 85.6'-87.9' (0-½")			
			Continued sheet #6			

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 675.9 **Hole No.** 57-A

PROJECT Clemson Upper Diversion Dam | INSTALLATION Hartwell Lake | SHEET 6 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)		Box 8	Pull 19 (Continued)
			Machine break-87.1		87.1'	
			Poorly cemented aggregate zone 85.6'-87.9' (0-½")			
587.5	88					Tape depth 88.4'
			Poorly cemented aggregate zone 89.0'-90.8' (0-½")	100	Box 9	Pull 20 From 88.4 to 90.1 Run 1.7 Rec 1.7 C.L. 0.0 Time 12:10-12:15 Tape depth 90.1
585.8	90					
			Bottom of concrete 90.8' Clay-Bentonite contact seam 90.8'-91.4'	70		Pull 21 From 90.1 to 93.4 Run 3.3 Rec 2.3 C.L. 1.0 Time 8:52-8:57
	92		Loose aggregate, clay and sand 91.4'-92.4'			
582.5						Note: 100% return drill water-brown color, sandy, Tape depth 93.4'
	94					
				0		Pull 22 From 93.4 to 98.4 Run 5.0 Rec 0.0 C.L. 5.0 Time 9:13-9:24
	96					
						Note: 100% return of drill water, brown color, sandy
	98				98.4'	Tape depth 97.9'
577.5			Bottom of hole 98.4'			
						Note: 4-25-84 water level after drilling 35.5' 4-26-84 water level at 24hrs. 38.5'

C-162

Hole No. 60

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 6 SHEETS

1. PROJECT Clemson Upper Diversion Dam	10. SIZE AND TYPE OF BIT HQ Diamond
2. LOCATION (Coordinates or Station) Sta. 17+37.5	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Froehling and Robertson Inc.	12. MANUFACTURER'S DESIGNATION OF DRILL CME 55
4. HOLE NO. (As shown on drawing title and file number) 60	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED ; UNDISTURBED
5. NAME OF DRILLER Tommy Burnette	14. TOTAL NUMBER CORE BOXES 9
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER 641.2 (24 hrs.)
	16. DATE HOLE: STARTED 4-17-84; COMPLETED 4-18-84
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE 675.7
8. DEPTH DRILLED INTO ~~ROCK~~ Concrete 91.5'	18. TOTAL CORE RECOVERY FOR BORING 93 %
9. TOTAL DEPTH OF HOLE 98.1'	19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
675.7	0		Concrete	97		Pull 1 From 0.0 to 3.1 Run 3.1 Rec 3.0 C.L. 0.1 Time 9:55-10:20
	2					
672.6				100	Box 1	Pull 2 From 3.1 to 8.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:26-10:36
	4					
	6					
			Poorly cemented, loose aggregate zone 7.3'-7.6'			
667.6	8					Pull 3 From 8.1 to 13.1 Run 5.0 Rec 4.9 C.L. 0.1 Time 10:40-10:50
			Clay-Bentonite seam 8.7'-8.8'			
	10		Clay-Bentonite seam 9.8'-9.9' Segregated Zone 9.9'-10.3'	98	10.3 Box 2	
	12					
62.6			C-163			
						Pull 4
661.7	14		Continued on Sheet #2			

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 675.7 Hole No. 60

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 2 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Concrete (Continued)			Pull 4 (Continued) From 13.1 to 18.1 Run 5.0 Rec 4.9 C.L. 0.1 Time 10:53-11:01
	16			98	Box 2	
657.6	18					
			Clay-Bentonite seam 18.7'-18.8'	100		Pull 5 From 18.1 to 23.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:05-1:20
	20				20.3'	
			Segregated zone 21.3'-22.1'			Note: Down time for 5 min. during drilling to seal pump leak.
	22					
652.6						Pull 6 From 23.1 to 28.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:26-1:38
	24				Box 3	
	26			100		
647.6	28					
				100		Pull 7 From 28.1 to 33.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:43-1:54
	30					
			C-164		30.9'	
					Box 4	
643.7	32		Continued Sheet #3			

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 675.7 **Hole No.** 60

PROJECT: Clemson Upper Diversion Dam | INSTALLATION: Hartwell Lake | SHEET 3 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
643.7	32					
642.6			Concrete (Continued)			Pull 7 (Continued)
	34				Box 4	Pull 8 From 33.1 to 38.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:00-2:10
	36			100		
637.6	38					Pull 9 From 38.1 to 43.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:16-2:28
	40			100		
	42		Clay-Bentonite seam 42.0'-42.2'		41.8'	
632.6						Pull 10 From 43.1-48.1 Run 5.0 Rec 4.9 C.L. 0.1 Time 2:33-2:43
	44				Box 5	
	46			98		
627.6	48					
			C-165	100		Pull 11 From 48.1 to 53.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:46-3:00
625.7	50		Continued Sheet #4			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.7	Hole No. 60
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 4 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
625.7	50		Concrete (Continued)		Box 5	Pull 11 (Continued)
	52				52.4'	
622.6						
	54					Pull 12 From 53.1 to 58.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 3:08-3:13
	56			100	Box 6	
617.6	58					
	60					Pull 13 From 58.1 to 63.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 3:25-3:37
	62			100		
612.6					63.1'	
	64					Pull 14 From 63.1 to 68.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 3:47-4:01
	66			100	Box 7	
			C-166			
607.7	68		Continued Sheet #5			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.7	Hole No. 60
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 5 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
607.6			Concrete (Continued)			Pull 14 (Continued)
				100	Box 7	Pull 15 From 68.1 to 73.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 8:40-8:57
	70					
	72					
602.6				100	74.1 Box 8	Pull 16 From 73.1 to 78.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:35-9:52
	74					
	76					
597.6	78			100		Pull 17 From 78.1 to 83.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:30-9:49
	80					
	82					
592.6					85.0 Box 9	Pull 18 From 83.1 to 88.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:02-10:20
	84		C-167			
589.7	86		Continued Sheet #6			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 675.7	Hole No. 60
PROJECT Clemson Upper Diversion Dam	INSTALLATION Hartwell Lake	SHEET 6 OF 6 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
589.7	86	c	d	e	f	g
			Concrete (Continued)			Pull 18 (Continued)
587.6	88				Box 9	
				100		Pull 19 From 88.1 to 91.5 Run 3.4 Rec 3.4 C.L. 0.0 Time 10:32-10:46 Note: Tool dropped 0.1' at 91.5'
	90					
584.2			Bottom of concrete 91.5'			Pull 20 From 91.5 to 93.1 Run 1.6 Rec 0 C.L. 1.6 Time 11:00-11:05
	92			0		
582.6						
	94			0		Note: Drill water-100% return, brown color, fine sand in water
	96					Pull 21 From 93.1 to 98.1 Run 5.0 Rec 0 C.L. 5.0 Time 11:10-11:25
577.6	98				98.1'	Note: Drill water-100% return, brown color, fine sand in water
			Bottom of Hole: 98.1'			Note: 4-18-84 water level after drilling 80.4' 4-19-84 water level at 24 hours 84.5'

C-168

REHABILITATION OF CLEMSON UPPER DIVERSION DAM

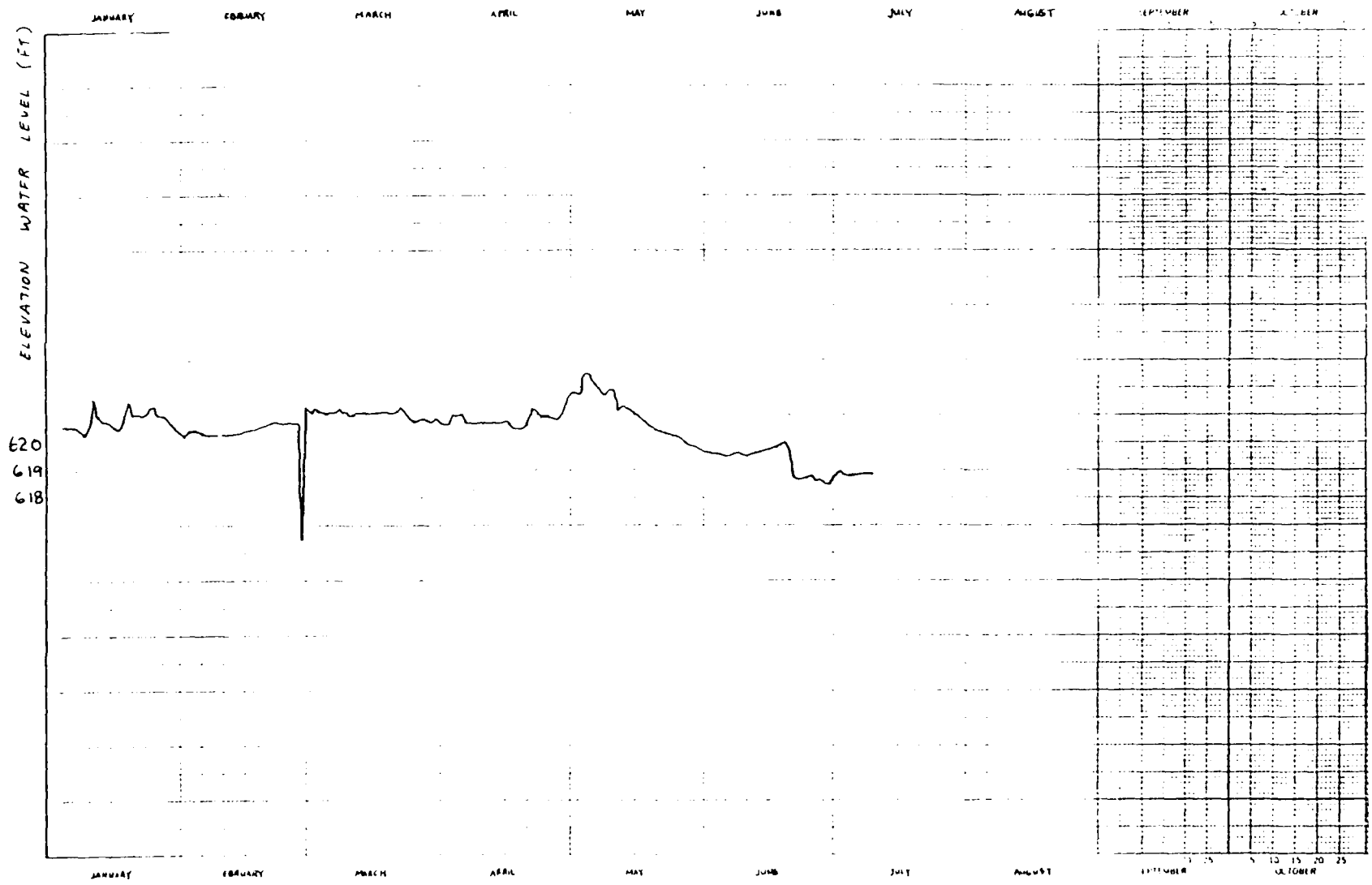
CONSTRUCTION FOUNDATION REPORT

APPENDIX D

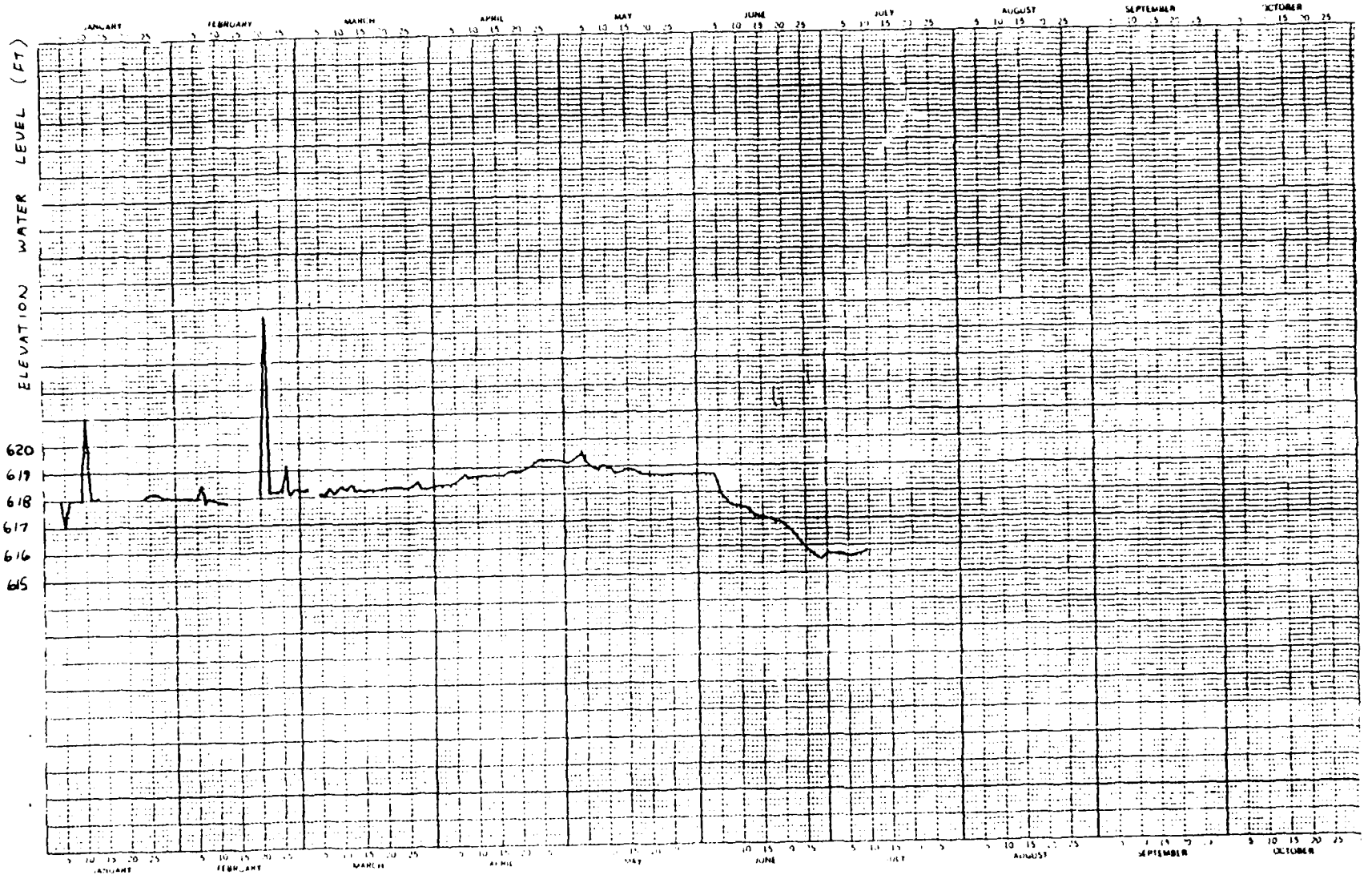
Piezometer Plots

UAP 1

1984


JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
ELEVATION WATER LEVEL (FT)
620
619
618
5 10 15 20 25

UAP 2 1984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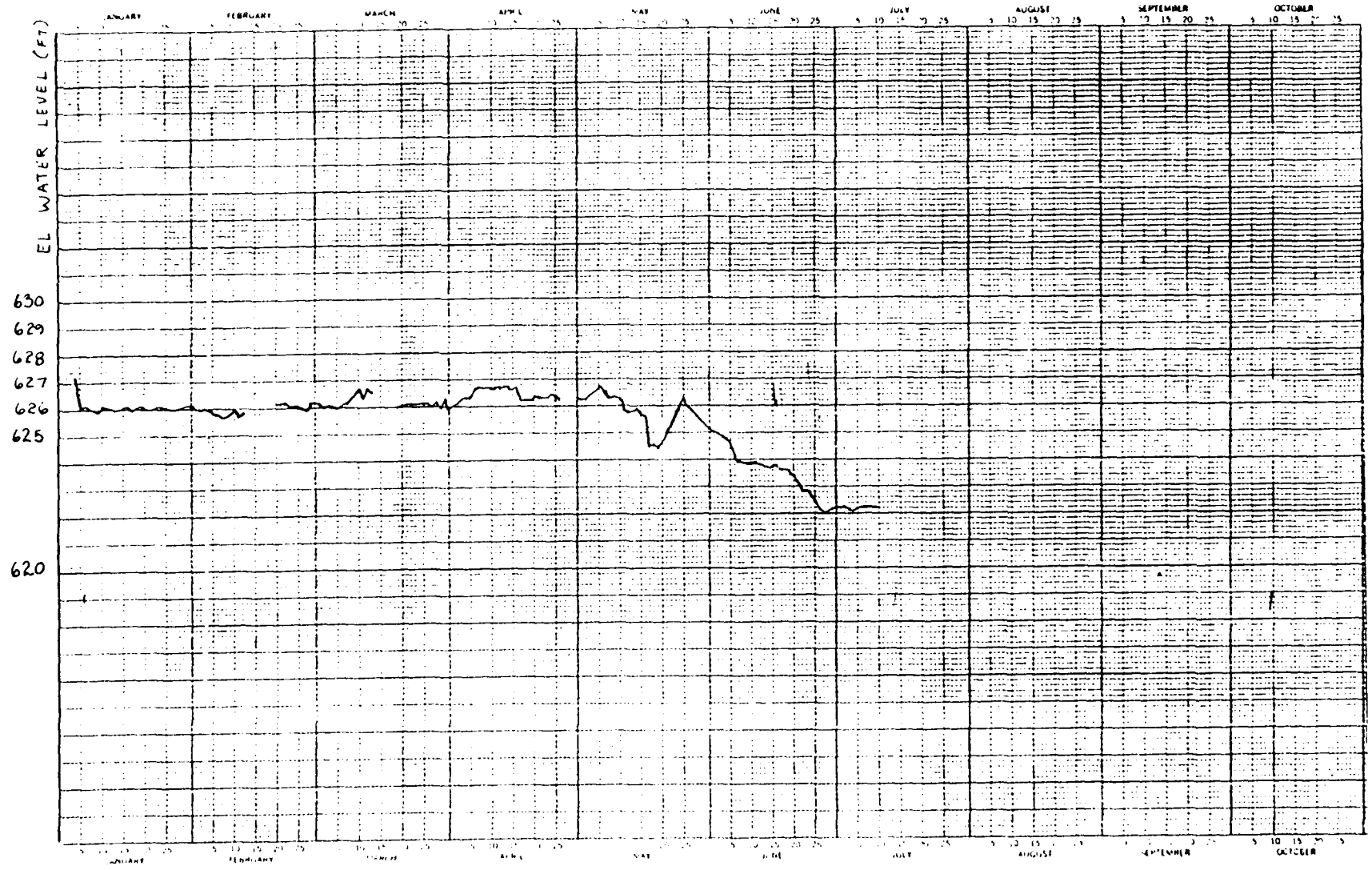
620
619
618
617
616
615
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

UAP 3

1984

EL WATER LEVEL (FT)
625
624
623
622
621
620
615
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

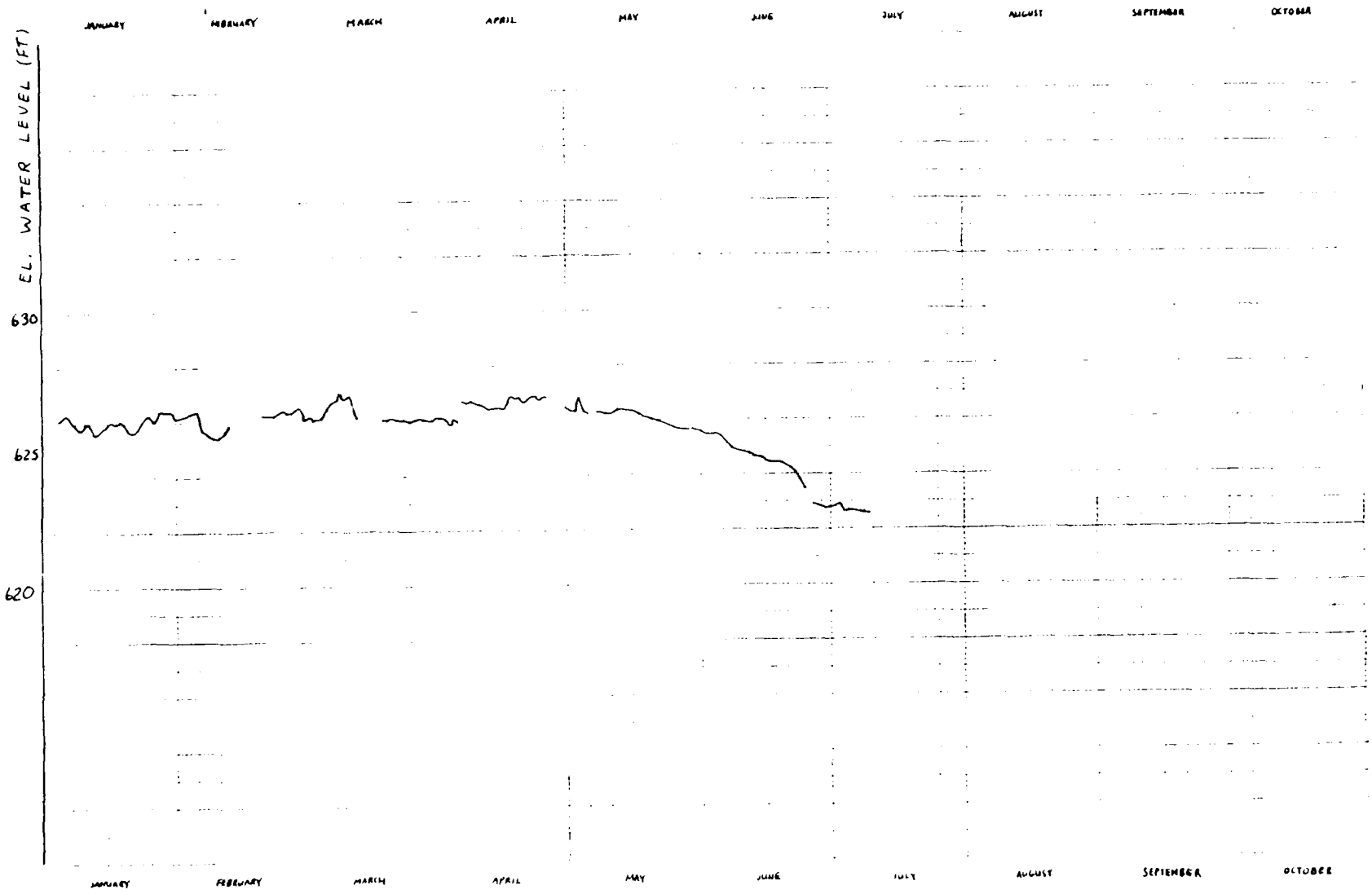
PC 202 1984



47 2812

K+E 1 YEAR BY 1 DAY X 100 DIVISIONS

PE 202 1984


JANUARY
FEBRUARY
MARCH
APRIL
MAY
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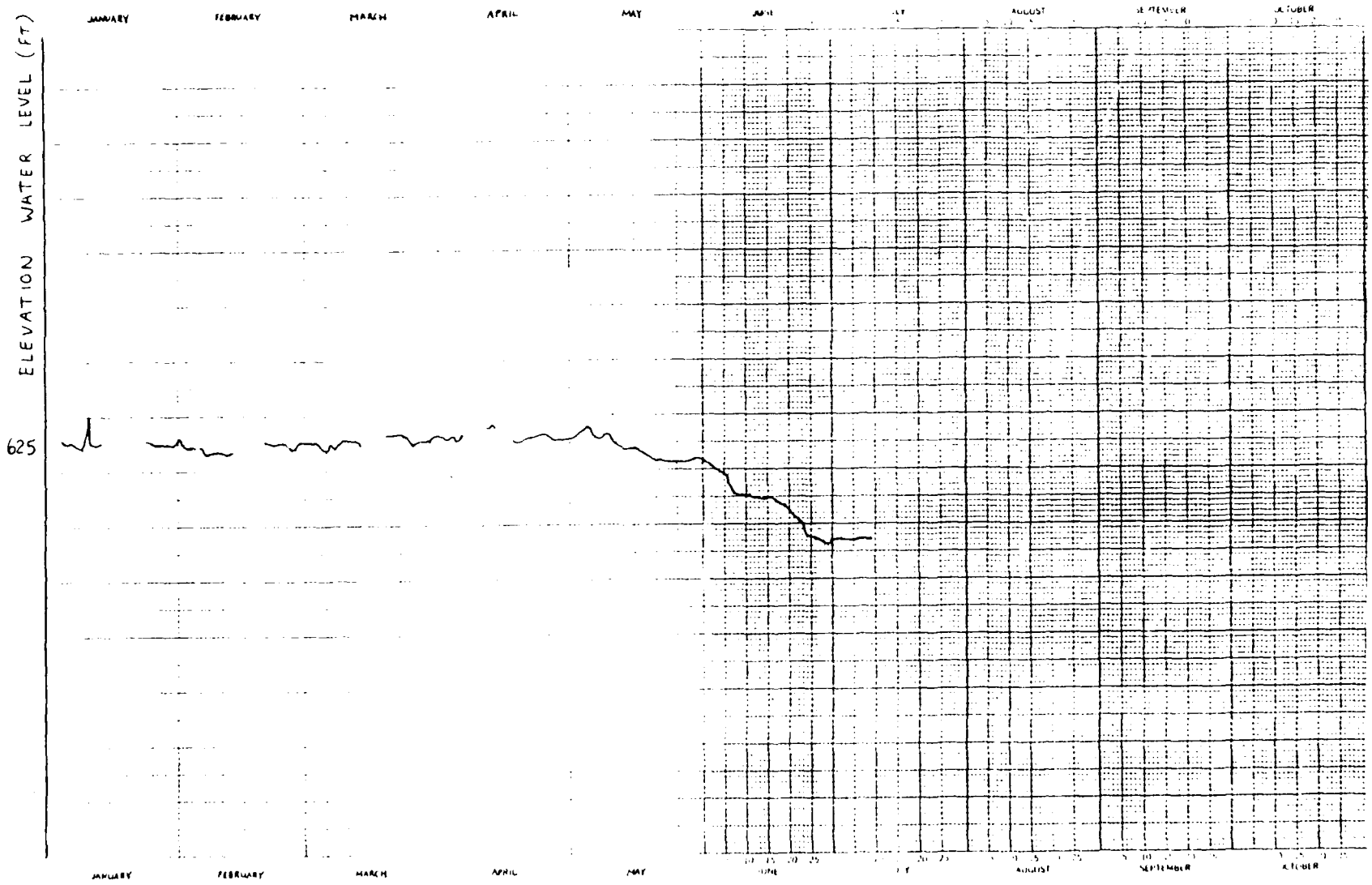
JULY
AUGUST
SEPTEMBER
OCTOBER
EL. WATER LEVEL (FT)
630
625
620

PF 202 1984


ELEVATION WATER LEVEL (FT)
625
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

PC 203 1984

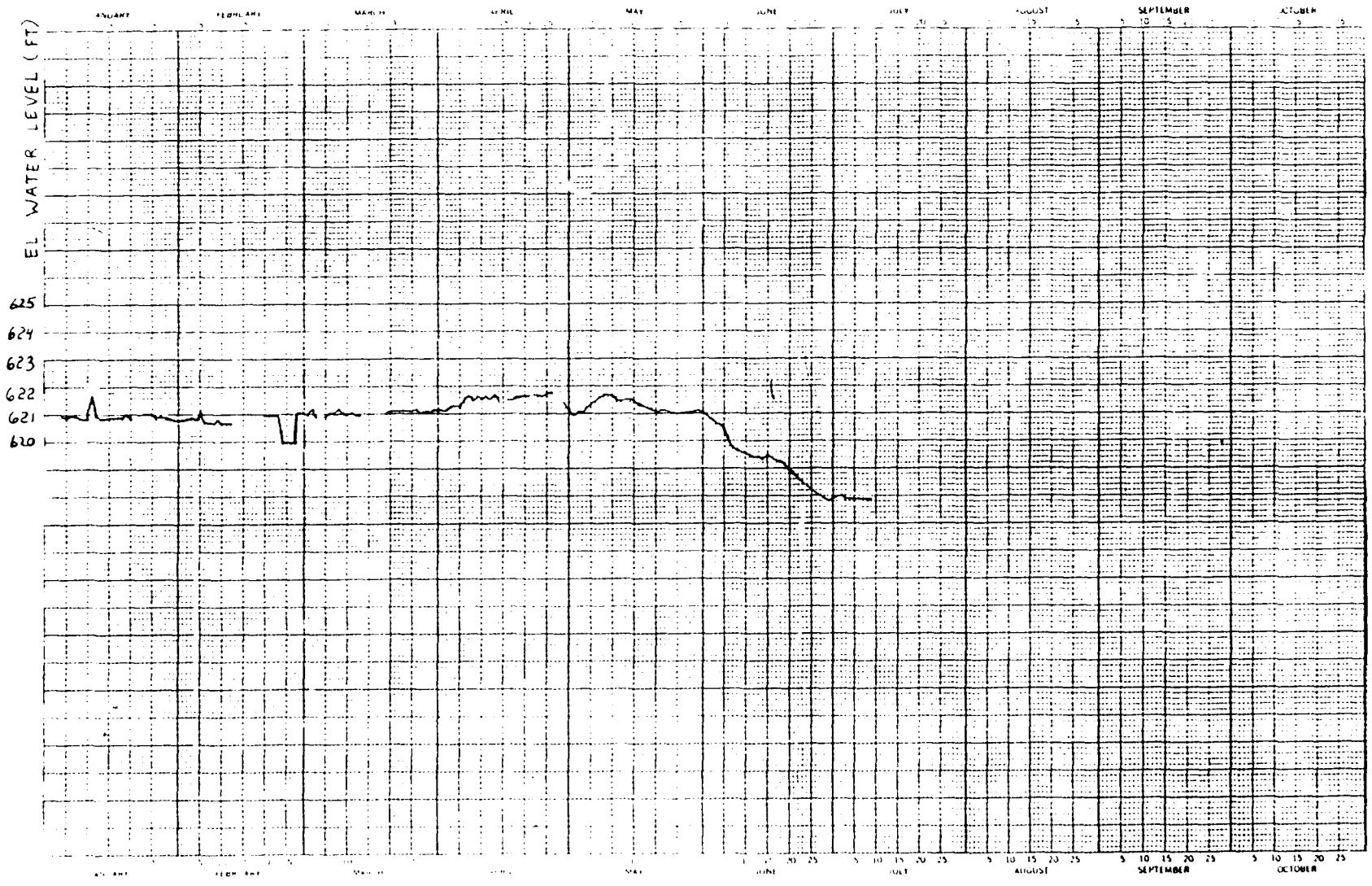
K+E 1 YEAR BY DAYS X 15 DIVISIONS
KEUFFEL & ESSER CO.

PE 203

1984

K+E 1 YEAR BY DAYS X 1 IN. DIVISIONS
KEUFFEL & ESSER CO.

PF 203 1984


EL WATER LEVEL (FT)
625
624
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JANUARY
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MARCH
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JUNE
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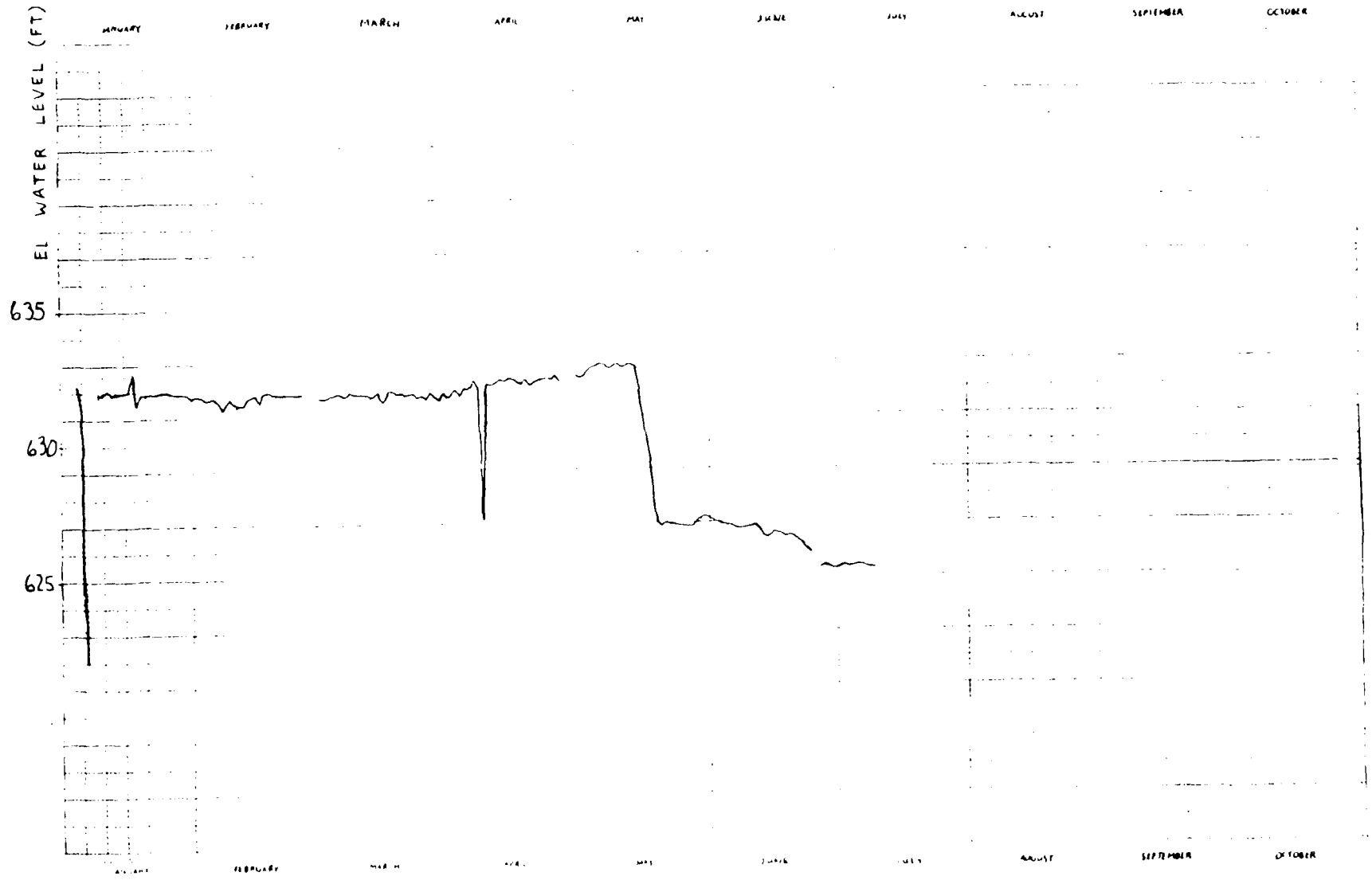
AUGUST
SEPTEMBER
OCTOBER

PC 204 1984


EL WATER LEVEL (FT)
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PL 201

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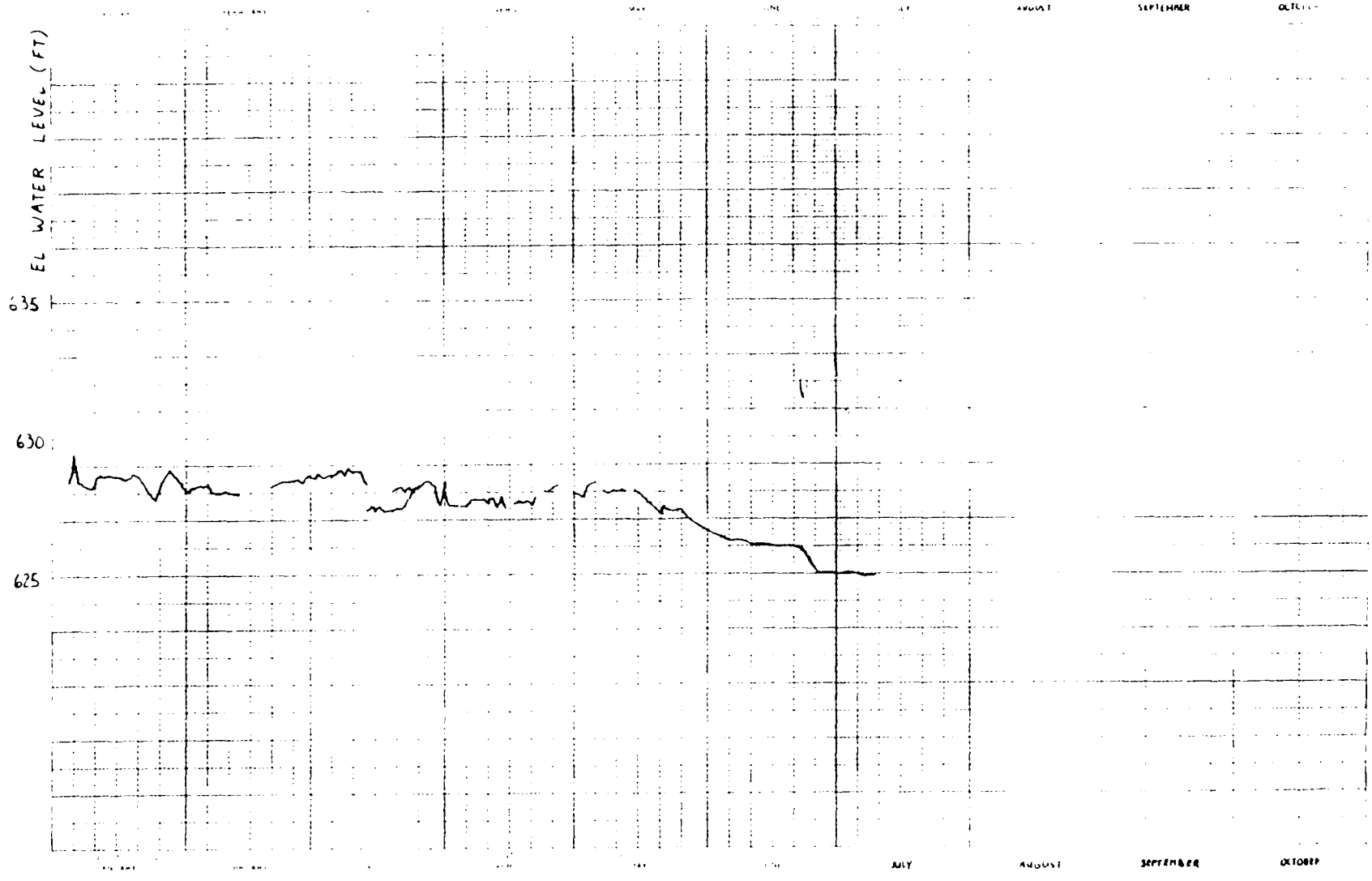

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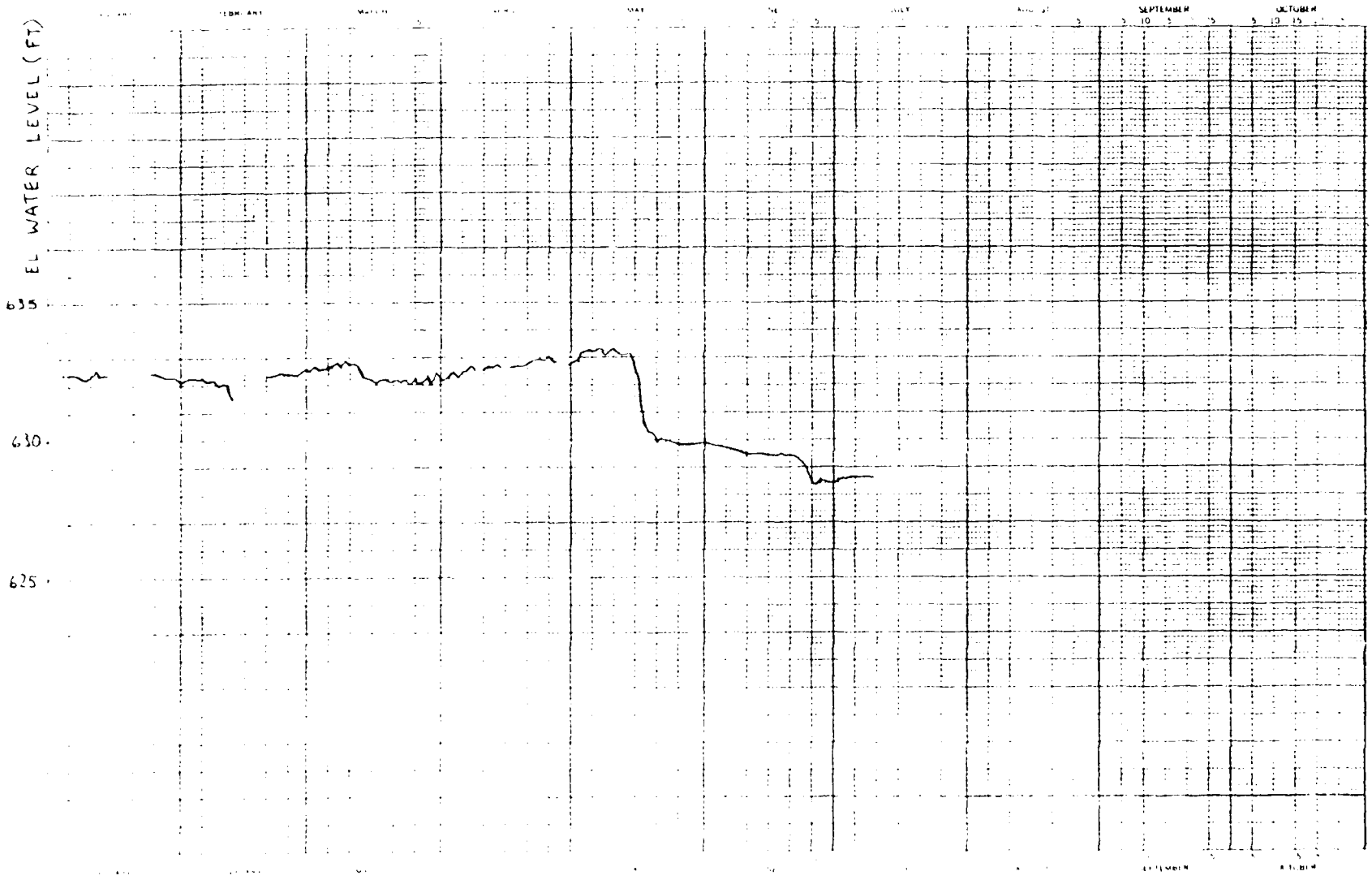

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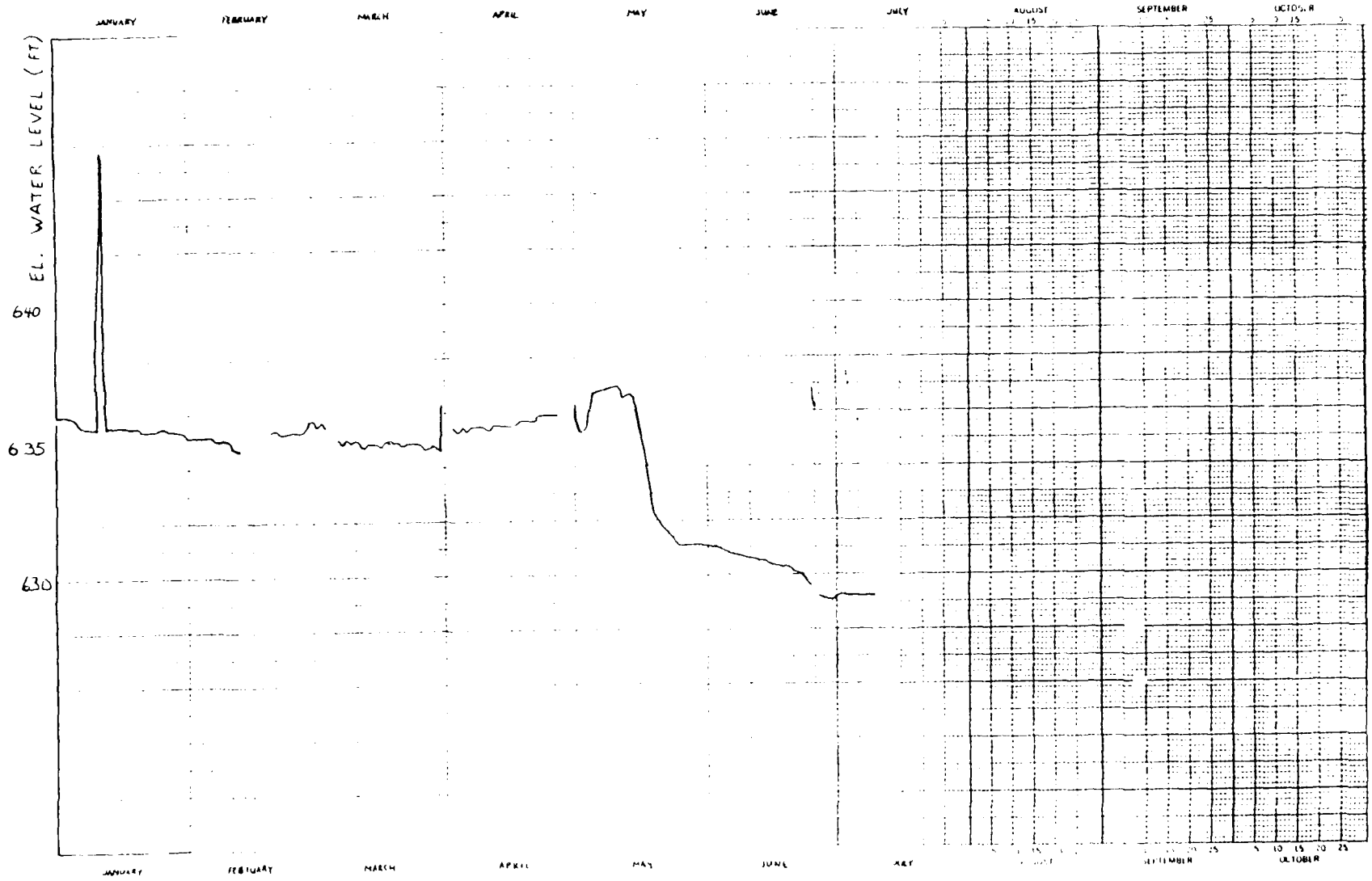
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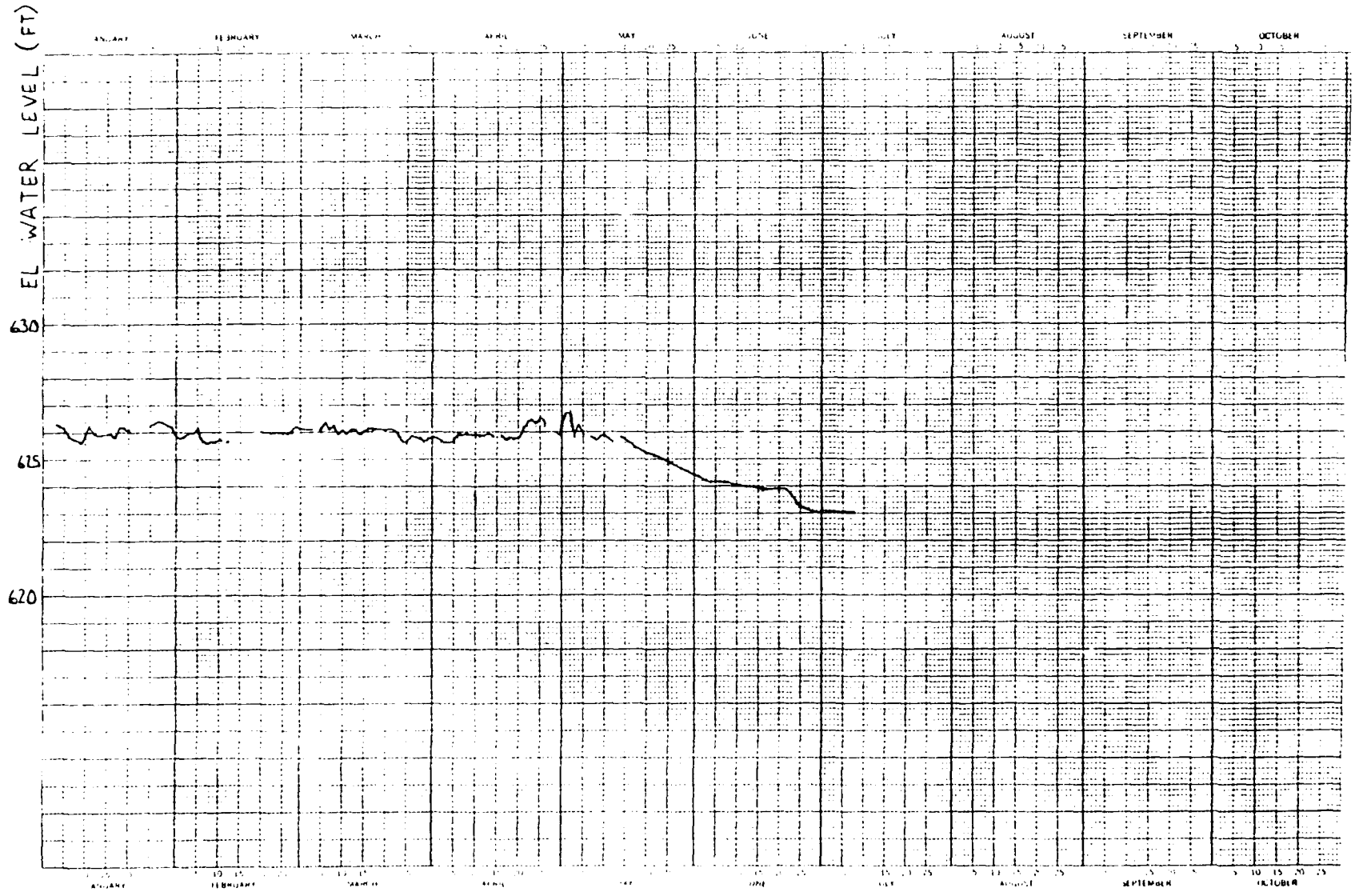
PE 206 1984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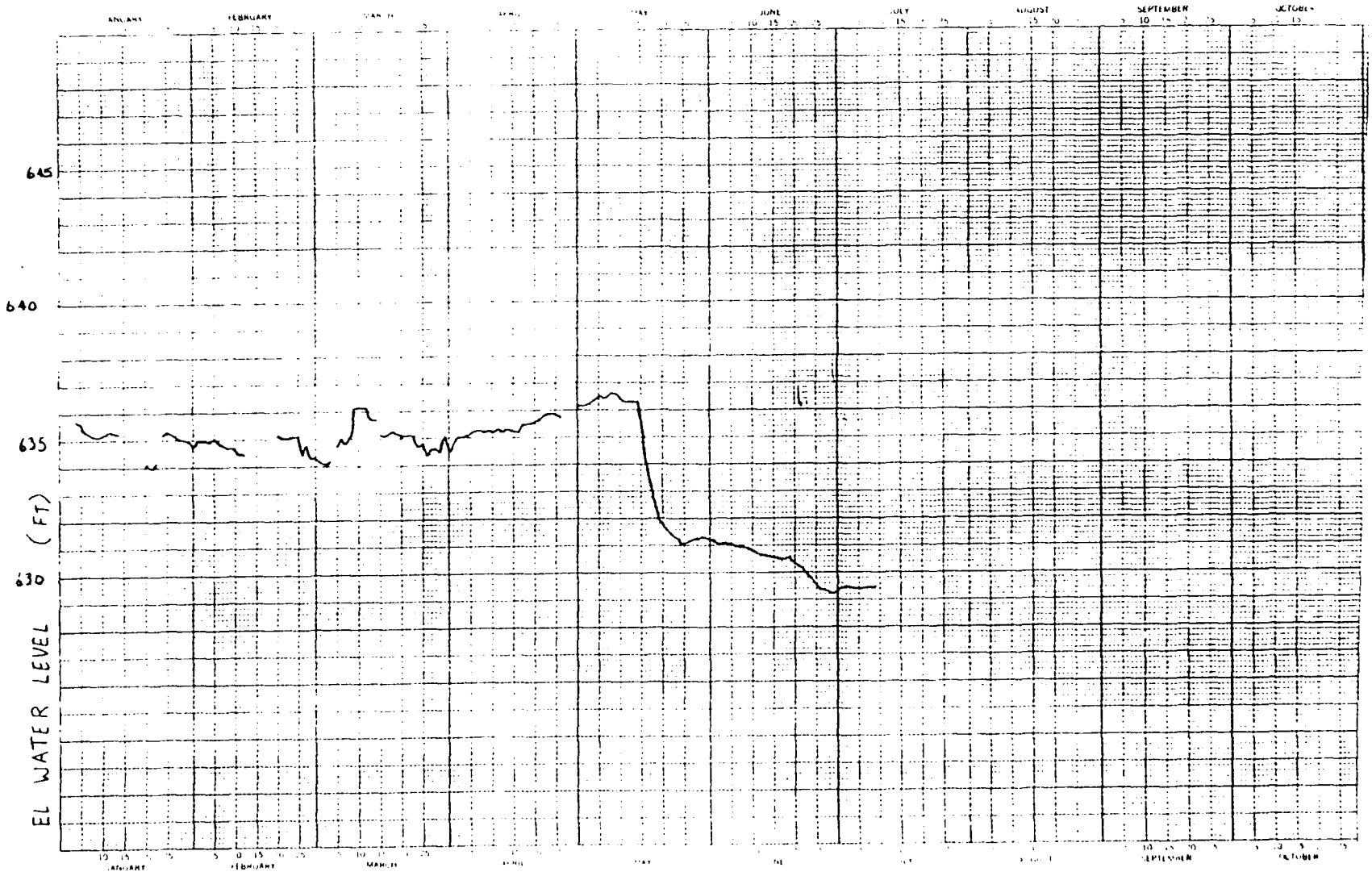
SEPTEMBER
OCTOBER

PF 206 1954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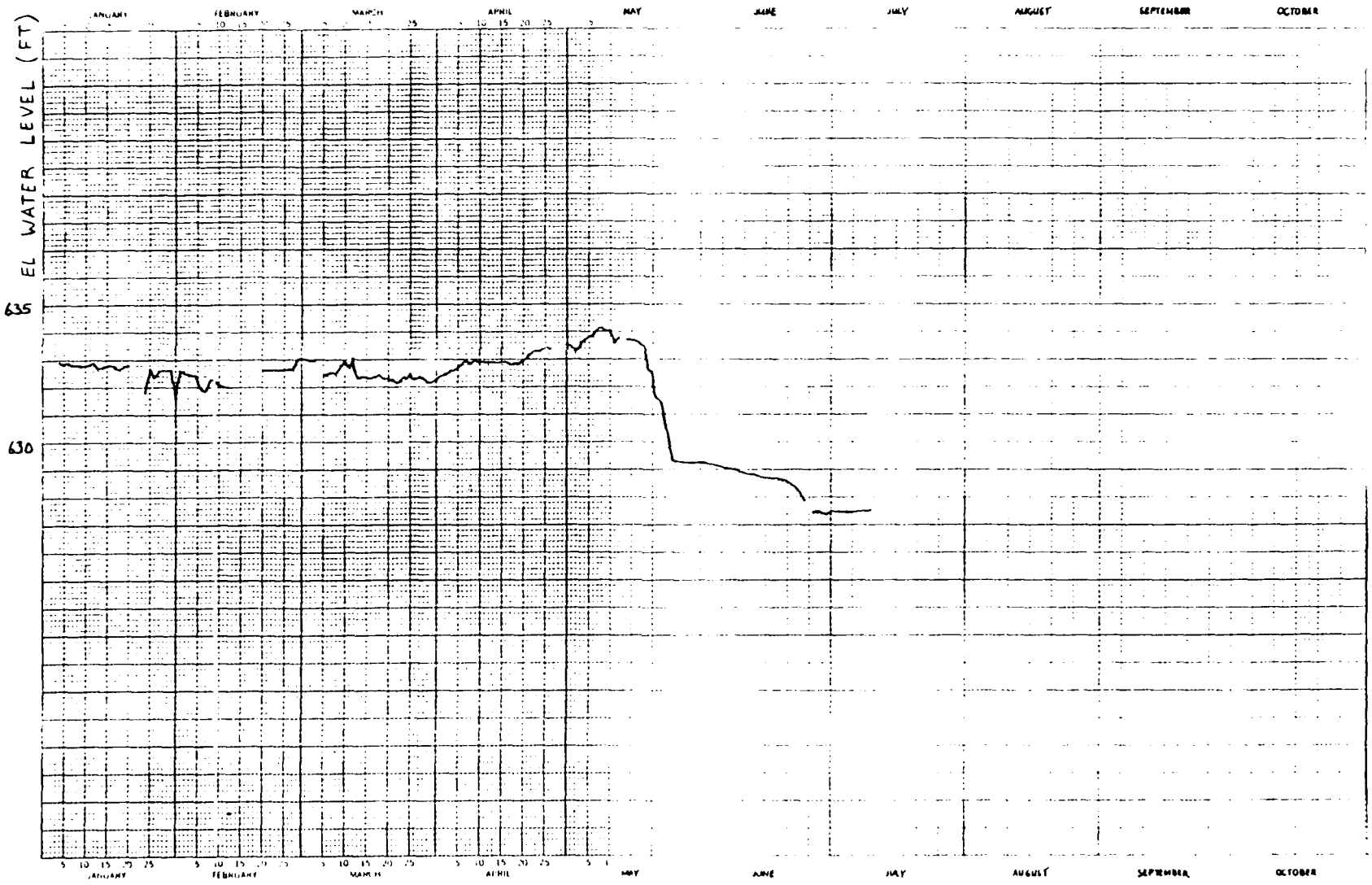
EL WATER LEVEL (FT)

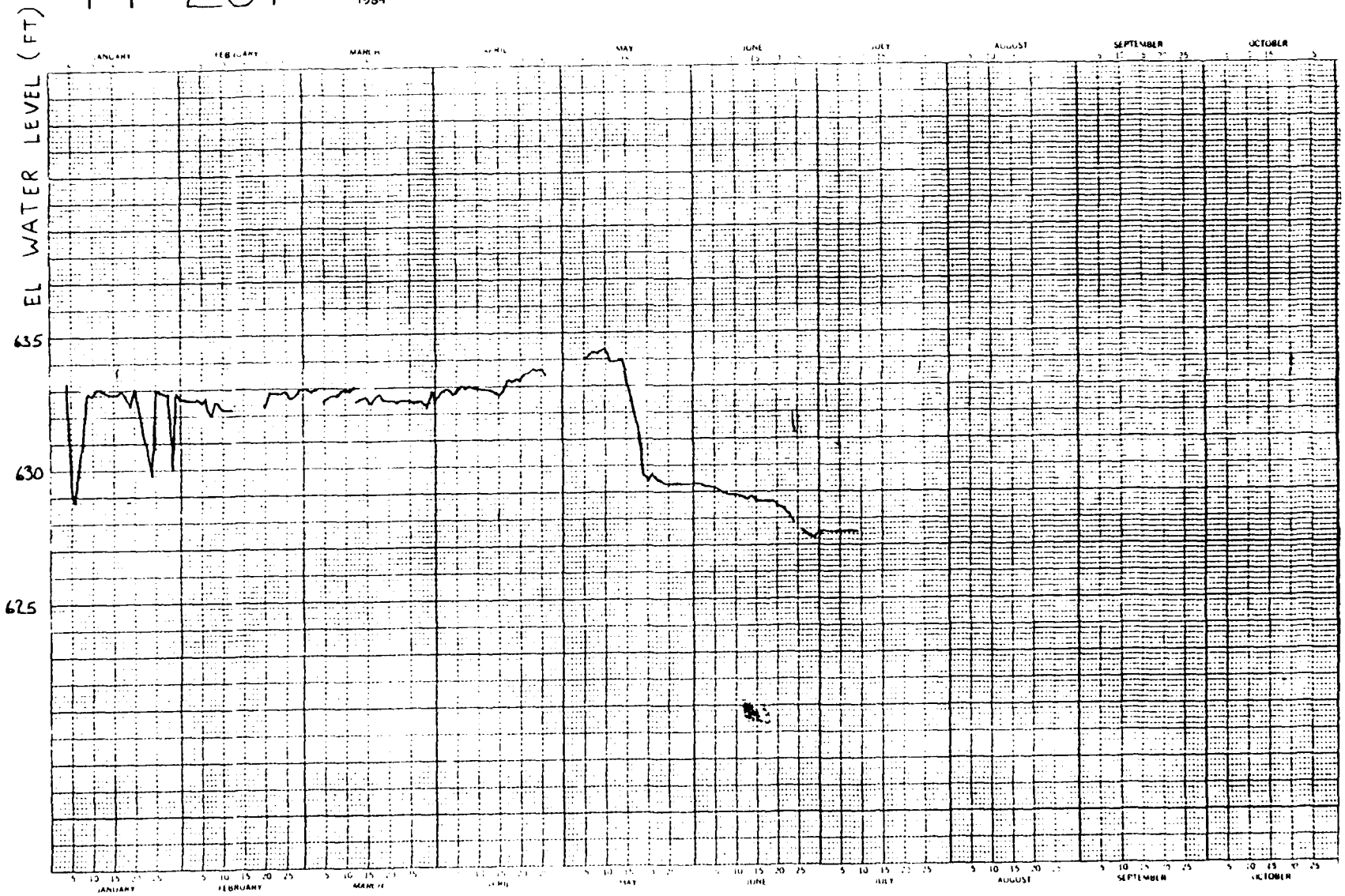
PC 207 1984



K+E 1 YEAR BY DAYS X 10 DIVISIONS KEUFFEL & ESSER CO. MADE IN U.S.A.

PF 207

1984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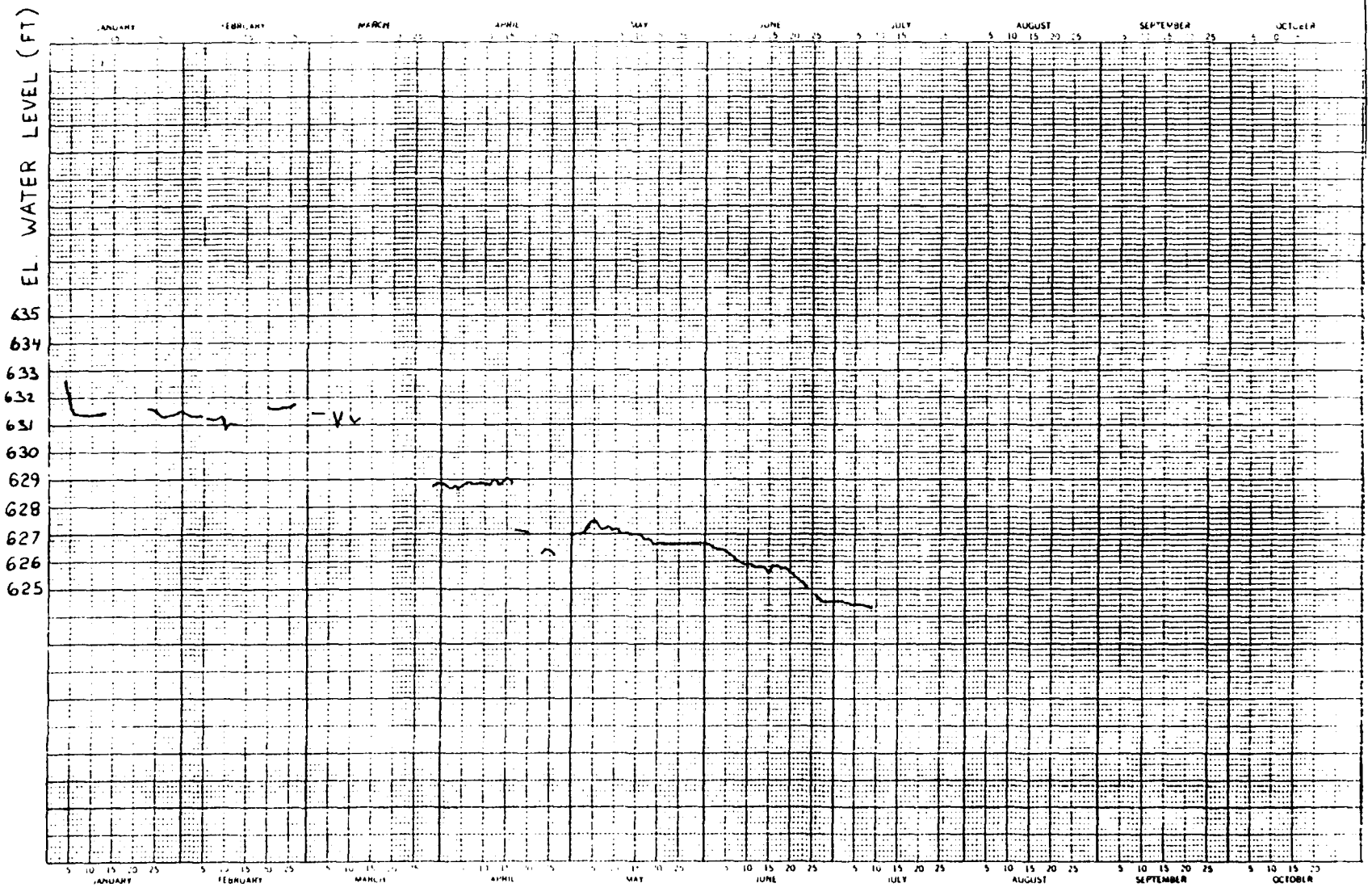
SEPTEMBER
OCTOBER

PC 209

1984


EL. WATER LEVEL (FT)
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JANUARY
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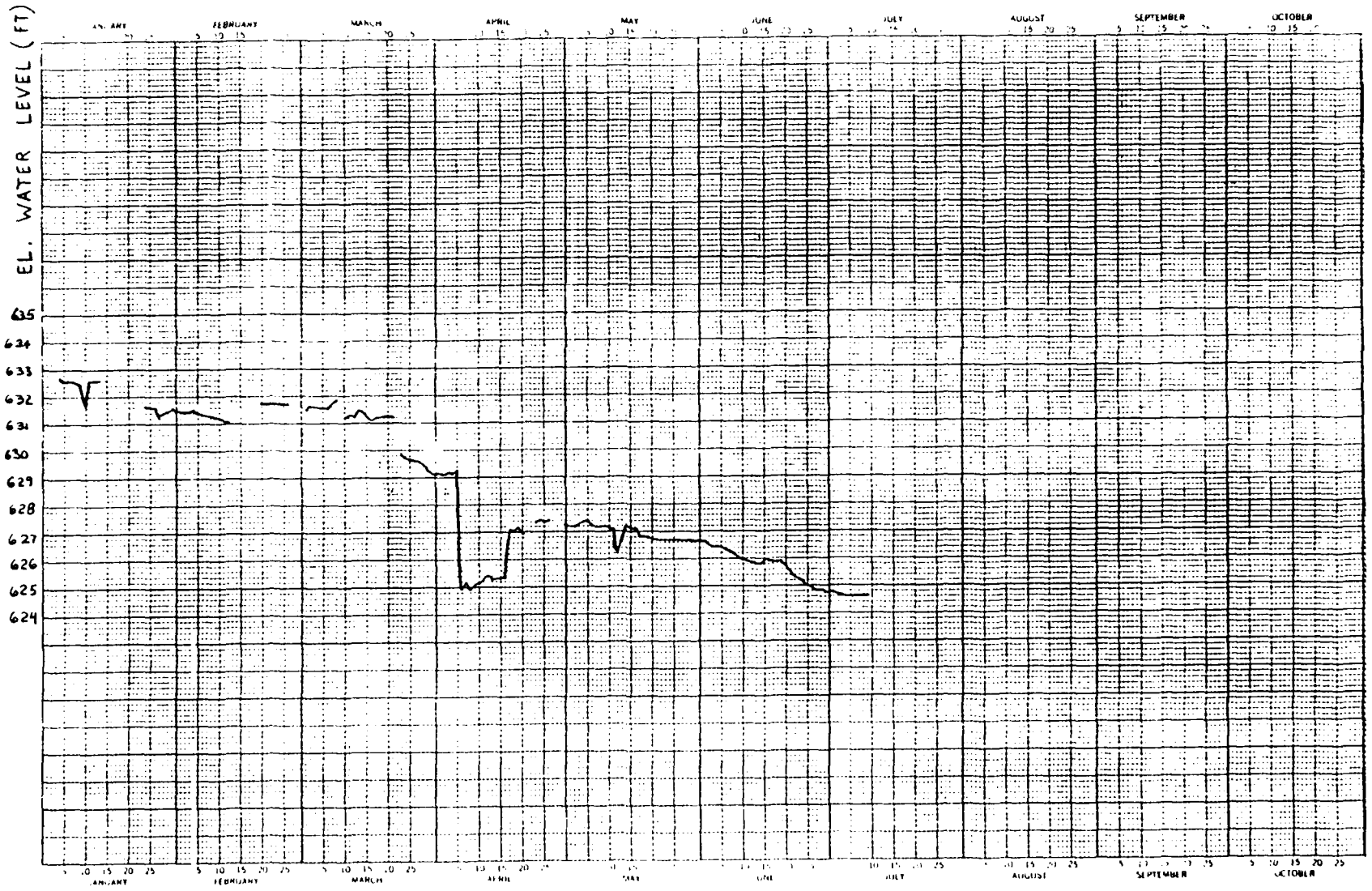
AUGUST
SEPTEMBER
OCTOBER

PE 209 1984

K+E 1 YEAR BY DAYS X 10 DIVISIONS KEUFFEL & ESSER CO.

PF 209

1984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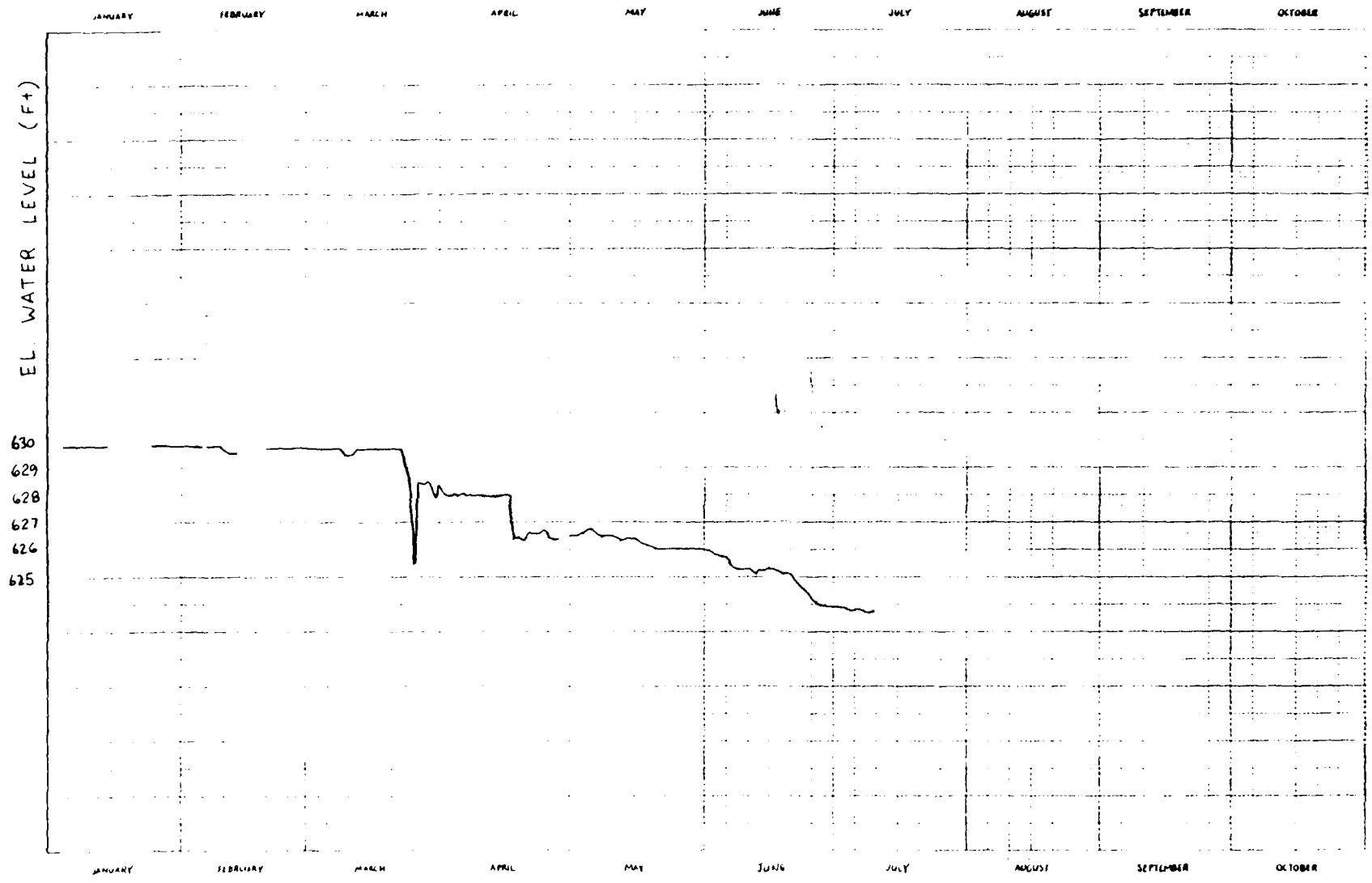
PC 210 1984


JANUARY
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PF210

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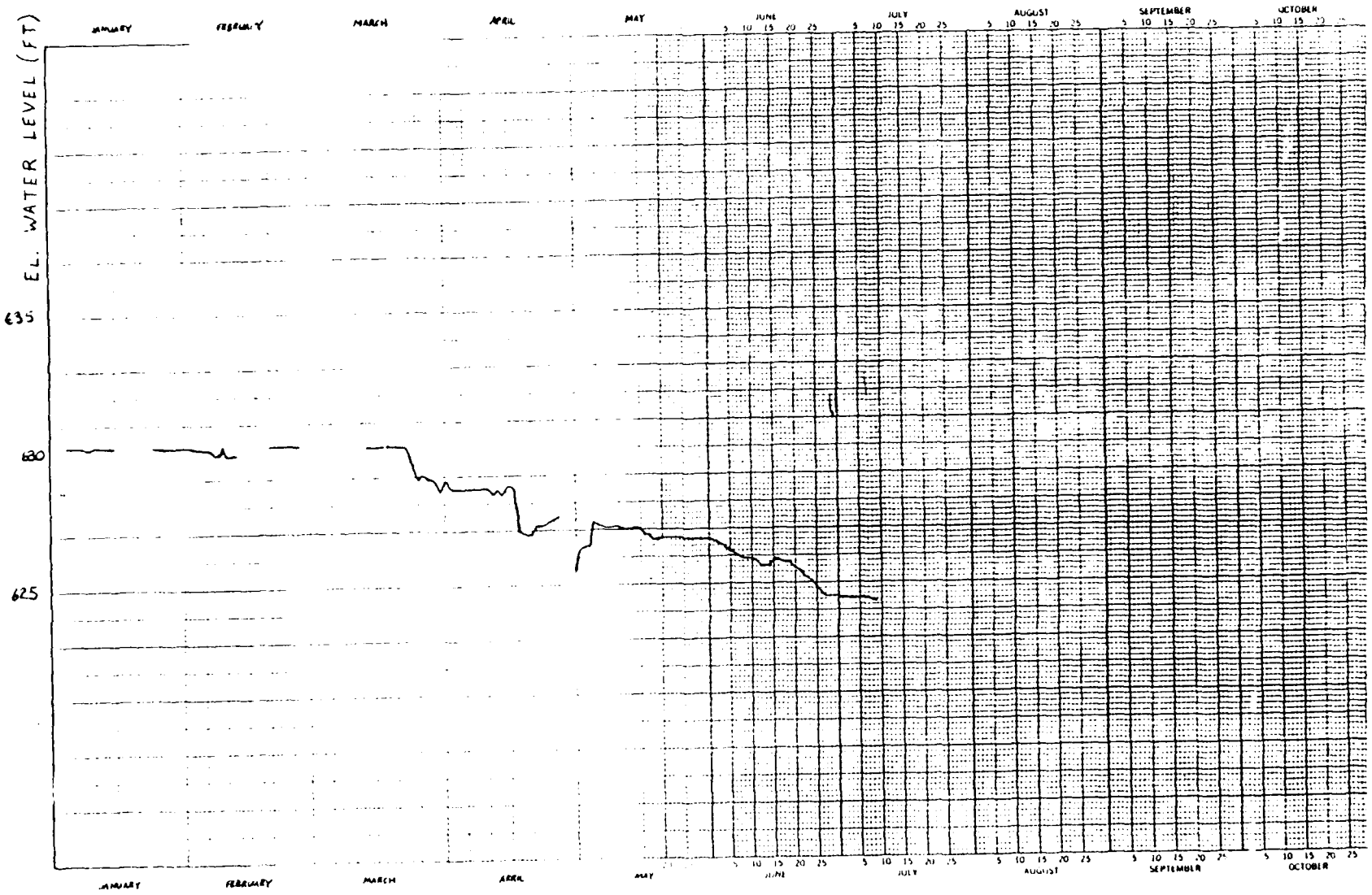
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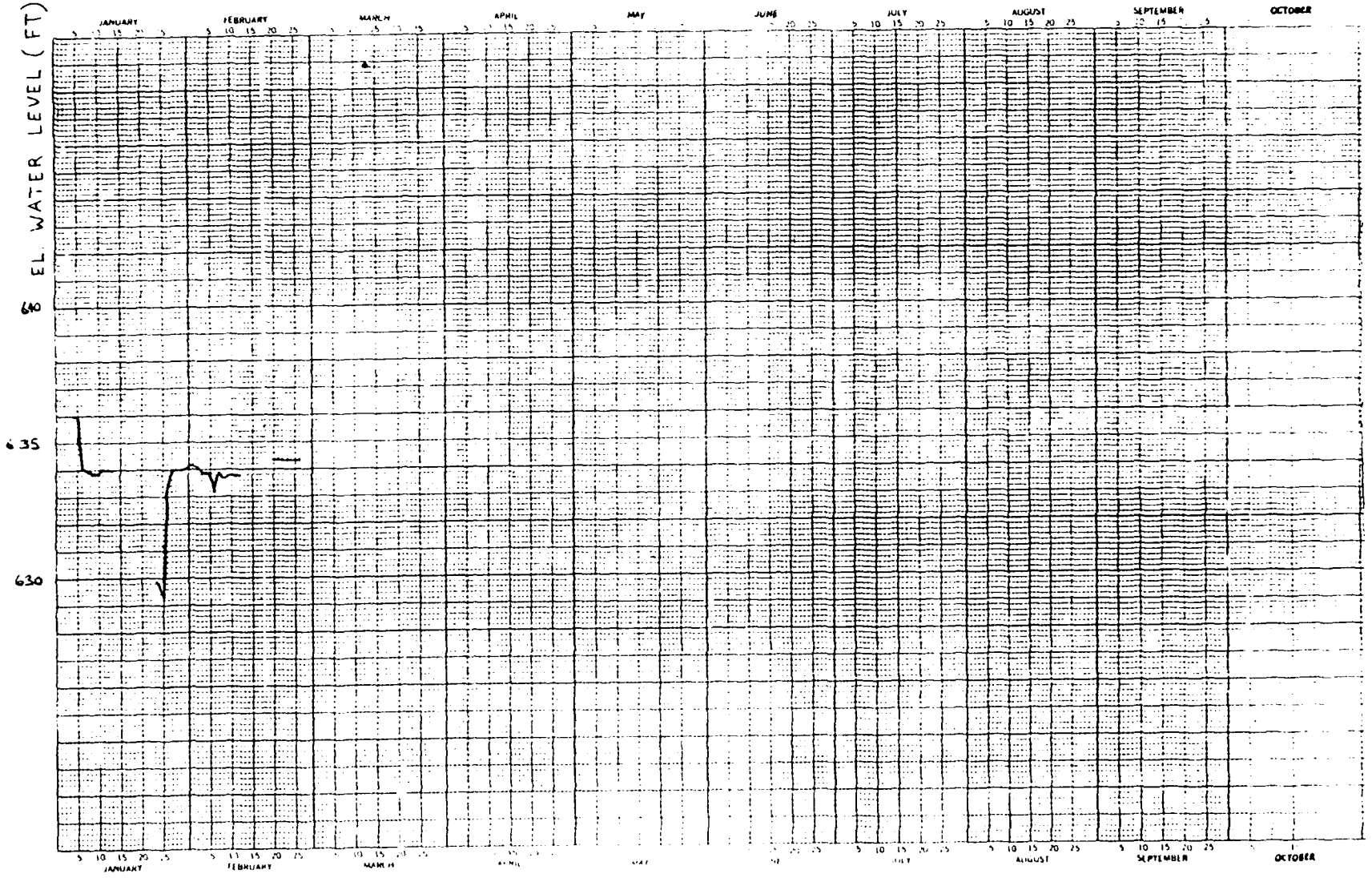
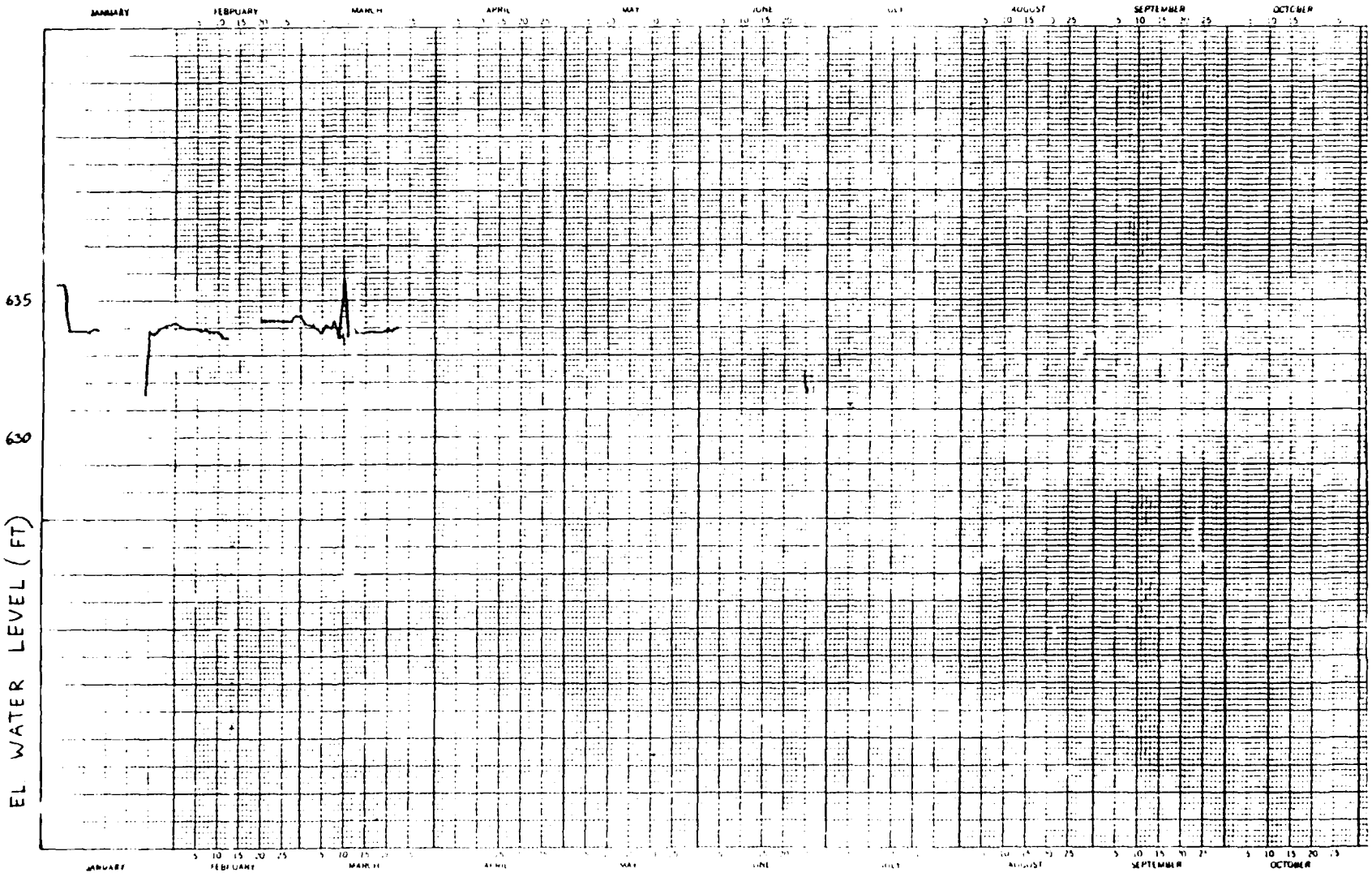
PC 211 1984



K+E 1 YEAR BY DAYS X 1 INCH DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.

PF 211

1984


JANUARY
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SEPTEMBER
OCTOBER
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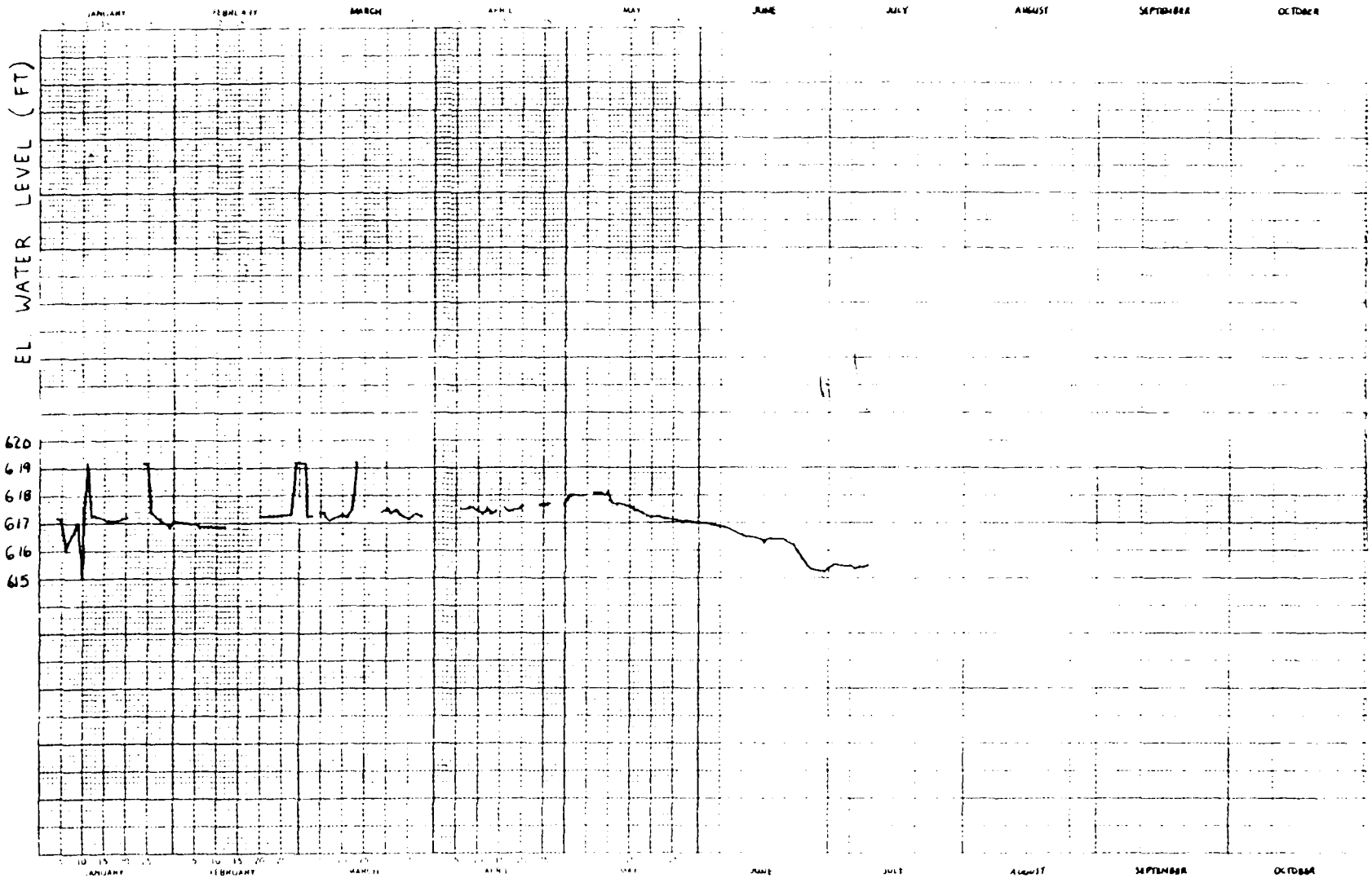
EL WATER LEVEL (FT)

PC212 1984


JANUARY
FEBRUARY
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SEPTEMBER
OCTOBER
EL WATER LEVEL (FT)
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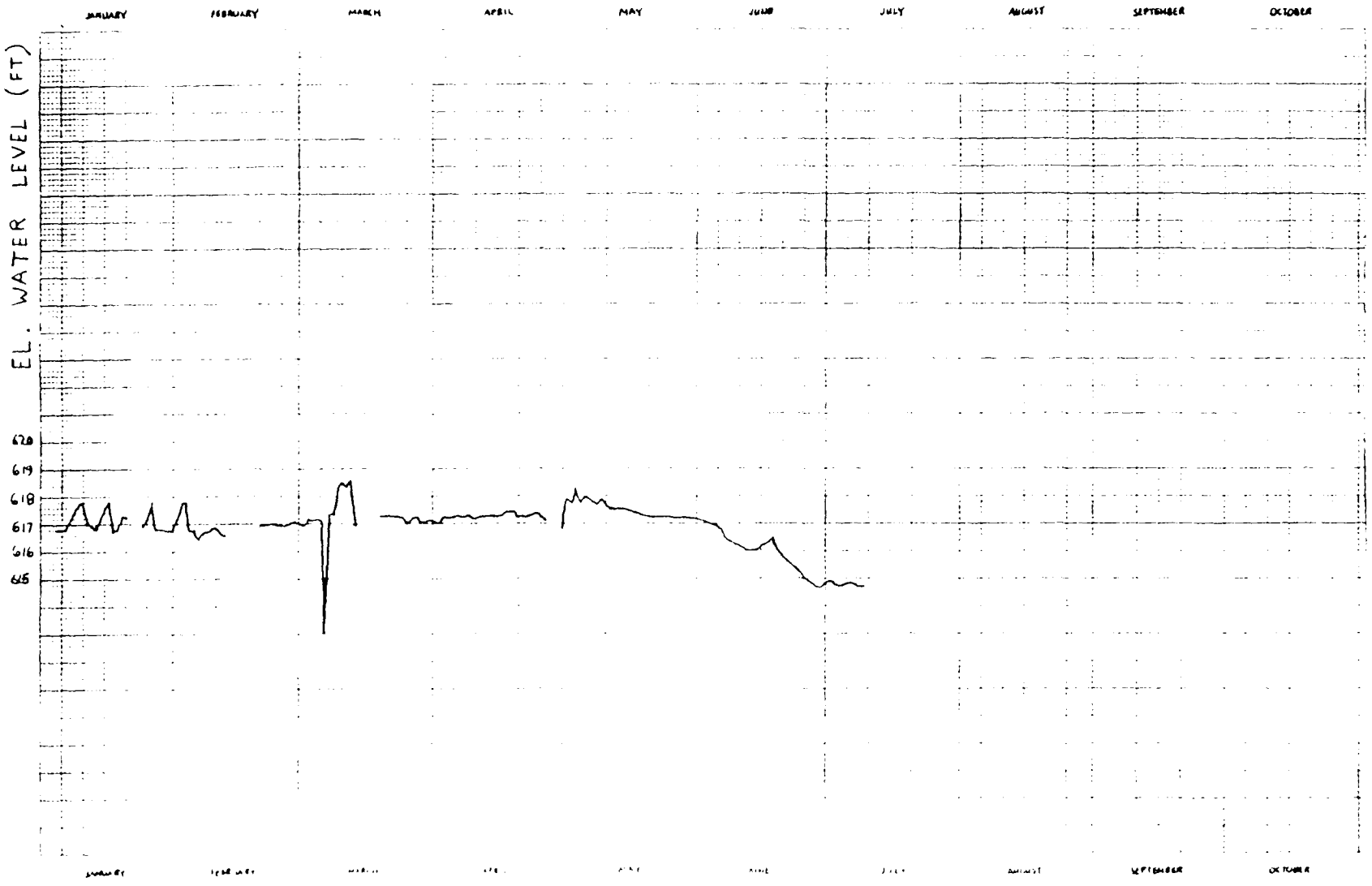
PC 213

1984


JANUARY
FEBRUARY
MARCH
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MAY
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JULY
AUGUST
SEPTEMBER
OCTOBER
EL. WATER LEVEL (FT)
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PC 214

1984

K+E 1 YEAR BY 1 DAYS X 1X DIVISIONS KEUFFEL & ESSER CO.

REHABILITATION OF CLEMSON UPPER DIVERSION DAM

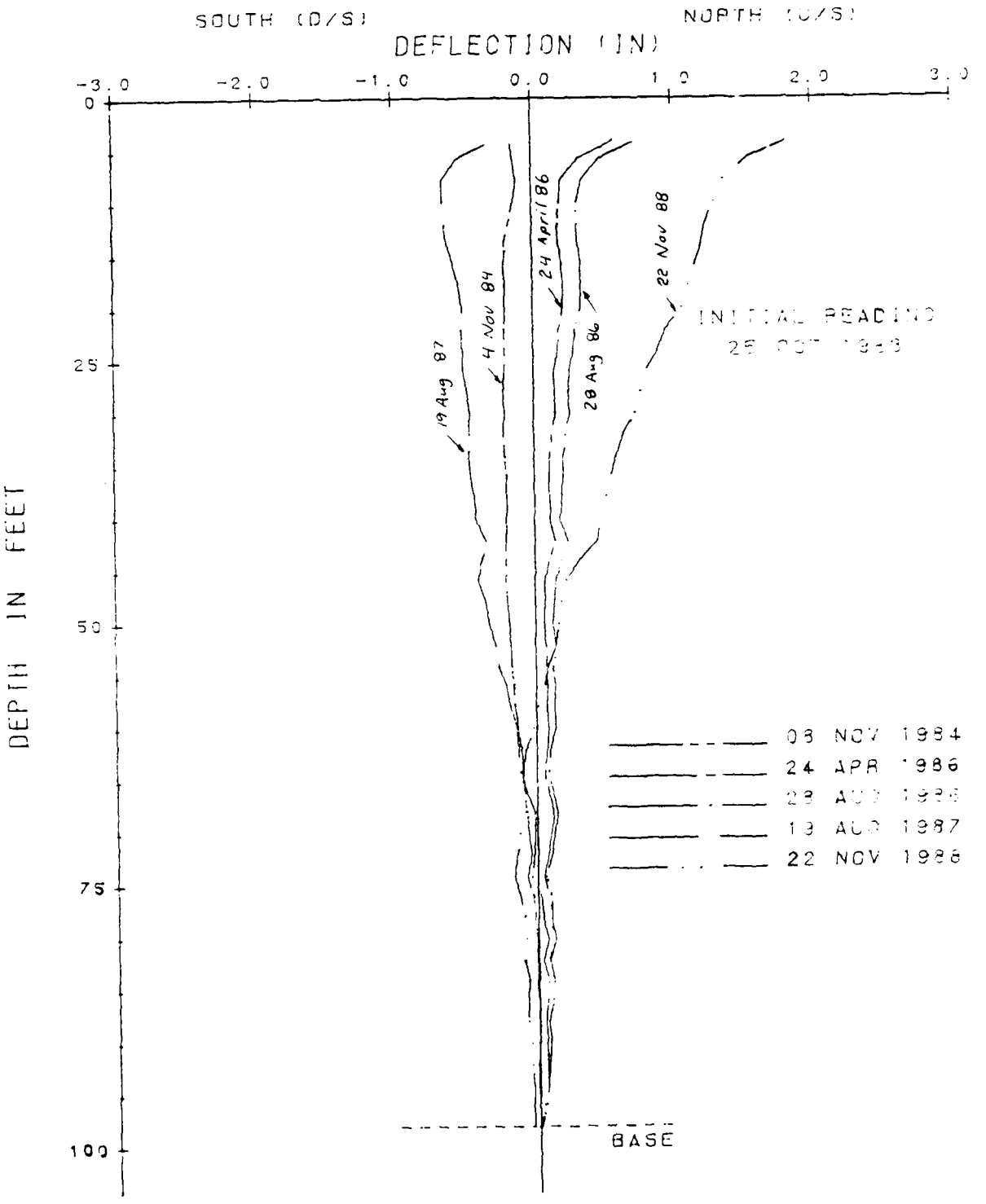
CONSTRUCTION FOUNDATION REPORT

APPENDIX E

Inclinometer Plots

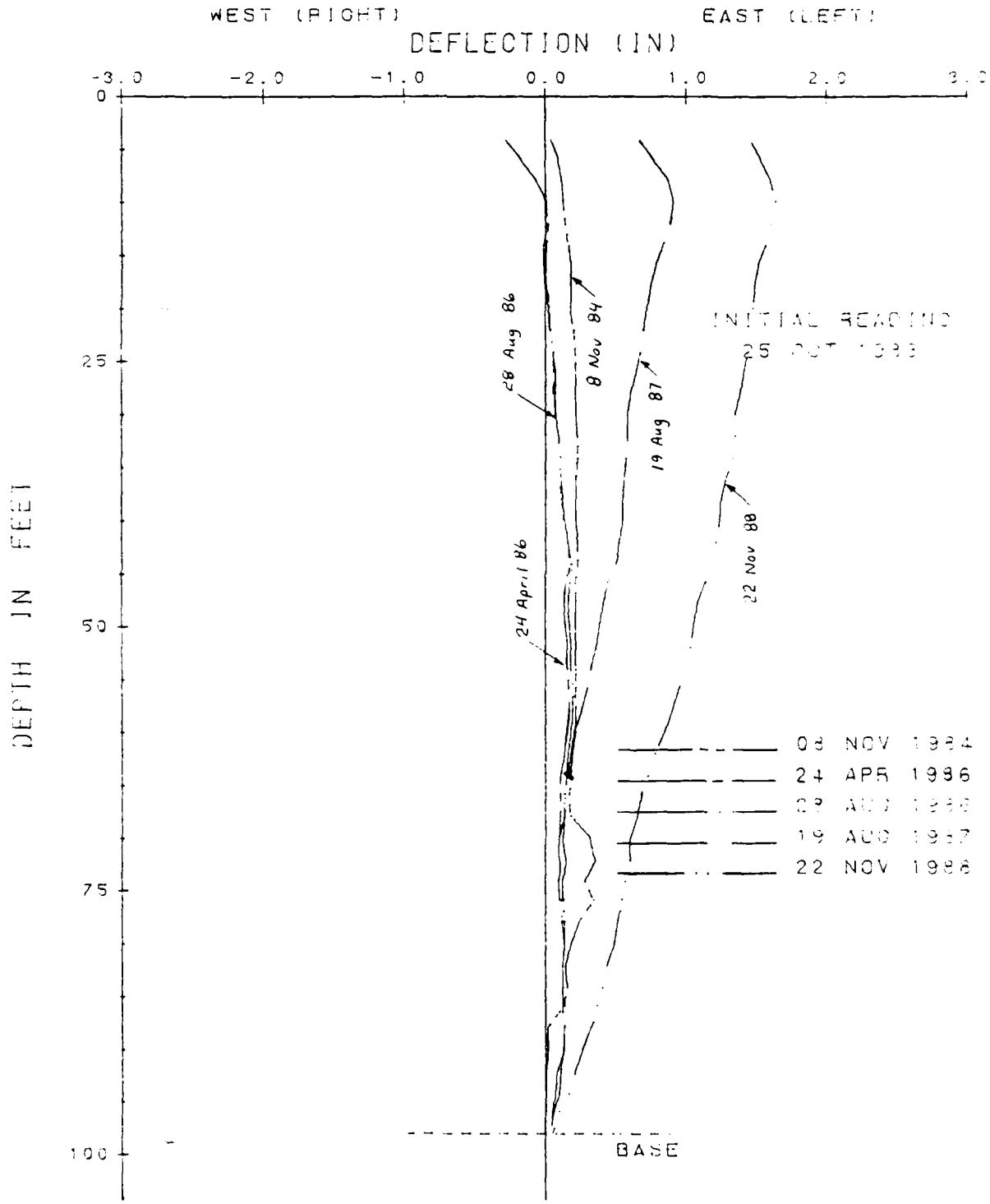
CLEMSON UPPER DAM
1U

N-S



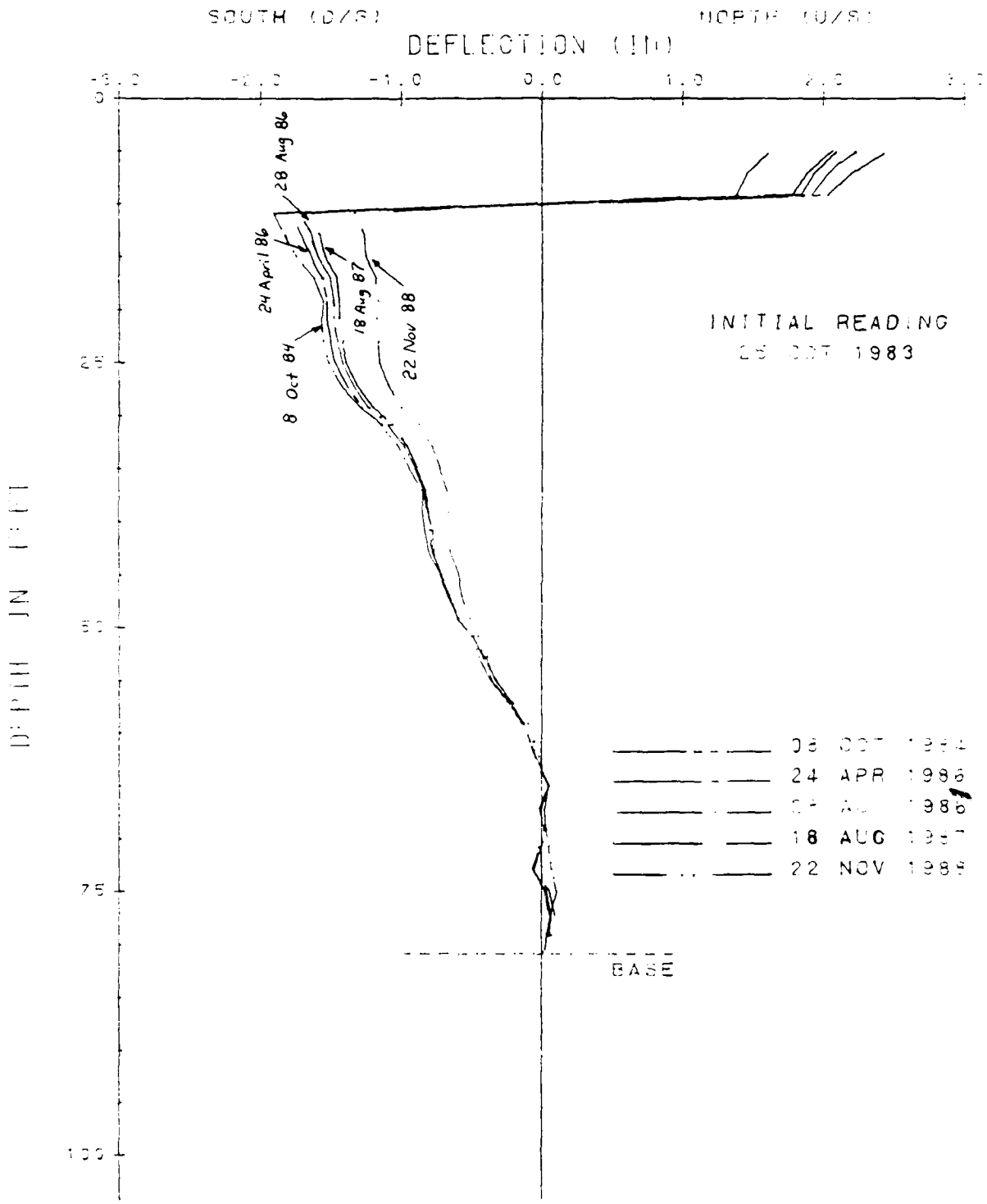
CLEMSON UPPER DAM
1U

E-W



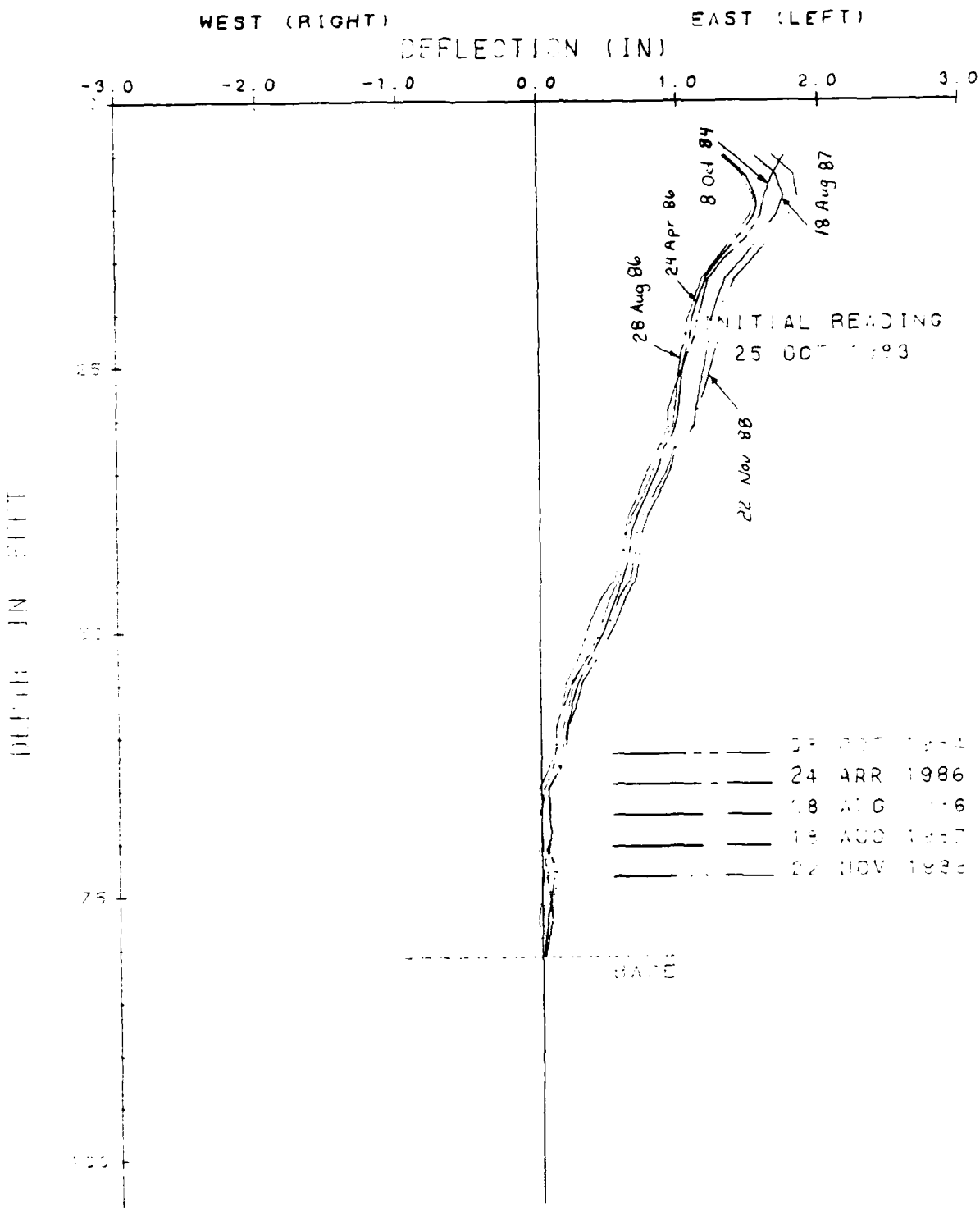
CLEMSON UPPER DAM
2U

N-S



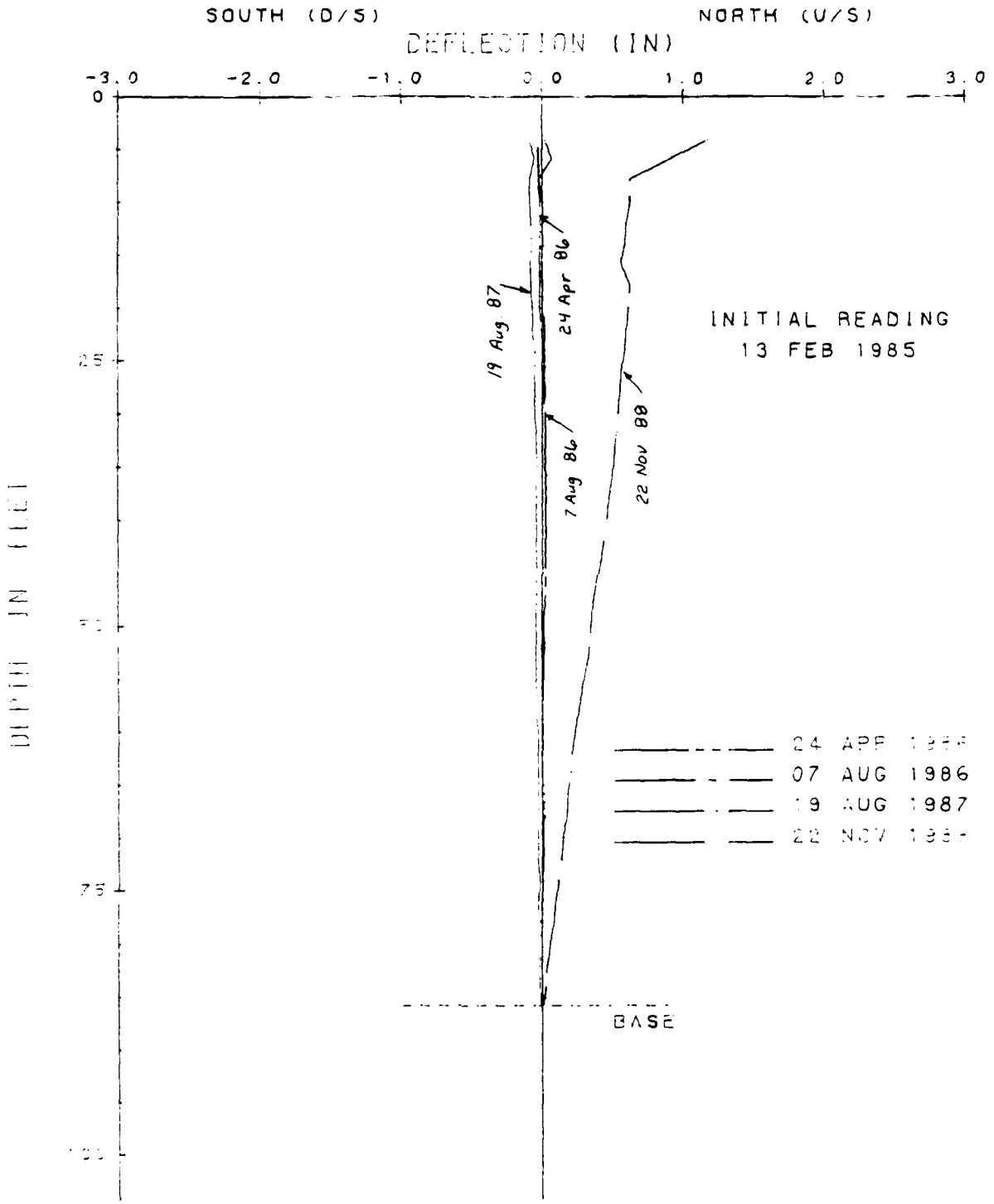
CLEMSON UPPER DAM
20

E-W



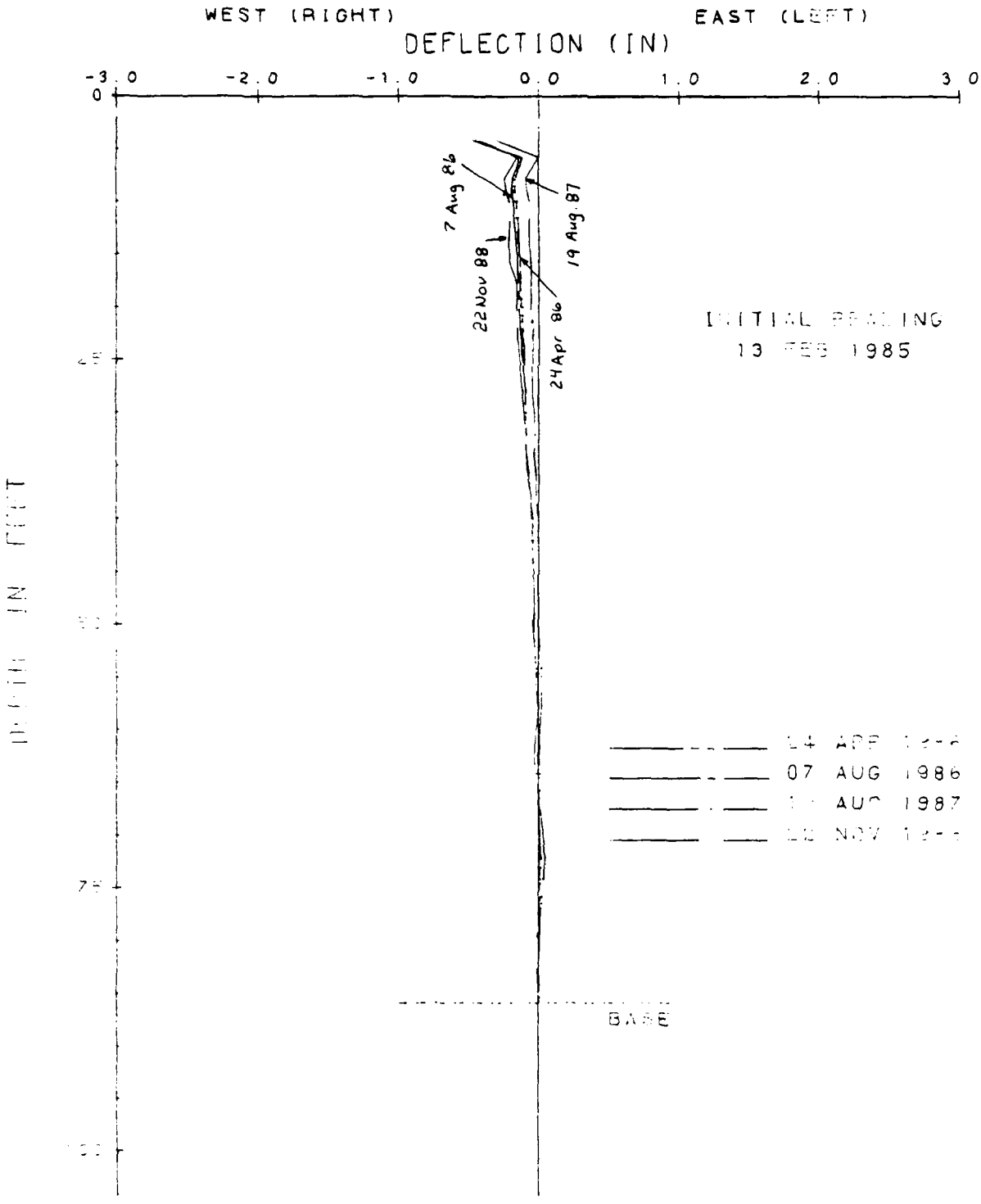
CLEMSON UPPER DAM
3C

N-S



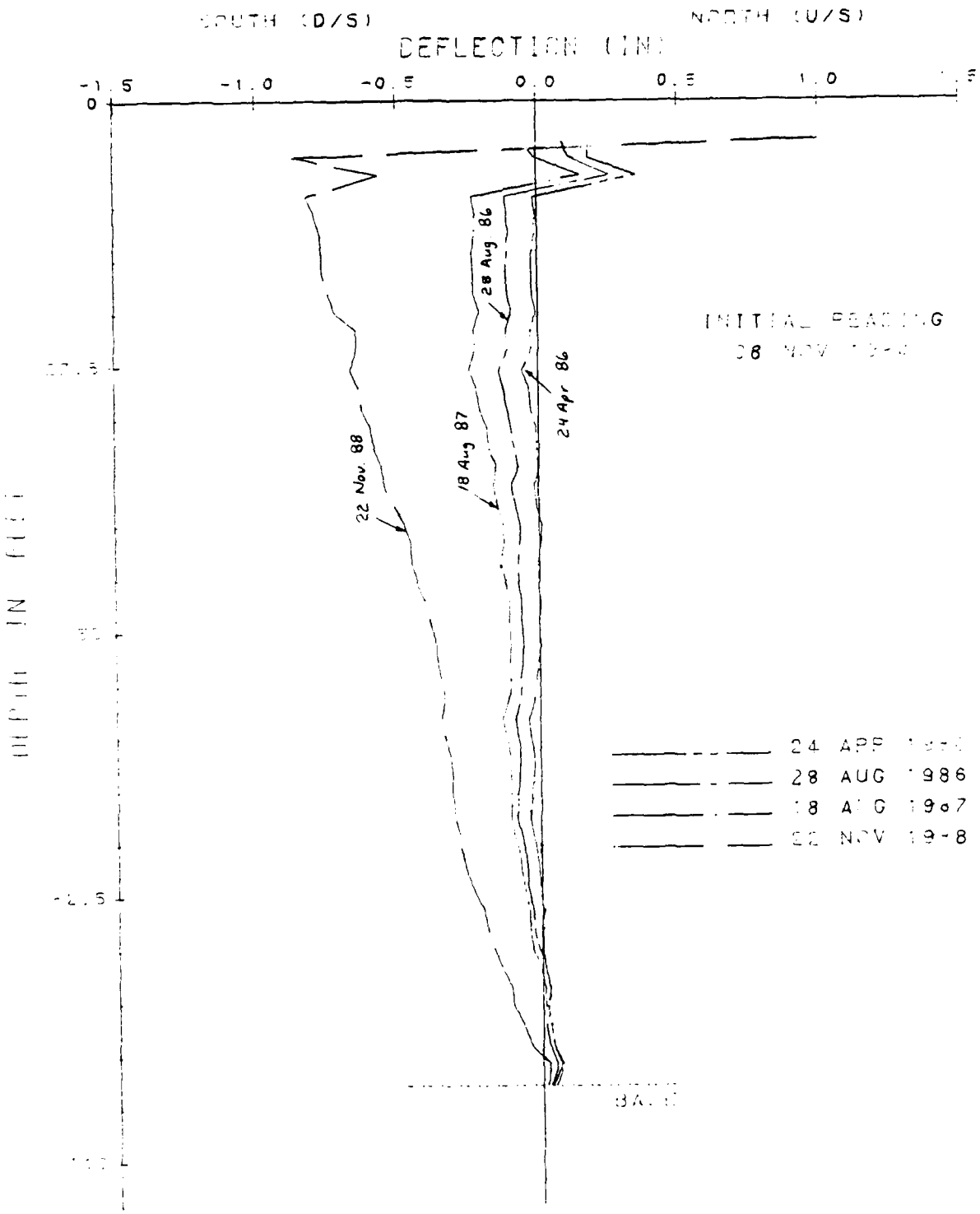
CLEMSON UPPER DAM
36

E-W



CLEMSON UPPER DAM

N-S



CLEMSON UPPER DAM
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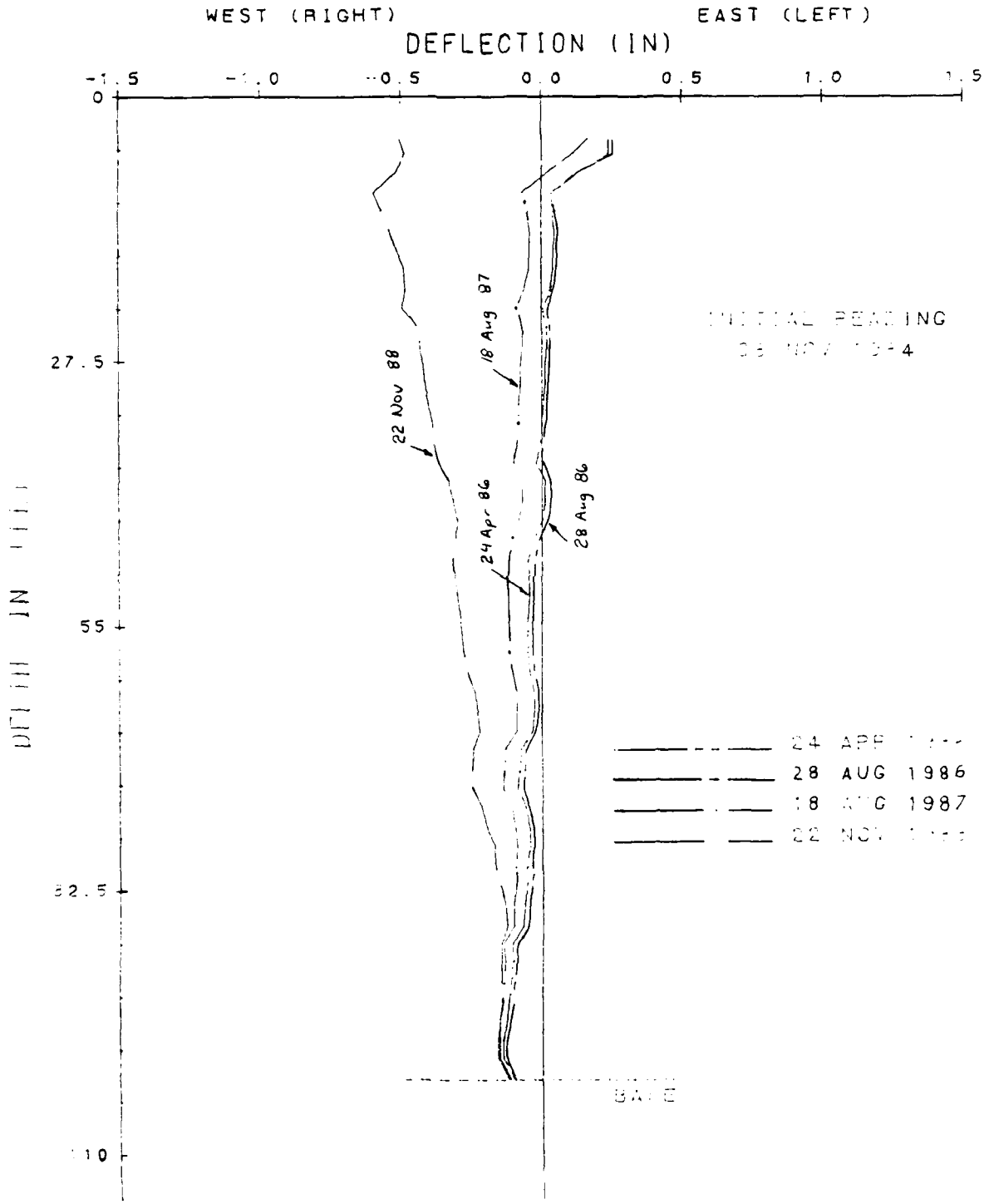
E-W